





AN

✦ ILLUSTRATED ✦ WEEKLY ✦ MAGAZINE ✦

FOR THE

ARCHITECT, ENGINEER, ARCHÆOLOGIST, CONSTRUCTOR,
SANITARY REFORMER, AND ART-LOVER.

CONDUCTED BY

H. H. STATHAM,

FELLOW OF THE ROYAL INSTITUTE OF BRITISH ARCHITECTS.

"Every man's proper mansion-house, and home, being the theater of his hospitality, the seat of self-fruition, the comfortablest part of his own life, the noblest of his sonne's inheritance, a kinde of private princedome, nay, to the possessors thereof, an epitome of the whole world, may well deserve, by these attributes, according to the degree of the master, to be decently and delightfully adorned."

"Architecture can want no commendation, where there are noble men, or noble mindes."—SIR HENRY WOTTON.

"Our English word To BUILD is the Anglo-Saxon Bylban, to confirm, to establish, to make firm and sure and fast, to consolidate, to strengthen; and is applicable to all other things as well as to dwelling-places."—DIVERSIONS OF PURLEY.

"Art shows us man as he can by no other means be made known. Art gives us 'nobler loves and nobler cares,'—furnishing objects by the contemplation of which we are taught and exalted,—and so are ultimately led to seek beauty in its highest form, which is GOODNESS."

VOLUME XLV.—JULY TO DECEMBER, 1883.

OFFICE: No. 46, CATHERINE STREET, COVENT GARDEN, LONDON, W.C.



INDEX TO VOLUME XLV.

JULY TO DECEMBER, 1883.

- ABATEMENT OF nuisances**, 110
Abbey Gatehouse, Bristol, 641
Abbeys: Lincoln, 231; Sherborne, 208; St. Alban's, 161, 172
Abuses of building societies, 60
Academy, Royal: admission of architectural students, 63; Annus annuitatis, 125; distribution of prizes, 783; students' designs, 784
Academy of Building, Munich, 445
Accidents: 94, 130, 305, 338, 337, 338, 371, 415, 510
Accidents, preventible, 288
Accounts, gas companies', 71
Actions: — Belt v. Lawes, libel, 840; Bomber v. Great Western Railway Company, law of light, 679; Brown v. London and South Western Railway, compensation, 269; Castellani v. Preston, rights of insurance companies against vendors of houses, 477; Charles v. Finchley Local Board, duties of Sanitary Authorities, 110; Collins v. Lawrence, Building Act case, 98; Conolly v. Metropolitan and District Railways, compensation, 303; Davies, Turner, & Co. v. Great Western Railway, liabilities of carriers, 269; Davis v. Hill, 637; Hill v. Scott, water company, water companies' charges, 201, 748; Fletcher, Salisbury & Co., light and air, 98; Foulham v. Shere, Building Act case, 336; Fulham Local Board v. Reade, "What is a new street?" 670; Galpin v. Husey, dilapidations, 772, 805; German v. United Telephone Company, overhead wires, 308; Glasgow v. Headon Local Board, duties of Sanitary Authorities, 110; Hearne v. Keeling, commissions, 130; Hemmings v. Williamson, liabilities of vestrymen, 681, 687; Hill v. Scott, Employers' Liability Act, 879; Holberton v. Levy, house drainage, 637; Isaac v. Commissioners of Sewers, compensation, 638; Jackson v. Eastbourne Local Board, a disputed contract, 90; Lambeth Water Company v. May, water fittings, 269; Lamb v. Commissioners of Justice Chambers, Company right to support of buildings by subterranean water, 644; Leyton Local Board v. Godwin & Green, building by right; Lloyd v. Gatti, temporary obstruction of light, 843; Maddison v. Helston Railway Company, right to plant, 74, 139; Metropolitan Board of Works v. Barr, Building Act case, 234; Metropolitan Board of Works v. Duke of Bedford, costs in re dangerous structures, 97; Metropolitan Board of Works v. Fallon, Building Act case, 270; Metropolitan Board of Works v. Willesden Local Board, drainage of Kilburn, 788, 839; Milnes v. Mayor of Huddersfield, liability of water companies for poisoned water, 705; Morris v. Donnan, liability of tenants for road maintenance, 32; Parker v. First Avenue Hotel Company, light and air, 97; Patent Silencing Company v. Padbury and others, light and air, 63; Reeves v. Barlow, building agreements and bills of sale, 648; Relf v. Helston Railway Company, contract, 141; Ruston v. Wain, libel, 678; Es v. parlo Saunders, the Public Health Act, 213; Snell v. Carnell, professional services, 737; Spanish Telegraph Company v. Shepherd, sub-contract of contract, 126; Stephens v. Simpson, employer's liability, 670; Watson v. Way, Building Act case, 130; Willis v. Davis, Building Act case, 180; Wilson v. Clarke, damage caused by hoardings, 605; Wonford Highway Board v. Krauss, builders and the wear and tear of highways, 470; Woodthorpe v. Woodall, Building Act case, 469
Addicome Wesleyan Church, 618
Addison, villa residences at, 668
Adelphi, suggested flower-market, 684
Admiralty, proposed new, 264, 379, 412, 406, 608, 604, 643
Admission in modern architecture, 813
Agreements and bills of sale, 648
Air: disinfecting, 608; testing, 637
Air-La-Chapelle, great fire at, 28, 41
Air-Line, Caisne, 267
Albert Exhibition Palace, Battersea, 669
Aldershot: Post-office, 399; Soldiers' Institute, 250
Alfred, inter in, 603
Alhambra Theatre, 641, 674, 636
Alterations in House of Lords, 203
Amalgamation of gas companies, proposed, 783
Amateur architect, temp., Elizabeth, 677, 738
America: architectural style and criticism in, 840; re prehistoric art of, 718, 815; railway pioneering in the U. S., 379; Suez, architects in, 75
American: Institute of Architects, 439; public buildings and dwellings, 33
Amsterdam: Exchange, 743; Exhibition, 648, 639
Angle of 45 degrees in light cases, 98
Anglo-Saxon antiquities, 738, 838
Annals of Chester-le-Street, 708, 773, 805
Antiquities: Armenian, 83; Anglo-Saxon, 748, 838; Roman, at Landenburgh, 785
Apprenticeship system, the, 781
Approaches to New Law Courts, 233
Archaeological: discoveries (see "Discoveries"); lectures, British Museum, 639, 748, 838; retrospections, Roach Smith's, 68
Archaeological societies: Basingstoke, 405; Bradford Historical and Antiquarian Society, 674; Bristol and Gloucestershire, 64, 434; British Archaeological Association, 197, 255, 282, 299, 8, 8; Lancashire and Cheshire, 132; London and Middlesex, 203; Penzance Natural History Society, 496; Royal Archaeological Institute, 167, 166, 639; Society of Antiquaries, 7; Society of Antiquaries of Scotland, 508; Somersetshire, 265; Sussex, 235; Wilt, 297
Archæology: Iceland, 312; Rhed Lectures, 551; the Shapira Manuscript, 312
Architect, amateur, Kemp, Elizabeth, 677, 738
Architect-squire, ac, 644
Architects: builders' estimates and, 738, 773, 804, 542; German, medals for, 28; law business of, 714, 803, 842, 879; Victor Hugo on, 849
Architects of buildings and authors of designs: Adams, C. A., house at Prestige, 588; Appleton, H. D., Board-room, Epsom Union, 356; Balu & Denerthes, Council-chamber, Hôtel de Ville, Paris, 463; Banks, T. L., Congregational Church, Turinham Green, 150; St. James's Congregational Church, Newcastle, 424, 425; Barry, C., roof Royal Exchange quadrangle, 486; Beazley, C. N., church, Westgate-on-sea, 845; Benson, Dudley, Sussex, 320; house, Westgate-on-sea, 397; Bell, C., offices, New-at., Bishopsgate, 788; Bombel, A., bond-ice, Renaissance, 592; Biggell, J. M., design for Town-hall, Jersey, 354; Birch, J.: Grafton Hall, Cheshire, 864; manor-house, Farnleigh, Wilt, 435; stable office, Grafton, Cheshire, 167; Blomfield, A. W., chance-screen, St. Leonard-on-sea, 590; Booth, L., artisans' dwellings, Manchester, 158
Boreham, F., Chapel, Addicome, 622
Brough, James, Northleach Church, 454
Bruce, J. M.: church, Ipswich, 121; St. Faith's Chapel, Stoke Newington, 860
Bryce, D. R., Royal Infirmary, Edinburgh, 14
Burges, W. A., A. A., Townhall, Dover, 43
Byrne & W., house at Windfield, 459
Campbell, J., Palace for the Maharajah Holkar of Indore, 792
Chapman, J. W., Schools, Peckham, 427
Collins, H., Westminster Jews' Free School, 456, 457
Cooke, C. H.: Houses at Addicome, 665; Lifeboat House, 118, 359
Cottingham, J., proposed church at Bingley, 220
Curwen, E., Leys School, Cambridge, 490, 607
Cutter, T. W., shop, Sutton, Coldfield, 858
Cutts, J. E. K.: church, Dovercourt, 860; St. Bede's Church, Liverpool, 801
De Fabris, Prof., facade at St. Maria del Fiore, Florence, 422
Dixon, W. A., Poplar Tabernacle, 188
Eales, C. & Sons: Flats, Hyde Park Mansions, 152; King's Arms Tavern, Edgware-road, 388
Fowler, C., Coffee Tavern, Marylebone, 656
Gale, A. J., design for Finchley Board Schools, 155
Garlick, Park & Sykes, St. George's Church, Preston, 256
Garratt, T., and **Lohr, H.**, design for All Saints' Church, Ipswich, 67
Hait, G. C.: brass-work, 357; door-decoration, 609; filling-in and border, 229
Kewee, H., house at Stoke, 488, 493
Hanson, T., terrace-houses, Dover, 758
Hennan & Beddoe, design for church for Old Meeting Trust, Birmingham, 23, 23
Hill, E. H.: Soldiers' Institute, Portsmouth, 227
Higgs & Rudkin, house, Harrow, 116, 254
Hollord, Clayton & Black, house at Brighton, 422
Hope, T. C., Thorpe Buildings, Bradford, 184
Isaac, A., Sewage Works, Salford, 688, 687
Leche, H., Council Chamber, Guildhall, 723
Joseph and Pearson, Jews' Free School, 18, 19
Kersey, A. H., Offices, New Cross-road, 259
King, J. L., Cottage Hospital, Surbiton, 790, 799
Knightley, T. E., shops, Fleet-street, 538
Leche, H. S., Trade Office, Westminster, 395
Lish, J. J., Wesleyan Church, Gosforth, 760
Lockwood, P. C., grove, Brighton, 618
MacKinnon, A. G., St. Bede's Church, Liverpool, 801
Masini, G., statue of Rebecca, Turin, 497
Architects of buildings (continued): —
Moore, F. H., Nelson Club, Warwick, 871
Mulley, J., Post-office, Aldershot, 360
Newton, H. I., tavern Butters, 461
Norton, J., Church of St. Matthew, Kemp Town, Brighton, 238
Perry & Reed, Assurance Offices, Berlin, 858
Phippo, C. J., Prince's Hotel, Coventry-street, 692
Rhind, J. and **J. R.**, Library, Hontly, 238
Robins, E. C., School, Caterham, 758, 763
Romaine-Walker & Tanner, Humphreys' Hall Mansions, Knightsbridge, 290
Sabater, T., Casino Mercantil, Barcelona, 828
St. Aubyn, J. P., Chambers, Temple, 862
Sanders, W. B., oak staircase, Egham, 625
Schmidt, F., Town-hall, Vienna, 658, 659, 667
Scott, Sir G. G., Leeds Infirmary, 24
Searle & Hayes, Congregational Church, Balham, 725
Sedding, J. D., Entrance to Finsbury Hospital, 232
Seitz & Thiersch, Exhibition, Munich, 418
Semper, Prof., Portal, Dresden Museum, 518
Sherrin, G., Schools, Lewisham, 523
Slithers, J., statue of Raffaele, 146
Smith, A., offices, Auckland, N.Z., 735
South, Prof. T. Roger, Sanatorium at Redham, 45, 63
Smith, W. B., Church, Caterham, 688
Stevens, A., sideboard, Dorchester House, 159
Sugden, W. & Son, Hanley Tabernacle, 12
Tanner, H., Post-office, Liverpool, 191, 193
Tarver, E. J.: clatters arrangement, 269; proposed flower-market, Thames Embankment, 590; sketch for an iron and concrete church, 649
Taylor, John, Lyden new building, 80
Tilman, J. & F., Institute for the Blind, Sunderland, 329
Topham, R. S., house, Stoke-upon-Trent, 681
Vernon, A., Grammar School, High Wycombe, 699
Walters, F. A., St. Mary's (R.C.) Church, York, 158
Ward, G. W., design for shops, 318
Webster, J., artisans' dwellings, White-chapel, 527, 529
Wilks, J., Chapel, West Brighton, 635
Wilson, Son, & Aldwinckle, Lewisham Public Baths, 724, 733
Woodington, W. F., terra-cotta group for Palace, 158
Wren, Sir C., doorway, St. Mary-le-Bow, Chapside, 631
Wyke, W., design for Church for Old Collins, in 1853, 673; a visit to, 162; and its baths, 304, 337
Baths: Carlisle, 537; Lewisham, 434, 448, 720; Longton, 806; Merion, Dublin, 137; Rome, St. Barbara, Treves, 574; Whitehaven, 471
Battersea: Albert Exhibition Palace, 689; shops and tavern, 465
Batard, an architectural, 345
Bayreuth theatre, the, 237
Beauty of nature, ignorance of, 29
Belfast Free Library, 367, 434
Bell, Lincoln's Inn Chapel, 773; at the new Law Courts, 841
Belt Libel case, the, 640
Benvenuto Cellini, 610
Berlin: building regulations, 28; Congress of Master Chimney-sweepers, 248; exhibition of Mexican products, 248; fire-insurance, 60; Gallery of Sculpture, 331; Hall of Fame and Military Museum, 641; Hygienic Exhibition and Congress, 9, 248, 645, 603; museums, 127, 208, 601; National Gallery, Cornelius Saloon, 461; new Reichstag building, 199, 516; Union Assurance Office, 284
Bernheim's treeproof composition, 639
Bethnal-green, dwellings of the poor, 741
Bewick, Miss, will of, 305
Bills of quantities, deposits for, 704
Bills of sale, 648
Birkbeck Institution, new, 841
Birkenhead: School of Art, 873, 881; Sessions-house, 357, 411
Birmingham: Architectural Association, 404, 634; artisans' dwellings, 334; Board Schools, 384, 505; church, ac, for Old Meeting Trust, 10, 63, 96, 601; Golden Coffee Tavern, 305; the Dawson statue, 438; markets, 641; new buildings, 364, 369, 382, 605, 705, 717, 879; new hotel and shops, 109; new theatre, 364, 705; notes from, 717; proposed assize-courts, 540; proposed improvements, 234; Society of Artists, 402
Bishopsgate-street, new premises, 788
Blackfriars Bridge: statutory for, 809; railway works, 61
Bloxam, Mr. M. H., 809
Boar's Head Inn, Middleton, 768
Boar's Head Tavern, E-street, 69
Board of Trade's report on railways, 333, 365
Board-room, Epsom Union, 353
Boat-houses for Lifeboat Institution, 125, 363

lings of the London poor, 873; English architecture and monuments of the nineteenth century, 816; fittings of buildings for applied science instruction, 680, 795; membership, 773; pointing of rubblework, 773; President's address, 612, 667; reform, 875, 881

Institution of Civil Engineers, 423, 401, 67, 709, 841, 854

Insurance companies and the vendors' houses, 477

Insurance offices, Auckland, N.Z., 737

Ipswich: All Saints' Church, 91

Jacobean style, 873

Iron and concrete, 619, 704, 773, 804, 842, 8; Iron curtains for theatres, 347, 369

Iron prevention of rust, 187; Swedish galvanization, trade, the, 807

Iron v. stone, 776

Iron work: constructional, 235, 236; superstructure, 837

Ischia, the earthquake, 171, 371

Italian art, 851

Italy, Southern, cities of, 138

JAPAN, art-manufactures of, 74

Japanese metalwork, 281

Java, the city of, 410, 512

Jewrey Town, the Jews' Free School, 349

Jews' College, Cambridge, 646

Jews' Free school, the, 10

Jews' Free School, Westminster, 89, 419

Jewish colonies, the, 335; exhibit in the, of 631; industry in Australia, 575

Jottings, sanitary, 703

Journalism, professional, fifty years of, 105

KEIGHTLEY School of Art, 639

Keington: Garden, trees in, 672

Museum (see "Museums"); Townhall, 138

Kilburn: drainage, 786, 839; Town-hall, 70

Kinneton Castle, 580

King of Bavaria: Palace, Sinaia, 645

Kingston-upon-Thames: Edgarwood, 399

Kirk's College workshop classes, 604

Kirkby Lonsdale bridge, 669, 704

Knots and cables in ornament, 139

Königsberg: central restaurant, at, 85

Küsterhaus, Munich, 691

LABOUR: surplus and badly-paid, 679

wages in the Old World and the New, 443

Lambeth: Survey: house-draughting, 267

Land; proposed Townhall, 267

Landmarks, the, 267

Landenburg, Roman antiquities at, 785

Land: Baileigote, 878; central London 194; City end of embankment, 470, 774

Land: the, 100; London, 30; Somersetshire, 33; Southsea, 503; West-India, 33

Landwardsh, 503; Wilshire, 338

Land-tax, 181, 269

Land-tax, the, 493

Land-drains in building plots, 31

Landlords of the poor, 634

Lands of Metropolitan Railway Co. 199

Landscapes, the, 100

Land and air, 32, 679; water-running, 746

Law business of architects, 714, 805, 827

Law Courts, the new, 128, 212, 611, 811

Lawrence, Sir John, 804

Leatres at British Museum, 650, 743, 833

Leads: improvements at, 739; Infirmary Lane, 77

Lee, School of Art, 741; Townhall, 541

Legislation, the Architectural Society, 333, 603, 842

Legislation against panics in buildings, 30

Leighton, Sir F., on Egyptian art, 783

Leizel's house, the, 624

Leis Promenade, 93

Leonardo da Vinci, 613, 671

Lesseppe, M. de, 613

Lesser, the architect of Da Vinci, 653

Lessons of Woolwich Explosion, 443

Letters, writers of:-

Aitchison, J., Admiralty War-office competition, 604

Barnett, F. J., chimney construction, 604

Barry, C. R., Royal Exchange roof, 836

Bartlett, W. G., the Crystal Palace, 128

Black, J. W. Southampton, 572

Brace, G., dampness, 302

Bridgman, H. H., buildings, Paternoster-square, 82, 234

Brierley, J., Sir Robert Rawlinson, 264

Brnell & Co., sub-contractors, 97

Buchan, W. P., illogical sanitation, 803

Burt, E., the Crystal Palace, 128

Christie, E., Kirkby Lonsdale bridge, 704

Collis, J. H., builders and quantities, 774

Crane, R., School Board contracts, and the, 82, 234

Dennett, T. B., Liverpool cathedral, 130

Doe, J., chapel bell, Lincoln's Inn, 773

Edmonson, J., Munich fine art exhib., 467

Egyptian art, 783

Evans, A. J., Roman remains, Frilford, 806

Fajls, H., iron and concrete, 804, 842

Frost, J. B., plumbers, 493

Guthrie, W. N., architecture and literature, 31

Gibbins, J., staining wood, 336

Gladstone, J., deposits for bills of quantities, 701

Gordon, J., Frankfort sewerage, 773

Graham, R. H., graphic statics, 670

Granger, J., the Crystal Palace, 128

Grimes, E., land tax, 268; preventable accidents, 268

Hall, A., Richard of Cirencester, 201

Hall, J., old plastering, 268; staining wood, 468

Horner, W. S., house draughting, 336

Hunt, J. B., party walls, 878

Hunter, R. D., the Crystal Palace, 128

dwellings of the London poor, 873

Judge, M. H.: dwellings of the London poor, 873; sewers-and-house-drains, 805

Kerr, Prof., reform at the Institute, 575

Plan, an ancient, 273
Planning of hospitals, 23

Plaster, carols, 125
Plaster of Paris, 125
Plaster work, external use of, 109
Plastering, old, 234, 289, 302
Plant, contractors and sub-contractors, 74
Plateways, Lancashire, 708
Playgrounds, public, 636
Plumbers, 403; licensing, 635
Plumbers and plumbing, 716
Playing cards, 636
Plymouth, new buildings, 434; Drake's
meze's dwelling, 370; pier, 286; work;
statue, rubble wall, 538
Points in town government, 108
Polytechnic, technical teaching at the, 246
Poor, the, and the Poor Law Commission,
130, 131, 132, 133, 773, 775, 803, 843, 844, 873,
874
Poplar and Bromley Talmacres, 195
Porcelain building materials, 175
Portrait Gallery for Scotland, 232
Portraits, French, Ecole des Beaux Arts
Portraits, professional, 243, 278, 310, 345
Practitioners of medicine, 399; Belfast,
739; Covent-garden, 833; Exmouth, 537
General, new works at, 29; Liverpool
30
Pousin, a work by, 518
Power: electric, 400; transmission of, 708
Powerhouse, a country, 241
Practitioners of medicine of Scotland, 343
of America, 715, 815; builders, 1
Prescription Act, the, 42
Present-day architecture, 108
Prestige, house at, 334
Preston: bequest to, 837; Guild Merchant
403; 839; 843
Presting, iron in, 170, 171
Prince's Head Tavern, Battersea, 465
Prince's Hotel, Coventry-street, 684
Principal architects, 108
Priory of St. Martin, Dover, 282
Prize drawings, South Kensington, 63
Prizes: Cardiff Bistaford, 239; Tarners
108
Procession of building trades, a, 601
Professional: journalism, half a century of,
57; portraits, 243, 278, 310, 345
Profession, Bourne-mouth, 275; of railway
ways, 363, 385; of the working classes, 70
Projects for 1881, 840, 874
Promenade, Leith, 636
Property, sales of, 93, 128, 144, 164, 334,
602, 603
Provincial competitor, a, 278
Provisional laws (see weekly numbers)
Public Health, care of, 400
Public Health Act, working of, 213
Pure geometry, 414
Putney: bridge, 282; old, 473

QUANTITIES, architects and, 738, 773,
804, 842
Ratings, utility of, 97
Queen Victoria, 245, 286, 310, 345
Queer clients, 51, 516
Question of figures and a question of art,
547
Quickens, sinking shaft through, 775

RAFABILE, 162; Monument, Rome, 601
Railway, built by, 515, 516, 141
RAILROAD, Northern Pacific, 271
Rails, steel, 510
Railway bridges, colonial, 85
Railway companies and law of light, 679
Railway companies' accounts, 71
Railway and dock construction, 413
Railways: Alberg, 243; electric wire,
1882, 365; offices, Manchester, 302; ship-
building, progress of, 363, 365; under the
Public Works Legislation, 242; Swansea,
the United States, 739; to pioneering
underground, ventilation of works at
Black-fish, new, 61; working hours,
610
Railway stations: Brighton, 338; No
thampton, 739; Sleigh, 638; Strassburg,
338
Rainwater separator, a, 549
Ramsgate amphitheatre, 207
Rathaus, Aix-la-Chapelle, fire at, 28, 41
Rathaus, West-architectural, 448
Ravenna, 409
Rawlinson, Sir R., 214, 254, 602
Recreation grounds, 636
Rebecca, a statue by Masini, 899
Recreation-grounds, public, 607, 803
Reddam Army sanatorium, 81
Refugees, German, state of, 12, 581
Refuge, destruction of, 648
Reichstag Building, Berlin, 199, 518
Remains of old forts abroad, 4
Renascence: architecture in Great Britain,
608; bouidri, a, 684
Reports in outline for competitors, 173
Reservoirs, the water of the Paris, 98
Residences, 310, 540
Respite for Old London, 678, 673
Restaurants: Holborn, 569; Macclesfield
380
Restorations: at the Government Office,
385; at Lincoln's Inn, 399; at St. Alban
101
Retractions, social and archaeological,
Rhind lectures in archaeology, 551
Rhythm in architecture, 51
Richardson, C. G. Crencroft, 201
Richborough Castle, 299, 390
Right of buildings to support, 644
Rights of insurance companies, 476
Ring, the, 838
Road maintenance, liability for, 32
Rocheester Castle, 305
Rocheester Castle, Woolwich, 442
Roman: antiquities, Landenberg, 74
baths, St. Barbara, Treves, 574; houn-

- in Somersetshire, 233; occupation of Britain, 551; pavement in Paternoster-square, 208; remains at Mayence, 232; tower at Cologne, 179; walls, Etruscan, 775, 805; walls, Merton, Isle of Wight, 348.
- Roman Catholic church-building news, 57, 65, 216, 339, 704, 717, 775.
- Rome, architectural history of, 207, 208; discovery of frescoes, 112; excavations in, 93, 247, 801, 818; fire-breakage of, 163; new hospital, 45, 95; proposed new Houses of Parliament, 468, 593; Luther's convent, 785; monument to Semper, 28; new Palace of Justice, 60; the Palazzo Barberini, 60; Raffaele Monument, 601; Victor Emmanuel monument, 726, 753.
- Roof of courtyard, Royal Exchange, 482, 635.
- Rothschild's offices, Messrs., 283.
- Rothwell Market-house, 78.
- Royal Academy (see "Academy").
- Royal Engineers, Professional Papers, 403.
- Rubble-walls, the pointing of, 59.
- Rustic, triangular lodge, 78.
- Rust in iron, 179.
- SAFETY** in public buildings, 39, 99, 839.
- Saint Andrew's Cathedral, 172.
- St. Andrew Understaff, 668.
- St. Bartholomew's, Smithfield, 743.
- St. Faith's Mission Hall, Stoke Newington, 29.
- St. Giles's Cathedral, Edinburgh, 70.
- St. Katharine's Coleman, 515.
- St. Mary-le-Bow, doorway, 616.
- St. Mary-le-Bow, 29.
- St. Mary's Church, Paddington, 855.
- St. Mary's Hospital, Paddington, 769.
- St. Matthew's, Friday-street, 625, 704.
- St. Sophia, 210.
- Sales of property, 30, 35, 95, 128, 134, 502, 503.
- Salford: playgrounds, 803; sewage works, 44.
- Salisbury, Lord, on dwellings of poor, 577.
- Salisbury Cathedral organ, 82.
- Salisbury Cathedral, 29.
- Salts deposits, Middlebrough, 540.
- Salisbury Hall, Preston, 95.
- Sanatorium at Redham Asylum, 67.
- Sanctuary, 415, 416, 445, 468, 503; condition of the Inner Temple, 831; defects in houses, 751; inspection societies, 61, 65; state of Vienna, 184, 208.
- Sanitary Institute of Great Britain, 183, 477, 631, 761.
- Sanitary Institute of Great Britain, 304, 611, 111.
- Sanitation: at home and in the East, 478; illogical, 805.
- Saracenic design, 214.
- Saragossa, church of San Gil Abbot, 737.
- Saxons, 127.
- Saxon architecture, 350.
- Schlemmer's discoveries at Troy, 777.
- Schlossberg, Gitchur, 299.
- School Board for London: contracts, 31, 62, 97, 234.
- School-building in France, 173.
- School Building News (see weekly numbers).
- School of Engineering, Crystal Palace, 60, 214, 875.
- School of wood-carving, Albert Hall, 501.
- Schools: art for, 24, 461; Congregational, Caterham, 722; Congregational, Lewisham, 510; Denferrim, 774; Grammar, High Wycombe, 684; Jews' Free, 10; Jews' Free, Westminster, 60, 448; domestic economy in, 402; pictures for, 28.
- Schools of Art: Birkenhead, 873, 851; Farnham, 692; Highbury, 639; Leeds, 741; Newbury, 803; Warrington, 705; Wolverhampton, 803.
- Scotland: building laws in, 30; prehistoric architecture of, 343.
- Scottish National Portrait Gallery, 232.
- Screens: wrought-iron, Leonard-square, 231; Ludham Church, Norfolk, 518; St. Leonard's, 552.
- Sculpture: colour on, 35, 263, 315; Greek, 36; impressionism in, 849; modern, 3, 7; modern, and competition, 745; Museum of Comparative, Paris, 91, 123.
- Sculpture Gallery, Berlin, 231.
- Sea defences, Worthing, 165.
- Sea-wall extensions at Esherbourne, 98.
- Semper, monument to, R. me, 28.
- Sessions House, Birkenhead, 387, 411.
- Seven Stars Inn, Manchester, 769.
- Sevens, the building at, 510, 618.
- Serville Cathedral, 316.
- Sewage of London, 840.
- Sewer: contracts and the Paddington Vestry, 369; tubulations, death from, 681; ventilation, 719.
- Sewers and house drains, 605.
- Sexton, the, 773.
- Shale through quicksands, 775.
- Shakespeare's house, 276, 337.
- Shapira's manuscript, the, 242, 302, 312.
- Shear legs, large, 809.
- Shepton-Mallet sewerage, 303, 336, 574.
- Sherborne Abbey Church, 208.
- Sherriff Court-chambers, Paisley, 447.
- Shield, the, 749.
- Ship Canals: Florida, 770; Manchester, 232, 233, 467, 831; Tyne to Solway, 774.
- Ship railway in the Sandstone Islands, 180.
- Shire-hall, Shrewsbury, 188.
- Shrop-front from Cwampore, 67.
- Shops: Birmingham, 109; Bradford, 170.
- Shropshire, Dorchester House, 159.
- Shops and offices, design for, 742.
- Shops and taverns, Battersea, 465.
- Sicily, cities of, 118.
- Sideboard, Dorchester House, 159.
- Sinks, cleanliness of, 339.
- Sion College, London-wall, 75, 518.
- Sites for: artisans' dwellings, 65; harbours of refuge, 545; hospitals, 497.
- Sketches at Happtown, 641.
- Slaughter-houses, dirty, 203.
- Smithfield Club show, 803.
- South abutment, 11, 132, 244, 470, 635.
- Social Science Congress, Huddersfield, 445, 478, 499, 504, 513, 533.
- Society, art and, 975.
- Society of Antiquaries, 7; Arts, 5, 32, 639, 737; British Artists, 716, 742; Chemical Industry, 639; Engineers', 339, 434, 634, 741, 805, 839; Medical Officers of Health, 675, 683; Painters in Water Colours, 747.
- Soho, Gerrard House, 437.
- Soldiers' Institute, Aldershot, 250.
- Somerset: churches and towers, 349, 381; domestic architecture, 381.
- Somerleaze House, Frome, 235.
- Sorbonne, Paris, 649.
- South Wales University College, 603.
- Southborne, progress at, 275, 365.
- Southport: Convalescent Home, 334; damage to sea-wall, 572; foreshore, the, 743; men of the British Association, 413, 433, 468, 476.
- Spaces, open, 603.
- Spear, the, 749.
- Spotfildes, the late Mr. W., 5.
- Spring Gardens, 127.
- Squire-architect, a, 644.
- Stable offices, Grafton, Cheshire, 118.
- Stables, Buckminster Hall, 744.
- Stained glass (see weekly numbers).
- Stains for wood, 816.
- Staircases, new, at La Courte, 618.
- State rules for building French schools, 173.
- Statics, graphic and analytic, 611, 670.
- Statuary for Blackfriars Bridge, 808.
- Statue of Rebecca by Manni, 399.
- Statues, for whom, when, and where? 307.
- Statues (see weekly numbers).
- Steel: rails, 510; Whitworth's fluid-pressed, 618.
- Stephens, E. B., memorial of, 438.
- Stockholm, proposed museum, 127.
- Storms and tornadoes, 94.
- Story, Mr., and King Humbert, 127.
- Story of Chapel Court, A, 514.
- Stoves, dangerous position of, 469.
- Strand to Holborn, 614.
- Strand, proposed changes, 283.
- Stratford, new railway station, 379.
- Stratford-on-Avon revisited, 276, 337.
- Strawberry-hill, 673.
- Street architecture: colour in, 247; Rating, 248; London, 552.
- Street-bars, 236.
- Strength of materials, 40.
- Structures, dangerous, 270.
- Students at Royal Academy, 63; designs, 764.
- Students' drawings at South Kensington, 63.
- Studies in architectural style, 370.
- Study and workroom, hygiene of, 242, 280.
- Style, architectural, 344, 370.
- Sub-contracting, 31, 62, 97, 130, 196, 234, 302, 413.
- Sub-contractors and their plant, 71.
- Subsidence in Northwich, 435.
- Subterranean water and support of buildings, 614.
- Suburban dwellings, 129.
- Successful mediocrities, 474.
- Suez Canal, 61, 110, 775, 783.
- Sugar, high art in, 367.
- Sanburore, large, 674, 697.
- Sunderland: the calamity at, 32; Institute for the Blind, 316.
- Soppies, builders and, 31.
- Support of buildings by subterranean water, 844.
- Surbiton Cottage Hospital, design for, 798.
- Surveyors: Highway, 353; how they differ, 301.
- Surveyors' Institution, 673, 741.
- Swan-with-two-Necks, 70.
- Swanage, seclusion invaded by railway, 239.
- Sword, the, 749.
- Sword for Sir Archibald Alison, 168.
- Sydney: budget of news from, 82, 240; Technological Museum, 235.
- Syrian discovery, 676.
- TABERNACLE** Church, Hanley, 27.
- Taberacle, Poplar and Bromley, 180.
- Tale of the, 130.
- Tapestry at Paris, 412.
- Taverns: Edgware-road, 399; old City, 69; Prince's Head, Battersea, 465.
- Teaching domestic economy in schools, 402.
- Technical education, 69, 89, 246, 607, 680, 741, 750, 751.
- Telephone wires, overhead, 363.
- Tell's Chapel, 248.
- Temple, Inner, sanitary condition of, 81.
- Temple, Middle, chambers, Brick-court, 556.
- Temple of Diana at Ephesus, 507.
- Tender accepted by lot, 235.
- Tenders: for Board Schools, 131; for paving, Camberley in, 270; "wides," for engineering works, 844 (see also weekly numbers).
- Tenement hospitals, 844.
- Tenure in Cornwall, 540.
- Terra-cotta group for Calcutta, 180.
- Testimonials, 800, 843.
- Test of bricks, 316.
- Test: for builders in Prussia, 403.
- Thames: bridges, proposed new, 32, 64, 168, 742; condition of the, 371, 773, 810; Embankment, proposed flower-market, 684; the proposed new lock below Richmond, 637.
- Thames Valley sewerage, 505.
- "The" and "Ye," 878.
- Theatre disaster in Japan, 540.
- Theatres: Alhambra, 541, 674, 636; Bayreuth, 237; Birmingham, 364, 705; Britannia, Hoxton, 188; Crystal Palace, 211; Legnan, Copenhagen, 393; Dublin, 365; Eastbourne, 61; Edinburgh, 78, 315, 742, 845; Liverpool, 347, 368, 369, 375, 839; fires in, 534, 804, 809; the, 675, 683; Painters in Water Colours, 747, 303; Lyceum, Edinburgh, 232, 369; panic in, 616; Princess's, Edinburgh, 232; safety in, 30, 95, 539; Valparaiso, 475; Vienna, 437.
- Things curable, 210.
- Thomas, Convento de Christo, 250.
- Thornhill, Bradford, 180.
- Thorpe, John, 23.
- Tibrogonia Avenue, 784.
- Tilbury Docks, 162.
- Times in Alton, 467.
- Timber houses at Hildesheim, 482.
- Titan, 672.
- Tolhouse, Great Yarmouth, 232.
- Tomb, Lincolnshire Abbey, 231.
- Tornadoes and storms, 34.
- Tottenham, workmen's dwellings at, 233.
- Tower at Cologne, Roman, 175.
- Tower of London, armory at, 849.
- Towers: Rathbun, Aix-la-Chapelle, burned, 28, 41; Somerset churches, 349.
- Town, a dilapidated, 631.
- Town-governments, points in, 103.
- To-n-refuse, destruction of, 648.
- Townships: Brechin, 703; Dover, 67, 303; Graysmore, 267; Jersey, design for, 349; Kensington, 132; Lillura, 709; Leeds, 541; proposed, Lambeth, 278; St. Mary Church, Torquay, 670; Vienna, 408, 607, Westminster, 112.
- Trade, art-education applied to, 479, 500.
- Trade circulars, 269, 778, 842.
- Trade Unions Congress, 368, 401.
- Trade unionists in France, 772.
- Trades' house, Glasgow, 369.
- Tramcar, electric, 349.
- Tramways in Ireland, 841.
- Trains, in cities, 637; Kensington Gardens, 572.
- Tresham, Sir Thomas, buildings of, 77.
- Trevet, Roman baths at St. Barbara, 374.
- Triassic strata near Liverpool, 438.
- Trocadero, Paris, Museum of Comparative Sculpture, 91, 125.
- Truro, 777.
- Truro Cathedral, late clerk of works, 541.
- Truth offices, Westminster, 399.
- Tueries, the, 541, 48.
- Tunell: Anglo-Saxon, 839; Hill Park, Coomb, 880.
- Tunnels: Arlberg, 718; Channel, 57; Hudson River, 540; Mersey, 343, 678, 820; Severn, 510, 615.
- Turin Exhibition of Fine Arts, 499.
- Turners' Company's prizes, 233.
- Type, improvements of the, 742.
- UNHEALTHY** in 335 of new buildings, 175.
- Unhealthy building estate, Camberwell, 199.
- Unhealthy occupations, 770.
- Union Assurance Office, Berlin, 284.
- United States: architectural style and criticism in, 344; buildings and fittings in, 407; public buildings and dwellings in, 33; railway planning, 370.
- University College, architecture at, 30, 404, 510.
- University College, Bristol, 471.
- Unsuccessful career, passages in an, 6.
- Use of: asbestos, 129; circulars, 269, 778, 842.
- VALLEY** of the Chess, 314.
- Valparaiso, new theatre, 475.
- Value of property (see "Sales").
- Variation (see "Books").
- Venice, the smelt of, 91, 127.
- Ventilation: abroad, 213; public buildings, 202; of sewers, 719; of the study and workroom, 280; of the Underground Railway, 67, 130.
- Ventilator, the "Lazy," 737.
- Ventilators, District Railway, 809.
- Vestibule of Art Exhibition, Munich, 418.
- Vestries, London, and the control of buildings, 504.
- Vestries and the London water-supply, 277.
- VESTRY**-halls: Chelsea, 409; Kensington 133; Westminster, 471.
- Vestrymen, liabilities of, 531, 637.
- Vibration of bridges, 741.
- Vicarage, Littleworth, 369.
- Victor Emmanuel Monument, Rome, 720, 752.
- Victoria Coffee-hall, 438, 550, 674.
- Victoria Embankment, new buildings, 841.
- Victoria Hospital, Chelsea, 482.
- Victoria Restaurant, Manchester, 282.
- Vienna: Asphalten Theatre, 347; Electrical Exhibition, 61, 346, 543; Hofburgtheater, 347; Houses of Parliament, 817; new buildings, 337; new observatory, 198; sanitary state of, 164, 363; Town-hall, 403, 601, 687; upholstery, 346.
- Villa, H. race, 249.
- Villa residences: Addlestone, Surrey, 650; Winkfield, 448.
- Village museums, 32.
- Vivray waterworks for Liverpool, 297.
- WAGES** and labour in the Old World and the New, 403.
- Wakefield Fine Art Institution, 891.
- Walls: drying, 363; fireproof, 281; rubble, 184; stone, 184; sweating of, 175.
- Walls of Nuremberg, the, 181.
- Walden: dwellings of the poor, 844; improvements, 203; workhouse, 41, 503.
- Walsby, proposed new, 284, 379, 412, 466, 518, 604, 643.
- Warehouses: Bishopsgate-street, 786; Bunhill, 184; floor area and coal contents under Metropolitan Building Act, 80.
- Werk-zinn-lane, 501.
- Warwickshire camps, castles, and earth-works, 142, 201, 678.
- Washmaking, English, 616.
- Water: and enteric fever, 707; subterranean, and the support of buildings, 644.
- Water-companies: charges, 201, 639, 746; liabilities, 705.
- Water-consumers' defence committee, 746.
- Water-famine, warnings of, 274.
- Water-chutings, 269.
- Water-pipes: the cleaning of, 63; examination of, 603.
- Water supply, 201, 234, 270, 277, 297, 365, 468, 504, 639.
- Waterworks, Wyrwry, 297.
- Waterloo Bridge, 282.
- Wasserkirche camps, Germany, 633.
- Weapons at the Tower of London, 348.
- Wellington Monument, St. Paul's, 136, 176.
- Wellington station, High Park, 233, 439.
- Wells and cesspools, 377.
- Westgate-on-Sea: house at, 399; proposed church, 67.
- Westminster: Free Library, 640; Jews' Free School, 59, 44; reminiscences of, 176; School yard, 116; Town-hall, 112; Vestry-hall, 371.
- Westminster Hall, 368, 619.
- Whitechapel, artisans' dwellings at, 516.
- Whitewash, dangers of, 668.
- Whittington-avenue, 702.
- Whitworth's fluid-pressed steel, 61.
- White archaeological society, 702.
- Winchester House, London-wall, 164.
- Wincmore Hill, proposed fever hospital, 509.
- Windsor, Cavenish Memorial, Kendal, 337.
- Windsor, the poor of, 843.
- Winkfield, house at, 449.
- Wires, overhead, 368.
- Wires of house-hunters, 404.
- Wolverhampton: proposed art exhibition, 638; Sanitary Protection Association, 809.
- Wood: fireproofing, 398, 443; staining, 398, 468.
- Wood-block floors, 704, 738, 774, 842, 879.
- Wood-carving, school of, 504.
- Wood pavement, coloured, 836.
- Wooden structures and Building Act, 336.
- Woodwork: carved oak, 833; exhibition of, 636.
- Woolwich, the explosion at, 442.
- Work of art student, 873.
- Work of the sanitary inspector, 477.
- Workhouses and buildings for Poor Law purposes, 84, 409, 402, 471, 503, 504, 676, 806, 809.
- Workmanship, art, 141.
- Workroom and study, hygiene of, 242, 280.
- Working of the Public Health Act, 215.
- Working classes, progress of, 702.
- Working Women's College, 808.
- Workmen's dwellings (see "Dwellings").
- Works: projected for 1891, 64, 874; public, 383.
- Workshop classes, King's College, 504.
- Working, works at, 165.
- Wotton, Sir Henry, 677, 739.
- Würzburg, cloisters at, 179.
- Wymouth Grammar School, 684.
- YARMOUTH** is the Tolhouse, 232.
- "Ye" and "the," 878.
- Yeovil, Excursions of the Architectural Association, 246, 349, 351, 672, 680.
- York: Agricultural Show, 106; Architectural Association, 481.
- ZOAN**, 135.
- Zoological Gardens for Liverpool, 540.

ILLUSTRATIONS.

- ARTISANS' DWELLINGS**, Holt Town, Manchester, L. Booth, Architect, 754
Artisans' Dwellings, Whitechapel, J. Webster, Architect, 527, 529
Assurance Office, Berlin, Perry & Reed, Architects, 286
Asylum for Fatherless Children, Reading, Sanatorium, Prof. T. Roger Smith, Architect, 46, 53
Augsburg, the Maximilian-strasse, drawn by H. W. Brewer, 420
BAS-RELIEFS, Chaldan, 824, 833
Baths, Lewisham, Wilson, Son, & Aldwinckle, Architects, 724, 733
Board-room, Epson Union, H. D. Appleton, Architect, 356
Boat-houses for the Lifboat Institution, C. H. Cooke, Architect, 118, 569
Border, designed by G. C. Haité, 229
Boudoir in Renaissance Style, designed by A. Bembé, 592
Boxes, Oak, 624
Braeswork, Designs for, by G. C. Haité, 357
Buildings of Sir T. Treaham: Lyveden New Building, Rothwell Market House, and Triangular Lodge, Rushton, 80
Buildings near Yeovil, visited by Architectural Association, 352, 392, 652
CASINO MERCANTIL (Commercial Club), Barcelona, Genor Don Tiborio Sabater, Architect, 829
Castles, Camps, and Earthworks of Warwickshire, Plans, 148, 679
Cathedral, Limburg, from the South-east, 92
Cathedral, Seville, view of the Transept, 322
Chambers, Brick-court, Temple, J. P. St. Aubyn, Architect, 865
Chancel-screen, St. Leonard's-on-Sea, A. W. Blomfield, Architect, 560
Chapel, Baptist, West Brighton, J. Wills, Architect, 835
Chapel, Mission, St. Faith, Stoke Newington, J. M. Brooks, Architect, 387
Chapels, Wesleyan: Addiscombe, P. Boreham, Architect, 622; Goodford, J. F. Fish, Architect, 760
Chimneys at Hampton Court Palace, drawn by Arthur Keen, 585
Church (proposed), All Saints', Ipswich: Design by J. M. Brooks, Architect, 121; Design by T. Garratt and C. H. Lohr, Architects, 87
Church, Congregational, Balham, Searle & Hayes, Architects, 724
Church, Congregational, Robert-street, Grosvenor-square, John Sulman, Architect, 256
Church, Congregational, Turnham Green, T. L. Banks, Architect, 189
Church of the Convento de Christo, Thomas, Portugal, 252
Church, Dovercourt, J. E. K. Cutts, Architect, 689
Church, proposed, Edingley, near Southwell, John Cottingham, Architect, 220
Church, Gross St. Martin, Cologne, 554
Church, Iron and Concrete, Sketch for a, by E. J. Taverer, Architect, 846
Church, Ludham, Norfolk: Screen, 524
Church, Northleach, James Brooks, Architect, 454
Church, Old Meeting, Birmingham: Design by Messrs. Henman & Beddoe, Architects, 23, 23; Design by W. Wykes, Architect, 586, 699
Church, St. Bede's, Liverpool, J. E. K. Cutts & Macdonald, Architects, 601
Church, St. George's, Preston, Garlick, Park, & Sykes, Architects, 225
Church, St. James's, Saragossa, 731
Church, St. Mary's Congregational, Newcastle, 454, 425
Church, St. Mary-le-Bow, Chesapeake, Doorway, sketched by G. H. M. Addison, Sir C. Wren, Architect, 631
Church, St. Mary's, Caterham, Tower, W. Bassett Smith, Architect, 688
Church, St. Mary's (R.C.), Croydon, Mr. F. A. Walters, Architect, 50
Church, St. Matthew's, Kemp Town, Brighton, John Norton, Architect, 288
Church, Tabernacle Congregational, Hanley, W. Sugden & Sons, Architects, 12
Church (proposed), Westgate-on-Sea, C. N. Beazley, Architect, 46
Churches in and near Yeovil visited by the Architectural Association, 352, 392, 652
Clatera Arrangement, E. J. Taverer, Architect, 298
Clusters recently discovered at Würzburg, drawn by H. W. Brewer, 192
Club, Nelson, Warwick, F. H. Moore, Architect, 871
Coffee Tavern, Marylebone, G. Fowler, Architect, 556
Convent of Himmelpforte, near Würzburg, 726
Convento de Christo, Thomas, Portugal, 252
Cottage Hospital, Surbiton, J. Loxwood King, Architect, 780, 793
Court Chambers: Guildhall, Horace Jones, Architect, 728; Hôtel de Ville, Paris, MM. Ballu and Deperthes, Architects, 463; Towhall, Vienna, Herr F. Schmidt, Architect, 639
Crosses, Wayside, in Germany, sketched by H. W. Brewer, 620
DECORATION, Surface, designed by G. C. Haité, 229
Design, Sarcenic, 216
Door Decoration, designed by G. C. Haité, 699
Door-furniture, designed by G. C. Haité, 357
Doorway, St. Mary-le-Bow, Chesapeake, sketched by G. H. M. Addison, Sir C. Wren, Architect, 631
Duomo, Florence, 222
Dwellings, Artisans: Manchester, L. Booth, Architect, 754; Whitechapel, J. Webster, Architect, 527, 529
EARTHWORKS, Warwickshire, Plans, 148, 679
Engine-House, Salford Sewage Works, A. Jacob, Engineer, 688
Exhibition, Art, Munich, Seitz & Thierach, Architects, 418
FLATS, Residential, Hyde Park Mansions, C. Eales & Son, Architects, 153
Foyer, Dagmar Theatre, Copenhagen, 384
GATES, Wrought-iron, Finsbury Hospital, J. D. Sedding, Architect, 227
Gatehouse, "Vion College, London-wall, 520
Gate to p. Wrought-iron, 520
Grafton Hall, Chesham, J. Birch, Architect, 864
Grammar School, Wycombe, A. Vernon, Architect, 680
Groyne, Concrete, Brighton, P. C. Lockwood, Engineer, 618
HALL of the Jews' Free School, N. S. Joseph and Pearson, Architects, 18
Hall, Leys School, Cambridge, R. Curwen, Architect, 490
Hall, Manor House, Eversleigh, J. Birch, Architect, 452
Hall, St. Faith's, Stoke Newington, J. M. Brooks, Architect, 387
Hampton Court Palace, Chimneys at, drawn by Arthur Keen, 585
Happington, Sketches at, 654
Hospital, Cottage, Surbiton, J. Loxwood King, Architect, 780, 793
Hospital, London Fever, Isolation Block, K. D. Young, Architect, 822
Hospital, Ochsenfurth, 728
Hospital Plans: Circular Wards of Civil Hospital, Antwerp, M. Backxma and M. M. Bellmeyer & Van Kie, Architects, 15; Edinburgh Royal Infirmary, the late David Bryce, Architect, 14; Leeds General Infirmary, the late Sir G. G. Scott, Architect, 14
Hotel, Prince's, Coventry-street, C. J. Phipps, Architect, 692
Hôtel de Ville, Paris, Council Chamber, MM. Ballu and Deperthes, Architects, 463
House, Furze Bank, Brighton, Holford, Clayton, & Black, Architects, 42
House, Mount Park Estate, Harrow, Higgs & Rudkin, Architects, 116, 254
House, New Cross-road, A. H. Kersey, Architect, 259
House, Nutley, Sussex, C. N. Beazley, Architect, 320
House at Prestegise, Cole A. Adams, Architect, 588
House at Stoke, Coventry, W. Hale, Architect, 488
House, Stoke-upon-Trent, W. S. Topham, Architect, 393
House, Westgate-on-Sea, C. N. Beazley, Architect, 397
House at Winkfield, Byrne & Wilnot, Architects, 459
Houses at Addiscombe, C. H. Cooke, Architect, 665
Houses at Dover, J. Treadway Hanson, Architect, 756
Houses, at Hildesheim, drawn by H. W. Brewer, 454
Houses at Ratschen, drawn by H. W. Brewer, 450
Humphreys' Hall Mansions, Knightsbridge, Romaine-Walker & Tanner, Architects, 399
INDIAN COURT, South Kensington, drawn by H. W. Brewer, 794
Infirmaries: Leeds General, Plans, the late Sir G. G. Scott, Architect, 14; Royal, Edinburgh, Block Plan, the late David Bryce, Architect, 14
Inns, Old Lancashire: Old Bear's Head, Middleton, 781; Seven Stars, Manchester, 761
Institute for the Blind, Sunderland, J. & T. Tillman, Architects, 329
Institute, Soldiers', Aldershot, R. H. Hill, Architect, 257
Insurance Offices, Auckland, N.Z., A. Smith, Architect, 735
Iron Screen, Finsbury Hospital, J. D. Sedding, Architect, 227
Ironwork, Wrought, old, 359
JEWS' Free School, the N. S. Joseph & Pearson, Architects, 18, 19
Jews' Free School, Westminster, H. H. Collins, Architect, 456, 457
KING'S Arms Tavern, Edgware-road, Eales & Sons, Architects, 338
LIBRARY, the Brander, Huntly, J. & J. R. Rhind, Architects, 298
Lifeboat-houses for the Royal National Lifeboat Institution, C. H. Cooke, Architect, 118, 339
Lodge, Mount Park Estate, Harrow, Higgs & Rudkin, Architects, 116
Lodge, triangular, Rushton, Northamptonshire, 80
Lyveden New Building, John Thorne, Architect, 80
MANOR HOUSE, Eversleigh, Wilts, John Birch, Architect, 152
Mansions, Knightsbridge, Romaine-Walker & Tanner, Architects, 299
Market for flowers and fruits, proposed, Adelphi-terrace, designed by E. J. Taverer, Architect, 699
Market-house, Rothwell, Northamptonshire, 80
Maximilian-strasse, the, at Augsburg, drawn by H. W. Brewer, 420
Memorial, Wayside, in Germany, sketched by H. W. Brewer, 620
Monumental Tomb of the Princess Margaret, Lincoln, 218
Mounds and Earthworks in Iceland, Plans, 133
Museum of Comparative Sculpture, Palace of the Trocadero, Paris, 84, 114
Museum, Dresden, Portal of; the late Prof. Semper, Architect, 518
Museum, South Kensington: Indian Court, drawn by H. W. Brewer, 794
NUREMBERG, drawn by H. W. Brewer, 189
ON BOXES, 624
Old Staircase, Egham, W. B. Sanders, Architect, 625
Offices, Auckland, N.Z., Alfred Smith, Architect, 735
Offices, New Cross-road, A. H. Kersey, Architect, 259
Offices, New-street, Bishopsgate, C. Bell, Architect, 758
Offices, Fleet-street, T. E. Knightley, Architect, 593
Offices and Shops, Prize Design by G. W. Ward, Architect, 318
Offices for Truth, Westminster, H. S. Legg, Architect, 393
Offices, Union Assurance Society, Berlin, Perry & Reed, Architects, 286
Old Westminster, a Bit of, 520
Ornament, Assyrian, 533
PALACE for the Maharajah Holkar of Indore, J. Campbell, Architect, 792
Plan and Section, Babylonian, 273
Plan of Hospitals, 14, 15
Plaster Work in Buildings near Yeovil, visited by the Architectural Association, 393
Portal of the Dresden Museum, the late Prof. Semper, Architect, 518
Post-office, Aldershot, J. St. C. Mulley, Architect, 390
Post-office for Liverpool Eastern District, H. Tanner, Architect, 181, 193
ROOF over Courtyard of Royal Exchange, C. Barry, Architect, 384
Roofs of Buildings in Neighbourhood of Yeovil, visited by the Architectural Association, 392
SANATORIUM at the Reading Asylum for Fatherless Children, Prof. T. Roger Smith, Architect, 48, 53
School, Congregational, Caterham, E. C. Robins, Architect, 758, 759
School, Grammar, High Wycombe, A. Vernon, Architect, 680
School, Asylum-road, Peckham, J. W. Chapman, Architect, 427
Schools, Board, Finchley, Design by A. J. Gale, 155
Schools, Jews' Free, N. S. Joseph & Pearson, Architects, 18, 19
Schools, Jews' Free, Westminster, H. H. Collins, Architect, 456, 457
Schools, Asylum Congregational, Geo. Ehrlich, Architect, 422
Schools, Leys, Cambridge, R. Curwen, Architect, 490, 597
Screen, St. John's Church, St. Leonard's-on-Sea, A. W. Blomfield, Architect, 560
Sculpture, Museum of Comparative, Palace of the Trocadero, Paris, 84, 114
Sewage Works, Salford, A. Jacob, Engineer, 688, 697
Shops, Battersea, H. I. Newton, Architect, 461
Shops, Sutton Coldfield, T. W. Cutler, Architect, 658
Shops, Fleet-street, T. E. Knightley, Architect, 558
Shops and Offices, Prize Design by Mr. G. W. Ward, Architect, 318
Shops, Bradford, T. C. Hope, Architect, 184
Sketches at Happington, 654
Sideboard, Dorchester House, by Alfred Stevens, 169
Sin College, Gatchow, London Wall, 520
Soldiers' Home and Institute, Aldershot, R. H. Hill, Architect, 257
Spandoli, Cairo, 218
Spandoli from the Medressah College, Ispahan, 218
Stra. Maria del Fiore, Florence, Portion of new Façade, Professor de Fabris, Architect, 222
Stable Office, Grafton, Cheshire, J. Birch, Architect, 157
Staircase, Oak, Park House, Egham, W. B. Sanders, Architect, 625
Staircase, Towhall, Vienna, F. Schmidt, Architect, 656
Statue of Isabella, Herr von J. Silberstein, Sculptor, 148
Statue, "Rebecca," at Turin, Girolamo Masini, Sculptor, 497
Statue from Tello, in the Louvre, 833
Statue found at Khorsabad, 824
Statues in Terra-cotta, by Stiff & Sons, 188
Sword Scabbard, Assyrian, 524
TABERNACLE, Congregational, Hanley, W. Sugden & Sons, Architects, Leek, 12
Tabernacle, Poplar, W. A. Dixon, Architect, 188
Tavern, King's Arms, Edgware-road, Eales & Son, Architects, 338
Tavern, Prince's Head, Battersea, H. I. Newton, Architect, 461
Terra-cotta Group for Calcutta, by Stiff & Sons, 188
Theatre, Dagmar (Copenhagen), Foyer, 382
Thorne Buildings, Bradford, T. C. Hope, Architect, 184
Timber Houses, Hildesheim, drawn by H. W. Brewer, 454
Tomb of the Princess Margaret, Lincoln, 218
Tower, St. Mary's Church, Caterham, W. Bassett Smith, Architect, 688
Towers of Churches visited from Yeovil by the Architectural Association: Bradford Abbas, Cerné Abbas, Langport, South Fetherton, Trent, and Yeovil, 352
Townhall, Dover, W. Burges, A.R.A., Architect, 43
Townhall, Jersey, Design by J. M. Bugnelli, Architect, 354
Townhall, Vienna, Herr F. Schmidt, Architect, Council Chamber, 658; Plan, 667; Principal Staircase, 656
Transept, Seville Cathedral, 322
Truth Offices, Westminster, H. S. Legg, Architect, 393
VESTIBULE of Art Exhibition, Munich, Heron Seitz & Thierach, Architects, 418
Villa-residences, Mount Park Estate, Harrow, Higgs & Rudkin, Architects, 254
Villa-residences, Addiscombe, C. H. Cooke, Architect, 665
WALLS of Nuremberg, the, drawn by H. W. Brewer, 189
Warehouse, New-st., Bishopsgate, C. Bell, Architect, 758
Wayside Crosses in Germany, sketched by H. W. Brewer, 620
Westminster School Yard, a View in, 520
Windsor Castle, drawn by H. W. Brewer, 450
Woodwork in Buildings near Yeovil, visited by the Architectural Association, 393



ILLUSTRATIONS.

Congregational New Tabernacle Church Buildings at Hanley (Double-page Engraving).—Messrs. William Sugden & Son, Architects	12
Hospital Planning:—Edinburgh Royal Infirmary; Leeds Central Infirmary; Civil Hospital, Antwerp	14, 23
The Jews' Free Church (Plan, 21).—Messrs. Joseph & Pearson, Architects	16
Design for the Church Congregational Room, &c., for the Old Meeting Trust, Birmingham.—Messrs. Henman & Beddoe, Architects	18
Transverse Section of Church for the Old Meeting Trust, Birmingham	19

CONTENTS.

The Pre-Historic Builders	1	West Hartlepool and the Public Park	27	Building Patent Record	31
Hospital Construction and Management	2	The Great Fire at Aix-la-Chapelle	28	Architecture and Literature	31
The Remuneration of Architects in Austria and Germany	4	Berlin	28	School Board Contracts	31
Costumes	5	Monuments	28	Builders and Supplies	31
Passage in an Unsuccessful Career: My First Literary Adventure	6	Foreign Notes	28	"The Cost of Getting your Own"	31
Locks and Keys	7	The Artists' Benevolent Fund: Anniversary Dinner	28	Land Drains in Ground sold in Building Plot	31
The Planning of Hospitals	8	Bristol and Clifton Junior Architects' Society: Opening Day	28	Village Museums	31
Exhibitions and Congresses	8	Ignorance of the Beauty of Nature and its Results	28	The East End Bridges Question	31
The Jews' Free School	10	Architecture at University College, London	30	Liability of Tenants for Road Repairs: A Novel Defence	32
Old Meeting Trust, Birmingham: Design for Church, &c.	10	Gatehead High School for Boys	30	The Government and the Building Acts	32
Hanley Tabernacle Church Buildings	27	Value of Building Land at Hendon	30	The Calamity at Sunderland: Verdict of the Jury	32
Modern Hospital Construction	27	The Building Clauses of the Police Bill, Scotland	30	Salisbury Cathedral Organ	32
		The Dwellings of the Labouring Classes	30	Miscellaneous	32

The Pre-Historic Builders.



THE rumour, or indeed something more tangible than mere rumour, of the discovery in the Pas de Calais of skeletons of a race of ancient inhabitants not altogether unworthy the title of giants, has extreme interest for the student of the history of the builder's art. We speak with all due reserve. We have a wholesome memory of "Flint Jack," and of other disciples of the school of the immortal Dousterswivel. But there is a credulity of denial as well as a credulity of assertion, and the accounts given are at least of sufficient importance to merit investigation. Of course other verifications are requisite beyond that of the dimensions assigned to the bones. The osteological calculus, although the first problem to be solved, is only one of many. If science be content to accept the fact as the discovery of human, or quasi-human, bones of large size, the question of date becomes one of primary importance. Nor, knowing what we do personally of the effects of the dropping well at Knaresborough (close to the home of the famous Mother Shipton) and of the travertine-forming streams of the Adriatic sea-board of Italy, are we prepared to admit that a fossil condition necessarily implies a very remote antiquity.

All that, however, we may patiently expect to see thrashed out by the archaeologist, the physiologist, and the paleontologist. The mode in which the effect of such a discovery (if it be one) may throw some light on the history of building is the subject which at the present moment most influences our consideration.

Our readers are aware that the mode of accounting for some of the most important megalithic remains in various parts of the world, and notably in our own island among others, ranges over an extraordinary difference of opinion. With one writer Stonehenge and Avebury are of post-Roman date. With another they are relics and monuments of a

geological (and, therefore, in all probability a physiological) condition of things in England totally different from anything which now exists. We do not wish, at present, to express any decided opinion on the points in controversy. But we cannot omit to point out that if any proof be attained of the former prevalence, in this part of the world, of a lofty race of men or man-like beings, it would go far to support the views of those writers who first employed the term "cyclopean masonry."

A mathematical consideration of some interest here comes in. It may be said, "Is a difference,—if it be proved to have existed,—of 12 in. or so in stature worth making much fuss about?" We think that it is, and that for the following reasons. From the dimensions of public buildings in Italy, of Roman date, as well as from those of Syrian tombs, and other structures, not without very ancient literary confirmation, we think that the normal stature of many of the races inhabiting the shores of the Mediterranean may be taken at 64 in. in height. Such a standard, we should say, certainly will not now be much exceeded in Southern France, in Rome and most parts of Italy, in Greece, or in Palestine. Now in cases which occur in our own time of abnormal height there is too often present some countervailing weakness. The modern giant is frequently (not always) a deformity. The great height of Guy, Earl of Warwick, was due to the abnormal length of his back, perched on a pair of ordinary legs. The magnificent skeleton in the Museum of the Royal College of Surgeons, which is, if we remember rightly, that of a man of 8 ft. 3 in. high, is, we think, symmetrical; but such is rather an exception than a rule.

But if we come upon traces of a race of men of approximately the same height, however phenomenal that may appear to our present experience, it may, we think, be safely assumed that bulk, and thence, and goodly proportions would, as a rule, all be in harmony. If this be so, such a difference of height as is now under inquiry involves something of much more importance. For human figures, according to the canons of the art of the sculptor, a certain amount of variety of proportion is laid down. The Venus and the Hercules, although alike in certain proportions, are unlike in others. The

old line, *Ex pede Herculem*, here comes true. In the most graceful nymph, or the most massive hero, of the great period of Greek art, the foot of the figure is alike taken as the unit of girth. But the length of the foot, which is normally exactly one-seventh part of the whole height of the figure, is somewhat increased for a powerful male type. We have found the difference to be as much as that between 137 (the seventh part of 960 parts—the total height) and 146, or about 6 per cent. But this, it must be remembered, is a square dimension, as it is applied horizontally in two senses. The proportion between the squares of 137 and of 146 is that between 18,769 and 21,316,—or, in other words, the figure denoting strength is, for equal heights, one-seventh more massive than the figure illustrating grace.

If this is the case in so apparently slight a modification of one type, and that the type of the most perfect symmetry, what will occur if we find a gain of height so decided as an advance from 64 in. to 84 in., that is to say, one of from 16 to 21? If we take the lighter Grecian proportion, that of the adoption of one-seventh of the height as the modulus of girth, we find an increase as the cube of the height. We are now concerned with increase as denoting muscular power. Without any such increase in girths as we have said that the Greeks gave to Hercules, taking only the difference due to the cube of the height, if the muscular power of the Roman is represented by 262, that of the cave-man amounted to 592, or 2½ times as much. And if we allow a thickening of proportion at the same rate as in the Greek figures, we have the figure 677, or nearly 2½ times as much as the first figure. In other words, if the stature of the race be raised from 5 ft. 4 in. to 7 ft., the strength of the individual would be not very far from being trebled.

How such an accession of strength would enable the strong man to rejoice in his toil, and to build up for his shelter, or for the memorials of his departed, piles of enormous blocks at which his more puny successors would only look with astonishment, we need not stop to point out. We must remember, however, that these Rephaim, or pre-Adamite giants (if they ever existed), are thought to have been the contemporaries of pachydermatous mammals and of

draconian reptiles, of far greater size and strength than any now known to exist on our planet. Thus if three individuals could, by their united force, raise a stone that it would take nine strong men of our present race to lift, small wonder that they should have built with megalithic blocks.

There is, we apprehend, very little to be said against the theory that the discovery of cement led to the habitual use of stones smaller than those which had been previously employed. Such a change in the builder's art is every way probable. It may be said to have attained its limit in the substitution of concrete for stone, and in the substitution of artificial monolithic buildings for the conventional brick-and-mortar, in which the structural unit of the work is reduced to almost its lowest expression. All that may be, and we think is, true. But it in no way replies to the question, "Why, at a remote period of time, did builders habitually use such immense stones?" That they should have used large stones we can understand, but what determined the size? In a rude state of society, we must think that the personal strength of the builders had a great deal to do with it. Now the stones of the *cella* at Avebury must have weighed, before they were wasted by the atmosphere, at least twenty-seven tons each. Such a weight is little for a steam-crane to deal with. But its management was a puzzle to our builders of the early part of the present century. To move a stone 18 ft. square, it would be difficult directly to apply the force of more than forty men. This would put on each of them a strain of 133 cwt., something beyond any due allowance. But trouble the strength of each man, and the difficulty disappears.

We are perhaps apt, when we see such quiet announcements as that a steam crane to lift 30 tons has been substituted for one lifting only 60 tons, to forget how enormous a step in advancement in our treatment of weights has been taken since, and mainly in consequence of, Mr. Robert Stephenson's experiments preliminary to the erection of the Menai Bridge. To take one instance alone, such a thing as a 100-ton gun could not have been made forty years ago; nor, if it could have been made, could it in any way have been used as a weapon of attack. And now we are beginning to consider vessels that do not carry 100-ton guns as not much more than second-rate men-of-war! We have, it is true, the records, on Egyptian and on Assyrian wall sculptures, of the movement of enormous masses of stone by an ingenious multiplication of levers, and by the combined efforts of a host of slaves. But the mere fact of such a method of the application of naked human force implies an advanced state of civilisation. Population must have become very dense to furnish the units of labour, and monarchical rule must have been very firmly established in order to allow that heterogeneous power to be combined and wielded by one will. And this state of things is reflected in the monumental character of the works thus accomplished.

There is, however, very little in common between the megalithic and monolithic work of Egypt and what have been called rude stone monuments. As to the latter, the range is as wide structurally as it is geographically, and we could specify parts of the East where,—though we cannot say with propriety that megalithic work is at the present moment being erected, we can say that memorial rites and monolithic (if small) monuments are still practised and erected, which are the survivals of the work of the dolmen builders of an undated antiquity. But it is the commencement of this kind of work into which the architect longs to peer,—not the traditional repetition or survival of it. And when we find that in work which (at all events in some cases) seems to have been not only of a sepulchral nature, but not intended for exposure to view, being covered with earth, it was natural to use large massive slabs of stone,—although in similar cases (as in the *kistvaens*) small stones seem to have been quite as efficient,—it is not unreasonable to inquire, Why were the large blocks first used? How did they become the fashion,—so fashionable as to be the historic progenitors of a long series of rude buildings continuing down to our own time? Who were the first megalithic builders?

Let it be said that to such a question no reply can be given except by the imagination. Be it so. But what human faculty has played a greater part in the development of mankind

than the imagination? To what else do we owe the most splendid discoveries of astronomy? True, the theory has been wrought out, by the inferrible rules of geometry and of arithmetic, into a splendid structure of absolute and unquestioned truth. But it was otherwise when Newton put to himself the question, Why did the apple fall? or when Kepler, swooping with the wing of an eagle on one of his primary laws, exclaimed in a half devout, half poetic rapture, "O God, I think thy thoughts after thee!"

Let it be said then, that it is only a poetic fancy that would connect the first introduction of the mode of building with ponderous blocks, of which mode, indeed, we can trace a long period of development, with a bygone state of things of which all the earliest sacred books, and all the most famous poems of the world, speak as undoubted. None the less may that fancy prove a fertile mother of truth. We are not, as we said before, about to say "So we believe it to have been." But we do say that there is quite enough before us to render the subject one of interest, and possibly of great value, to pursue; and that the discovery of the relics of a seven-foot race of men in Europe,—if such be verified,—is one that bears very directly on the support of the hypothesis of the giant builders of primeval times.

HOSPITAL CONSTRUCTION AND MANAGEMENT.

There is an old and salutary but often neglected proverb,—“Let us wait a little, that we may make an end the sooner,” which those who are landably anxious to produce important books upon important subjects would do well to act upon. In the preface signed by the joint authors of the work published under the above title,* it is observed that “there is no systematic work in the English language on the arrangement, management, and construction of hospitals, in their hygienic, administrative, and structural relations.” This is, unfortunately, true; though there is, in fact, a considerable body of information on the various sides of the subject available by the “collation” of Miss Nightingale's book with the practical information on construction and sanitary appliances in various standard works on sanitation, together with special illustrations of planning and of means of warming and ventilation to be found in such works as that by Capt. Galton on “Healthy Dwellings,” in which considerable space is devoted to the consideration of barrack and hospital sanitation, and in the very useful book brought out by Mr. Saxon Snell, one of the authors of the present publication, on “Charitable and Parochial Establishments,” workhouses and infirmaries to wit; the sanitary problems in regard to which are in many respects very similar to those incident to hospital construction; so much so, in fact, that for the fuller illustration of several points Mr. Snell refers to or (better) quotes from his previous book. We may observe also that there is “in the English language,” though not by English authors, a large and most valuable book, consisting of five “systematic” essays on the construction, organisation, and management of hospitals, written by five very competent American experts, in order to prepare the way for the production of a perfect hospital at Baltimore with the Johns Hopkins bequest. This book (which was noticed at length in the *Builder* for December 27, 1879) the authors do not seem to be acquainted with, as they make no reference to its existence, though they promise the publication of plans of the hospital itself. These, we suppose, will be got into Part II. of the publication, the plan of which, as far as at present appears, is not very comprehensible. On the cover we learn that this is “Part I.,” and Part II. is to follow; in the synopsis of contents the book is divided into three sections, of which No. I. by Dr. Monat, and III. by Mr. Snell, appear to be included in this volume, and Section III., by Dr. Monat, is deferred.

In short, this book itself is not what can be rightly called a “systematic work” and one reason why it is not is supplied in the preface:—“It was originally intended to make the work a complete representation of the hospital systems of the civilised world, with

typical and illustrative examples of the best-known and most recent models in existence of such institutions. It has been found, however, that to collect the materials for this purpose would necessitate very considerable delay,—a postponement of publication so considerable, in fact, as to be altogether inadvisable.” The authors, therefore, determined to publish at once so much of the materials as they had been able to digest regarding the principles to be observed in the management and construction of such institutions, with such descriptions and illustrations of the most advanced types to be found in Europe generally. The result of this is that the book contains too little for the one assumed purpose, too much for the other. The object of showing what are the true principles of hospital construction, and by what practical means these may be best realised, is one thing; that of giving a comprehensive view of the actual methods that have been employed is another thing. For the latter purpose the examples given are inadequate in number; they only include, relatively, a small proportion of the larger hospitals of Europe. Whether the practical value of a much more extended illustration of actual hospital construction would be at all in proportion to the time and trouble that would be required to collect the materials for it, is another question.

We do not believe it would be. Such a collection of examples would serve to show how much has been done that is wrong and absurd; the statistics might be of interest as showing the actual state of knowledge and practice at the present moment, but would certainly include a great deal that would merely show what to avoid. And even as it is, this is the case to a considerable extent. If the object of this publication is to show, in the positive and not in the negative sense, what are the main objects to be kept in view in the planning and construction of hospitals, the description and illustration of some hospitals, both English and foreign, which are full of faults, is little better than wasted space. If the book be intended, not as an exhaustive illustration of hospital architecture, but as a treatise on the best methods, a few illustrations of different types of plan, each of which has something to recommend it, with a critical estimate of the merits and defects of each, would have been more to the purpose, and could have been comprised in a smaller compass. As it is, a good deal of useful information may be gleaned from both sections of the book, which has to be picked out from amid a good deal which is of no use, except as giving partial and incomplete information in regard to the present actual state of hospital building.

The medical author of the book, or of the first portion of the book, suggests as the best, or at least simplest (and that means the best) classification of existing hospitals, their consideration under the heads of “Clinical,” “General,” “Special,” “Cottage,” and “Convalescent” Hospitals; the classification was quoted more in detail in Mr. Robins's paper on hospitals at the Parkes Museum, reported in our last number, where it will be found printed (p. 875). This is, of course, an adequate general classification; and following upon that we should have naturally expected a succinct statement of the special objects which should be prominently borne in mind in the construction and working arrangement of each of these classes of hospitals. Instead of that, the medical author goes off, through about thirty large pages, into rambling sections on ventilation and warming, and descriptions of various existing hospitals, illustrated by small and inadequate block-plans and bird's-eye views, all which should have had place in the second or architect's portion of the book, in which case they would probably have been better and more intelligibly described; and then we come upon a repetition of the classification with an alteration which had occurred to the writer since the first one was made; and then at last we have the special recommendations in regard to special classes. But this is not the way to make a useful and practical text-book of the subject: the waste of space and waste of words, in a kind of book where everything should be as plainly and briefly stated as is consistent with perfect clearness, shows that whatever the knowledge and experience of the writer, he wants the power of putting it into logical shape. The want of any relation between the work of the two authors is obvious: the

* Hospital Construction and Management. By Frederic J. Monat, M.D., F.R.C.S., &c., and H. Saxon Snell, F.R.I.B.A., &c. London: J. & A. Churchill & Co. 1883.

two parts of the book might have been independent treatises published separately. Dr. Mount, for instance, speaks in several cases with great dissatisfaction of St. Thomas's Hospital, as a costly mistake, and so on, but without specifying what are his particular charges against it. When we come to the second part of the book, and find a lengthy description of St. Thomas's, with plans, sections, and perspective view, we expect to find detailed reasons for the criticisms thrown out in the first part of the book; but nothing of the kind. The architectural author mentions, as matters of fact, one or two things that were not done, but without expressing any particular condemnation of the omissions, and alludes to it in his peroration as "this magnificent building"; and there is nothing whatever to indicate that in the other part of the treatise this hospital had been generally but emphatically condemned. Mr. Snell, as far as his portion of the book is concerned, is more business-like and concentrated in his way of writing than his medical co-adjutor; but there seems little more relation between the two than if an enterprising publisher had thrown two separate books into one cover in order to "exploit" them as one work.

Looking to the classification adopted by Dr. Mount, the special provision which he considers to be required in clinical schools, as distinguished from general hospitals, is that they should have greater space in the wards for clinical teaching, more complete classification of disease, and the careful selection of typical cases; though the author is careful to add the proviso that "the primary intention of hospitals should never be sacrificed in them to the schools to which they belong,"—the patients, in other words, should never be allowed to feel that they are mere objects of study, and that their recovery is a secondary consideration. There are, we suspect, a certain proportion of hospital patients who always will have that idea, simply because a considerable number of persons, among the uneducated classes especially, labour under an inability to understand the medical character, and fancy the cool and business-like manner of an experienced surgeon means callousness and indifference. General means come under the same conditions as to requirements, minus the extra space for teaching and the extra provision for classification and for study. Among the special classes one of the most important is that of the lying-in hospitals, and here Dr. Mount makes a strong stand, in which we should be disposed to be entirely with him, and in favour of which he brings very conclusive statistics, as against general lying-in hospitals and in favour of small hospitals with separate rooms. Parturition, we are assured, is in relation to hospital conditions to be classed with "traumatic injuries"—in other words, with wounds resulting from violence, and leads to some very similar results in the generation of "septicemic poisons, dangerous to the individual and to others, from their eminently contagious character and liability to extend from epidemic causes or unsanitary conditions." Attention appears to have been first drawn to this by the report, made in 1867, of a Committee appointed to consider "the cubic spaces of metropolitan workhouses," from which it appeared that puerperal fever and mortality were less frequent in the lying-in wards of workhouses, where the space was much greater in proportion to the number of patients, than in any other lying-in institutions. But the most remarkable statistics are those resulting from an inquiry made in Paris in 1873-5, by M. Lefort, on the results of four different methods of affording care to the pregnant poor, all practised side by side in Paris, viz.:

1. The obstetric wards of general hospitals.
2. The special lying-in hospitals.
3. Home delivery of the indigent by official midwives.
4. Confinements at the licensed houses of midwives.

The statistics are startling; we take them in reverse order:—

- | | | |
|----|-----------------------|-------------|
| 4. | Proportion of deaths, | 1 in 200. |
| 3. | " | " 1 in 528. |
| 2. | " | " 1 in 32. |
| 1. | " | " 1 in 24! |

The lesson is, to some extent, of wider application than to this class of hospital merely. It seems to indicate that in all ailments which are accompanied by, or result from, external bodily injury, the difficulty of recovery rises formidably in proportion to the number of cases

placed together. In regard to this special class of cases the statistics, if unimpeachable, ought to make it morally indefensible to build lying-in hospitals with public wards any more. We expressed a strong opinion not very long since, in reviewing some competition plans for a hospital, against the public lying-in ward, but our words would have been much stronger had we then been acquainted with such medical statistics as we have quoted above.

The point mainly emphasised in regard to special hospitals, fever and small-pox hospitals particularly, is the desirability of more thorough isolation than is possible in most hospitals even on the orthodox pavilion pattern. For all sudden outbreaks and epidemics, for which special provision must be made, Dr. Mount recommends temporary structures, wooden pavilions, or (if the season permits it) tents, as still better. Abstractedly, he is no doubt right; but circumstances sometimes render this next to impossible at the moment, and in any case a local legislation armed with despotic power is necessary to carry out the scheme before it be too late. We ought to take a lesson in these matters from the great German Commander, who is said to keep a drawer full of prepared telegrams to be sent wherever necessary to military subordinates, prepared at once to carry them out. As Count Moltke's "War—mobilise," told everything necessary for the moment to his military subordinates, so we ought to have a settled medical scheme and a legislative machinery in readiness against epidemic, so that a municipal authority need only telegraph to his medical officers "cholera—mobilise," or whatever may be the peculiar enemy threatening the camp. There are unfortunately so many persons, in a free country, who will assert (what is practically) freedom to make themselves and other persons ill, and shriek their complaints through the columns of too-ready journals open to the expression of all kinds of imaginary grievances, that the enforcement of the course which would best fight an epidemic is beset by many quite unnecessary difficulties. In regard to the advantages of isolation, though these hardly need proving now, we may advert to one instance mentioned by Dr. Mount, in connexion with the City Hospital of Boston last year, "when an unmanageable outbreak of diphtheria was ultimately overcome by treatment in tents in the garden of the hospital." The permanent provision of small pavilions in connexion with all hospitals, for the treatment and isolation of infectious diseases, is, of course, a natural corollary from these and other observed facts; and to such arrangement the Tollet system especially lends itself; but on this a word just now.

In relation to the subject of special hospitals we may observe that there is mention made of a proposal by Dr. Burdon Sanderson for the erection of circular sick wards for small-pox patients. "These wards would have a central chamber 20 ft. diameter, inside which an inspirator would be placed for the purpose of removing the foul air from the adjoining ward. It is proposed that this air should be made to pass through a furnace, or otherwise be subjected to a sufficiently high temperature to ensure the destruction of all organic matter contained in it. The beds would be placed with their heads against the inner chamber, and would be divided from each other by partitions; thus the patients would face the windows in the outside walls, placed at a distance of 18 ft. from them." The efficacy of this ingenious suggestion has not yet been tested. The suggestion, we may observe, ought to have found place under the heading treating of special hospitals, but in this "systematic" book (which as yet has no sort of index) it is thrown in at the end of a description of the Antwerp Civil Hospital, where no one would think of looking for it, and is then dismissed with a "more of this hereafter"; but, in the absence of an index, our search did not enable us to find any further reference to the subject.

Cottage Hospitals include merely the application of the same sanitary principles which regulate the construction of larger hospitals, on a smaller scale and under (generally) more favourable conditions of site; and Convalescent Hospitals may, on the whole, be regarded simply as "healthy dwellings." Having glanced at Dr. Mount's classification, let us for a moment make another rather more general classification in relation to principles of planning. We might group these under four heads: large blocks of building on the old type; pavilions of

several stories with corridor communication; pavilions of two or more stories entirely separate; and one-story pavilions entirely separate. The first class need not at this time of day have been noticed at all, but for the appearance of an apparent partial, and we must say very foolish, reaction in their favour on the part of a few, but we have reason to believe a very few, of the medical profession. This demonstration will be found in the report of the discussion on Mr. Robins's paper, printed on another page; from which it appears that two members of the medical profession wish to have hospitals built in quadrangles, open at the angles, in preference to the pavilion system. How carelessly the speakers entered on the subject is shown from the fact that one of them referred to the Friedrichshain Hospital as a one-story pavilion hospital, which it is not; only the surgical wards are one-storied. We have reason to believe that the opinions expressed by Dr. Poore and Dr. Steele do not represent those of the majority of the medical profession, and do not require serious refutation, although there is no doubt that they include considerations which require to be duly taken into account.

When we come to consider the other three principles, we feel, no doubt, that actual statistics, as well as the most logical theory, are on the side of such a system of one-story pavilions as that with which the name of M. Tollet is now chiefly connected. But then we must not forget other practical considerations which modify the possibility of always carrying out such a system in its entirety. As one of the first surgeons of the day observed to us, "Of course, the ideal hospital would be a hut in the middle of Salisbury Plain, but then we cannot command a Salisbury Plain wherever we want it." Hospitals for surgical cases are in one sense best in the most isolated form, and in the most open position; but it is in large towns, and amid all the chances of injury incident to crowded manufactories, streets, and docks, that the greatest number of cases requiring surgical treatment arise, and it is impossible that we could adopt a system of relegating all hospitals for such cases to open country, in the outskirts of the town. The hospital for the treatment of sudden and violent injuries must be comparatively near at hand, or the dangers arising from long transit before medical aid could be obtained would certainly, in the long run, counterbalance the sanitary advantages of an open situation; and the great space required to accommodate the same numbers in detached one-story pavilions can hardly be expected to be spared in the centres of labour and business of a large city. Certainly, in London at present such spaces are not, and are not to be had, without turning a considerable portion of our park areas into hospital ground, an alternative which for many reasons is not to be thought of. Could we begin *de novo*, and lay out London again, we should, no doubt, in our present state of knowledge of the subject, see the advisability of retaining a much larger area for hospital sites than is occupied by any of our present metropolitan hospitals; but even then it is a question whether it would be the best arrangement for the general good of the community to lay aside, for the purpose of curing disease and injuries, a proportion of space which must be robbed from the living space of the uninjured portion of the community. For town hospitals, therefore, we believe the real answer to the problem is in a middle course, in the adoption of the pavilion system with two or more stories in height for medical cases (better if they can be kept to two stories), and one-story pavilions for surgical cases, more completely isolated. The best examples of this system of treatment which are illustrated in the present volume are the Berlin Civil Hospital and the Heidelberg Hospital; best in general arrangement, that is, for in matters of detail even the best of German hospitals exhibit arrangements which are fearful and wonderful in our eyes, and which no English sanitary authority would tolerate. In the Berlin Hospital, for example, the lavatory and latrine rooms open right on to the ends of the wards, and close to an artificial ventilation extractor; "no structural precaution is taken to prevent the foul air from the water-closets and urinals being blown directly into the wards when the windows are opened; on the contrary, open gratings are inserted in the lower panels of the door communicating with the ward, for it is contended that the action of the ventilating appliances is such

that the air is constantly being drawn out of the ward, and through the compartment containing the urinals into the ventilation extraction-shaft." The plan shows at once that this action is very problematical, and it is a curious instance of the risks in regard to this class of danger which will be permitted even in otherwise well and carefully planned hospitals in Germany. This is nothing to some of the features in other German plans that are given, which are simply astounding. We have long ago said, and we observe that some at least among the best English independent sanitarians are with us, that water-closet apartments in particular should always where possible be warmer than the adjacent portions of a residence of any kind, both on account of the necessary exposure in them and in order to insure a current drawing into them from the rest of the building, and not, as is too often the case, the reverse way: and how much more necessary is this in the case of hospitals, on every ground?

In cases where large many-storied hospitals are built, if any will be still built, on the pavilion principle, it must be observed that it is highly improper and quite subversive of the benefits of the system, to join two tall blocks of buildings, say a ward block and an administrative block, at right angles to each other, even with an intercepting passage with a cross draught. There are a good many instances of this among the plans of existing hospitals given in the volume. Wherever there is a re-entering angle there is, in hot and calm weather, in all probability, a stratum of stagnant air. It is not likely, however, that this mistake will be permitted in future hospitals.

The description and plans of the Antwerp Civil Hospital give detailed information of the only practical experience on a large scale which has yet been made with circular wards, as suggested by the late Professor Marshall. This building is hardly yet completed, and therefore we have no authentic experience of its results as yet; but the plan and description lead us to expect dissatisfaction from it.* The saving of floor-space is less than was promised, because the radiation of the beds towards the centre brought them too close together at the feet for the convenient operation of doctors, nurses, and other attendants, and the number of beds which might have been placed against the same length of straight wall had to be reduced, on the circular plan, by one-sixth. The placing of the beds so that each patient can have the best view of the whole of his fellow-sufferers appears to us highly objectionable, and an aggravation of one of the unavoidable miseries of public wards. The ventilation appears to be admitted in the centre, near the ceiling (from a central shaft), and drawn out from various openings in the wall near the beds, communicating with an extracting-shaft,—the very reverse of the system which ought to be adopted. Fresh air (warmed when necessary) should be introduced near the patients, and then drawn away and extracted at the upper part of the room, instead of being introduced at a distance and allowed the chance of mingling with partly-contaminated air on its way. In the centre of the circle is an octagonal nurses' room, divided by a partition not reaching to the ceiling. After the building has been in use for some years there would be a melancholy interest in obtaining statistics of the rate of disease and mortality of the nurses thus spending the best part of their time in the centre of a ward surrounded by patients. The idea of a circular ward, suggested by Dr. Barton Sanderson, as before observed, in which the arrangement is reversed and the beds are in the centre and the patients face the outer wall, would be free from some of the objections to the circular ward, provided the interior space could be properly utilised. But the circular system, as arranged at Antwerp, we expect to hear condemned on full experience of its operation.

Where space can be spared for it we have no hesitation in adopting the view that what may now be called the Toller plan of hospital in its completeness is for this climate the best that can be had.† We say for this climate, because a decidedly colder climate than ours might be unsuitable for it. But while we endorse Dr. Moutat's

opinion on this head, we regret that his remarks are accompanied by no adequate representation of the system in question. This is another of the curious inconsistencies of this publication, that one hospital, as we have observed, is uniformly condemned in Section I., but receives ample illustration and implied admiration in Section II.; while another, the Toller form, is uniformly extolled, but receives no illustration beyond a small and perfectly inadequate bird's-eye view, neither plans, sections, nor elevations being given; and the description is in this instance furnished entirely by the medical contributor, in a manner not very intelligible except to those already acquainted with it. For instance, Dr. Moutat writes, "The wards are built on the plan of the Gothic arch, to avoid all stagnation of air, or arrest of organic or other matters floating on it, by angles or corners of any kind." What Dr. Moutat, we presume, really meant to say is that the wards have a pointed-arch section, in order to avoid any angle at the cornice, and leave the air free to arise unimpeded to the only angle, the ridge of the pointed arch roof, where the extraction takes place. This at least would be the course of the natural ventilation in summer, but not a word is said about the details of this; and the form of hospital which is most praised in the book is the worst described and illustrated of all.

There is no doubt a great deal of information of various kinds, in connexion with the subject, to be extracted from this book, but it is put together in a somewhat confusing manner. In spite of defects, however, the appearance of any serious work on the subject is somewhat opportune just now, when there seems such a growing distrust of the merits of some of our great hospitals that their subscriptions are perilously falling off. The method of dealing with these buildings which are on plans now universally condemned, Dr. Moutat suggests, is not by attempting to bring "these antique institutions" up to modern standards by any system of patching, but to diminish the number of beds by one half, utilise the additional space thus obtained so as to neutralise their most obvious defects, and then build small hospitals elsewhere, on modern principles: and this appears to us to be the best suggestion. It appears obvious that in some cases public confidence in the efficacy of the hospital will have to be restored in this or some other manner; and considering that all except Guy's, St. Bartholomew's, and St. Thomas's are supported by voluntary contributions, public opinion becomes a very important factor in the matter, and any publication which influences public opinion will be likely to have practical results at no distant date.

New Hospital at Eastbourne.—Their Royal Highnesses the Prince and Princess of Wales, accompanied by the Princess Elizabeth of Hesse (second daughter of the late Princess Alice), visited Eastbourne on Saturday last for the purpose of opening the Princess Alice Memorial Hospital. Their Royal Highnesses were received on alighting by the chairman, the Rev. Canon H. R. Whelpton; the treasurer, Mr. George Garney; and the hon. secretary, Mr. J. H. Campion Coles, who conducted them through the pavilion to the entrance of the hospital, where they were received by the architect, Mr. Thos. W. Cutler, and Dr. Gream, physician to the Princess of Wales. The Prince of Wales opened the entrance door with a ceremonial key, which was designed by the architect and manufactured by Messrs. Chubb & Son; the key was of chased and polished steel inlaid with gold. The handle was in the form of a Tudor rose with the letter A for Alice, inlaid in gold; in centre, the whole surmounted by a princess's coronet; on the stem was entwined a gold snake, the symbol of Æsculapius, the god of the healing art. An inspection of the administrative building and wards was then made under the guidance of the architect. We gave a view and plans of the building in the number of the *Builder* for Oct. 21 last, and may give further particulars of the building on a future occasion.

Engineering Exhibition at Islington.—The second Engineering and Metal Trades' Exhibition was opened in the Agricultural Hall, Islington, on Thursday last, under the management of Mr. Samson Barnett, jun. We will take a look at it, and say something of it next week.

THE REMUNERATION OF ARCHITECTS IN AUSTRIA AND GERMANY.

THE remuneration of professional men, like that of all classes of workers in modern civilised states, of necessity from time to time requires revision and readjustment. The simple fact that the purchasing power of gold and silver has undergone very considerable changes since the invention of railways and steam vessels, and the discovery of the rich mines of the precious metals in America and Australia, has of itself necessitated a revision, and in almost all cases an immense increase in the wages of skilled and manual labour, as well as in the salaries and honoraria of the professional classes. To this law of political economy, the remuneration of architects and the allied professions forms no exception, and there have, in fact, within a comparatively few years past, been very considerable changes carried out in the rates and methods of pay of the profession in every country of Europe. In illustration of these general remarks, we will refer to the case of Austria and Germany. The method of calculating the honoraria of architects now in vogue in those empires was only settled in 1868. In that year there was a great Congress of German Architects and Engineers, held at Hamburg. The principal topic of discussion at the various sittings was the arbitrary and unsatisfactory pay which the profession everywhere received throughout the various German States. There was no regular fixed scale of remuneration, and as there were no other means of putting an end to the uncertainty, the capriciousness and inadequacy that had hitherto characterised the pay for the services of architects and engineers, the Hamburg Congress worked out a complete scheme or scale, and recommended it for adoption throughout the country. The proposal met with immediate approval by the profession, and after a long and hard struggle was recognised by the Courts of Law in Germany. Moreover, the next year it was likewise taken up by the architects and engineers of Austria, and was, as rapidly as could be expected, adopted throughout that empire. For the last fourteen years, in fact, the Hamburg scale has been generally acknowledged in Austria and Germany. It has served its purpose well throughout that period, but the time has now come when it has at length been found in many points unsatisfactory and unadapted to the altered circumstances of the day. An agitation has for some time past been going forward for a revision of the scheme, and this time the initiative is being taken not by Germany, but by Austria.

Some time back the Austrian Engineers and Architects' Association appointed a committee to draw up a revised set of rules on the scale of remuneration for professional services. The result of their labours was submitted to the Association at one of its recent sittings, and the new text was adopted, and has now been published in its proceedings. The title of the revised scheme is "Rules for Calculating the Honorarium for Buildings and for Architects' Services." Paragraph 1 of the new rules runs as follows:—"The Austrian Engineers and Architects' Association considers it desirable that between architects and those entrusting them with commissions there should be, with regard to the proposed work, a contract entered into in which the nature of the work is described, the amount of the honorarium is stated, and the date assigned when the latter falls due, whether before and during the execution of the commission or after the work is finished, and likewise prescribing that any eventual disputes shall be settled by the Court of Arbitration of the Austrian Engineers and Architects' Association." By the adoption of this last recommendation the settlement of disputes becomes very inexpensive, as the employer of an architect binds himself thereby not to appeal to the ordinary courts of justice. The judgment of the Board of Arbitration acquires legal force, and the wearisome delays and ghastly expense of the law are avoided. Whether the employers of architects will always be willing to deprive themselves of an appeal to the ordinary courts of justice in case of disputes, is another question. They may possibly be reluctant to tie themselves down to a professional body, which many will be apt to think cannot fail to be prejudiced in favour of the architect. It is, however, pretty certain that the employer of an architect

* The plan is published in this number, as it happens, as an illustration to Mr. Robins's paper printed in *o.s.* last.

† An able medical critic in the *Saturday Review* fears that architects would regard this class of hospital with despair, as incapable of anything but ugliness. We do not regard it so. It could not be made an imposing building, but it might be made very picturesque and pleasing.

would, in the long run, lose less even if the result of an arbitration is adverse to him than if he appealed to the legal tribunals. The next three paragraphs run as follows:—(2) "As the basis of the contract the Association recommends the appended rules and scale for calculating the honorarium for buildings and architectonic services. These rules and scale are obligatory upon the members of the Association, when on the proposal of the Association they perform professional services for third persons. (3) Every member of the Association is at liberty to settle with the employer the conditions of the contract according to his own judgment, and to fix the remuneration for his services without regard to the honorarium tariff. To increase subsequently the remuneration thus determined is, however, admissible only in case of additional work, that was not foreseen, being done; on the other hand, the honorarium may be reduced when less than the stipulated work is done. Where no previous agreement is made between the parties, professional services will be reckoned according to the scale laid down in the honorarium tariff. The members of the Association are bound in the interest, and for the honour of the profession to claim as their remuneration the full terms agreed upon in the contract. (4) The rates laid down in the honorarium tariff include full remuneration, not only for the physical labour, but also for the mental work of the architect. For every other use of the same project beyond that stipulated in the original contract, or for its repeated application, the parties must enter into new agreements. But under all circumstances the rights of the architect as the originator of a project are reserved to him, and the members of the Association are entitled to that protection which, under the regulations of the society, they owe to one another." The next six paragraphs of the rules remain practically unchanged. All buildings are divided into five distinct classes, and tables are given showing the percentages which architects are entitled to claim, according to the different scales of outlay. Rules are laid down for determining intermediate percentages not specially provided for in the table.

The Eleventh Paragraph, which is entitled "Honorarium for services which cannot be calculated according to estimated cost," provides that for certain sorts of work performed in or out of doors, such as preparing opinions, estimates, inspecting buildings, and making drawings of buildings, &c., the pay is to be reckoned by the day. Honoraria calculated according to time must always be by days, especially in all those cases where there are no tariff quotations in the table to settle the honorarium in the given case. The time applied in services includes that taken up by the necessary preliminaries, and likewise that employed in travelling to and from between the place of residence and where the business is performed. For the chief architect the honorarium, when he works in his place of residence, amounts per day at least to twenty-five florins, but outside the town where he resides, the minimum per day amounts to fifty florins (fl. 3s. 4d.). For an assistant the respective amounts are half the above. The expenditure for other help must be reckoned separately. Consultations are to be calculated upon the following scale:—(a) questions and simple replies, five florins; (b) consultations in the office, from five to twenty-five florins; (c) consultations not in the office, but in the town, from ten to forty florins; (d) inspection or estimate of buildings, from twenty-five florins upwards. If an architect performs a piece of work outside the town where he resides, he is authorised in claiming his travelling expenses, in addition to his honorarium, according to the tariff. The chief architect, when he has to take a carriage, claims for a two-horse vehicle, and first-class in travelling by railway or steamship. Assistants claim for a one-horse vehicle and second-class by rail and first-class by steamer. Moreover, both may claim the fees paid for carriage of luggage, measuring apparatus, instruments, &c. Expenses for additional assistants are to be reckoned separately.

Paragraph Twelve lays it down that, for business in which the architect has to work after seven o'clock in the evening, his fee is doubled. The thirteenth paragraph states that where work has been commenced and is stopped, or remains unfinished without the fault of the architect, he can claim both compensation for preliminary outlay, and honorarium proportional to the quantity of work done, provided it be not

less than one-fourth of the total amount agreed upon for the entire work. When the architect is not entrusted with conducting the building operations, and when by desire of the employer, he furnishes several sketches, the employer has to allow pay for them in the following manner. The first sketch is to be paid for according to the tariff scale. The second sketch one-third, and the third and following sketches at one-fifth of the scale. The fourteenth paragraph refers to instalments. The architect, if he desires, must be paid by instalments, proportional to the progress of the work. In case no special agreement has been made in reference to paying the fee by instalments, the payment must be made in four instalments as follows:—1. Three-tenths on giving instructions to proceed to building; 2. Three-tenths upon finishing the principal construction; 3. Two-tenths on receipt of permission to use the building; 4. Two-tenths on the passing of the revised accounts.

Such are some of the principal features in the new Austrian rules in respect to the remuneration of architects. They are exciting much attention in Germany, where a similar revision is shortly expected.

The question of the honoraria to be allowed to architects for the restoration of monumental buildings has also been engaging the attention of the profession in Germany, where the difficulty has long been felt as to the proper method or principle of calculating the remuneration for this kind of work. It is impossible or unsatisfactory in many cases to reckon by a percentage of the total sum expended, nor by a lump sum fixed at the outset, as restorations of monumental structures are liable to such frequent and unforeseen revisions and extensions. The regular rate on which the remuneration of architects is calculated in the case of new buildings will also rarely apply in a satisfactory manner to restorations. Herr Redtenbacher has accordingly submitted the following suggestions to the consideration of the architectural profession in Germany. He proposes to allow a fixed sum of 100 marks (6l.) for travelling expenses, and 35 marks (1l. 15s.) a month for office rent and warming, with a lump sum of 300 marks (15l.) for all other office materials and expenses. For his professional services Herr Redtenbacher proposes he should be paid at the rate of 20 marks (1l.) per day (of seven hours). Out of this he would have to pay for any other travelling expenses he might incur connected with the particular task he had in hand. All original sketches and documents drawn up in connexion with the restoration to remain the property of the board or authority employing the architect; but the latter to have the right to make copies, and, if he pleases, to publish them. Herr Redtenbacher proposes that there should be, first, a special and distinct agreement respecting the preliminary sketches and inquiries; and secondly, a fresh arrangement for the production of the plans of restoration with all the requisite drawings. After the plan has been accepted, and the architect authorised to carry it out, then the writer proposes that he should be paid by a fixed monthly salary, or, if more agreeable, quarterly or yearly, with a regular allowance for office assistance, rent, and materials. The new proposal, which, it must be confessed, is sufficiently vague, is expected to call forth a variety of comments and counter suggestions.

The late Mr. Spottiswoode.—At the annual general meeting of the Society of Arts, held on Wednesday, June 27th, the following resolution was passed:—"That this meeting of the Society of Arts desires to express the deep regret with which it has received the news of the death of Mr. William Spottiswoode, one of its Vice-Presidents, and its sense of the loss which the Society has sustained by his decease. In him, England loses one of her most remarkable men of science, science itself one of its greatest ornaments, and all who knew him a sincere and valued friend. Besides devoting his own time and thought to the advancement of knowledge, he was ever ready to lend to all engaged in like pursuits the assistance of his experience and his wise counsel. In thus placing on record their own appreciation of his services, the Society desires to express its feelings of sympathy with his widow and family, and also with the Fellows of the Royal Society, of which he was the honoured and beloved President."

COSTUME.

We have been, in books of natural history, characterised as the only animals that really laugh, also as cooking animals, as no other creature makes use of fire for preparing its food, and there have been various other definitions of us, but none, perhaps, are more distinctive than that we alone of all the animal kingdom wear clothes, i.e., clothes prepared by ourselves and not by Nature. At least, there are very few tribes on the face of the earth, and these are the very lowest of the human species, who are entirely destitute of dress and go about altogether nude. Other animals, so to speak, have their coverings of protection naturally supplied, which undergo no changes save in some cases those of season, when in the winter a thick fur takes the place of a thinner coat, and even in birds occasionally some variation of colour occurs. Thus, comparatively, the creatures of lower natural history are always, or nearly always, dressed alike. They make habitations, and birds especially build most wonderfully in the matter of nests, but they do not make to themselves clothes. On the other hand, not only do we do so, but the varieties of our dress, still further diversified by the styles of raiment of the two sexes being nearly always markedly different, are almost infinite. Costume is a subject which evidently affords the opportunity for a vast degree of invention, not only in the way of meeting the uses of dress, but also in that of varying its fashion in conformity with climate and the tastes of nations and of individuals. Thus does its representation notably come within the province of art, and indeed exists as one of its chief elements. In the two fine arts of painting and sculpture, as the direct accessory to the human figure, costume is divisible into three kinds, which may perhaps conveniently bear the designations of the classical, the general, and the actual. Each of these treatments of raiment and drapery has its appropriate mission, and is calculated to assist materially and forcibly in compositions of human figures. It is essential, however, that these methods should be used appropriately, and not the one adopted when one of the others was more suitable, which has been a not unfrequent error in both painting and sculpture.

Now that art has, in purely historical subjects, settled down into the common-sense propriety of representing the actors of all events in the costume that they wore, we are apt to forget within how recent a period the contrary was the received opinion of, not only individuals of refined taste, but of undoubted authority at the time. In respect to this subject the Royal Academy Exhibition of 1771 takes especial rank by reason of one picture it contained, namely that of the Death of Wolfe, by West; for in respect to the question of historical costume this work formed a turning-point and epoch in English art, as recounted by Leslie in his life of Sir Joshua Reynolds completed by the late Mr. Tom Taylor. "Until this picture was painted no work had been produced by a painter of 'high art' which aimed at the literal representation of a contemporary event. History in high art had disdained historical fact. Sir Joshua Reynolds had told the students of the time that historical truth and local circumstance were incompatible with the grand style." West has himself recorded in the following words the consternation with which his unheard of intention was received:—

"When it was understood that I intended to paint the characters as they had actually appeared on the scene, the Archbishop of York called on Reynolds and asked his opinion, and they both came to my house to dissuade me from running so great a risk. Reynolds began a very ingenious and elegant dissertation on the state of the public taste in this country, and the danger which every innovation incurred of contempt and ridicule, and concluded by urging me earnestly to adopt the costume of antiquity as more becoming the greatness of my subject than the modern garb of European warriors. I answered that the event to be commemorated happened in the year 1759, in a region of the world unknown to the Greeks and Romans, and at a period of time when no warriors who wore such costume existed. The subject I have to represent is a great battle fought and won, and the same truth which gives law to the historian should rule the painter. If, instead of the facts of the action, I introduce fiction, how shall I be understood by posterity? The classic dress is

certainly picturesque; but by using it I shall lose in sentiment what I gain in external grace. I want to mark the place, the time, and the people, and to do this I must abide by truth." After this was said they went away, West recounts, and did not return until he had the picture finished. Then, he says, Reynolds seated himself before the picture, examined it with deep and minute attention for half an hour, when rising he said to Drummond, "West has conquered. He has treated the subject as it ought to be treated. I retract my objections. I foresee that this picture will not only become one of the most popular, but will occasion a revolution in art."

The above arguments in West's able reply to the objections of the great Sir Joshua will be acknowledged as so just and admirable as to be well worthy of quotation, and the test to which he put them in the excellent painting he produced in accordance with them, so triumphant, that it may be accepted that together they were of essential service in putting the question on a right footing, and in causing that change in public taste which Sir Joshua so generously predicted. The event we have been recounting took place little more than a century ago, namely, in 1771.

Much later, however, than this period, and, indeed, subsequently to the art competitions in Westminster Hall in 1844, did the same feeling descanted on by Sir Joshua in respect to costume, but in this case in reference to the sister art of sculpture, still retain its hold; for at that time, not forty years ago, it was seriously debated by the Fine Arts Commission of the Houses of Parliament whether the series of statues now in St. Stephen's Hall in that edifice should be habited in the dresses of their periods or in classic costume. This doubt and discussion took place at the time when the first three statues,—Clarendon, Hampden, and Falkland,—were commissioned, and even the erudite and tasteful secretary of the Commission, the late Sir Charles Eastlake, viewed the subject as worthy of serious deliberation. Fortunately, however, common sense and historical truth prevailed, and evidently this series of statues, treated as they now are, and which occupy the pedestals in that hall, have far more interest with the public, and are altogether much more satisfactory, than if they had been habited in Greek or Roman costume or even in raiment and drapery more general than their individual and special dresses which are suitably historic.

With respect, however, to other classes of subjects opinions may vary. The actual truthful costume is now accepted as that which is the most proper to subjects purely and solely of history, and as giving the most value to their representations. On such occasions, however, as when the historic element merges into the poetic or religious, fresh and further thought may be advisable. In these departments of art, dignity, refinement, grace, beauty, and solemnity may in their turn be held as beyond all other considerations essential, and the actual in costume may appropriately be called on to give way to them, which may lead to the adoption in its stead of the classic or the general.

Classic costume is assuredly frequently the most favourable for purely poetic subjects; and general costume, namely, that composed of draperies not made up into dress, but simply consisting of flat pieces of fabric, disposed around the figure in simple folds, the most agreeable for the larger portion of the raiment of the principal personages in religious art. Notwithstanding the honest and conscientious ardour of the so-called Oriental school, the majority of serious thinkers and lovers of art will probably always adhere to preference for that style of draping our Lord and his apostles which was adopted by Raffaele and his school, and for the following reason in addition to that of the superior dignity of mien and sentiment thereby attained. The teachings of the Bible are for all countries and ages, in conformity with which accepted conclusion it appears most agreeable to adopt for the costume in art-illustrations of sacred writ such a general character in the robes of garment in which the actors in them are represented as should harmonize with the universal sentiment and object of the doctrine with which they are associated. It seems, therefore, open to objection that attention should be called away from the more important objects of a work of sacred art to the lesser ones of the details of dress by their being made notably peculiar; for, if this be the case, surely it may be acknowledged that

more is lost than gained, and that the general impression and mission of art are thereby endangered. It may not be denied that this point is one open to discussion, but there seems reason to believe, whatever oscillations of opinion may take place on this subject, that it will always gravitate, and mainly return, to the conclusion adopted by the great masters of the Italian school, as well as by Flaxman, Overbeck, Eastlake, and by very far the larger number of those artists who have treated subjects of this class. Even in their works, however, some portions of the costume are of garments partly cut and fashioned, and occasionally, for instance, the raiment of the upper part of the body, has sleeves for the arms; but for the most part the vestments consist of simple and ample dispositions of draperies of flat pieces, and, in accordance with these examples, apparel for the grand style, even when made up and fashioned, should be simple; and the dalmatic robe may be mentioned as one of those to which no exception can be taken.

In the sister art the series of Christ and the Apostles, by Thorwaldsen, affords an opportunity for appreciating the fine effect of adopting this general style of drapery in the representation of sacred subjects. In this case, possibly, it may be remarked that, with some disadvantage to the noble statue of our Lord, the special studies of the great sculptor has led him to make the whole appearance of the work possibly somewhat too Greek; but at any rate we must feel that no precise Oriental costume of Palestine would have produced so dignified an effect as the grand and simple drapery selected by the Danish artist.

Sir Joshua Reynolds selected occasionally much that was classic in the costume of his female portraits, especially when they are introduced in compositions of full-length figures; but he also often adopted what we have called general costume, as in his grand picture of Mrs. Siddons as the Tragic Muse, in which may be traced the impression made on him by the draped Sybils of Michelangelo in the Sistine Chapel, without his having seen which it seems doubtful whether the above-mentioned noble composition would have even been conceived. In this eminent work pure portraiture and even history gave way to a grand poetic vision, and thus the treatment of the accessories was judicious and truly in accordance with the best principles of art.

In respect, however, to definite and distinct portraiture of a purely historic nature, it is fortunate that we need scarcely be under the apprehension that our royal personages or warriors will now be garbed in the dress of a Roman centurion like the figure of James II. by Grinling Gibbons, behind Whitehall, although still occasionally too classic a form of drapery may be said to have been adopted in some more modern examples of portrait statues. In the case, however, of busts it appears to be still a moot point whether the practice of Chantrey and Behnes in their modified and artificial style of drapery is to hold its ground against the more actual coat and neckcloth. Perhaps it may be well that this variety of treatment may continue for the present, and until our male costume is altered for the better, when there would appear but little excuse for the prevalence of a mode of draping portrait busts which cannot be supported as historical, and, therefore, renders them less valuable as records of the person and his time. Nevertheless, no doubt the subject is open to the comment that the abstract nature of sculpture, in seeking so much to represent especially the mental quality of the original, removes it in degree from the rigid criticism in this respect that might attach to a picture. Whatever, however, may be said against draping portrait statues in dresses that the subjects did not wear, we cannot but view with admiration the magnificent Lorenzo of the tombs of the Medici family in Florence, which is in Roman costume, and also the statue of Dr. Samuel Johnson in St. Paul's Cathedral, in which the idea of Bacon seems to have been to represent him as an intellectual Hercules, reminding us of him carved by the chisel of Glycon. It is true that he is not represented so nude as the statue of the first Napoleon now in Apsley House; but, nevertheless, the drapery is so loosely and classically arranged, that much of the body is left exposed. In the sister art of painting evidently no such treatment of a portrait of the lexicographer and essayist would be tolerated now, although we must acknowledge that the cathedral would be deprived of one of

its finest works of sculpture were it without this fine statue.

We may, indeed, trace in the course of a discussion such as the above, that it is unsuitable to attempt to set up, on questions of fine art, too hard and fast rules, which should rather, on the other hand, be liberally elastic. Still, some that are general appear salutary for our guidance, and among these, in respect to costume in both painting and sculpture, that the adoption of Actual costume in portrait and historic subjects,—of that which is Classic in those which are poetic,—and of that kind which we have entitled General, in those of sacred art, is a practice which will usually meet with the approbation and support of those lovers of art who give most consideration to the subject.

PASSAGES IN AN UNSUCCESSFUL CAREER.

IV.—MY FIRST LITERARY ADVENTURE.

In one of the strongest Presidential addresses ever delivered within the walls of the Royal Institute of British Architects, the late Mr. Street recommended the younger members of that body to address themselves to the cultivation of the literary faculty. Nothing, he said, would so much help them to a first footing on the ladder that leads to success. He spoke with authority, for he was himself almost as distinguished for his literary as for his artistic attainments, and the gold medal of the Institute, the highest honour in its gift, was awarded him expressly on account of his proficiency in both arts. As a writer he possessed an irresistible power, and carried his readers along as with the impulsive force of a mountain torrent. It is probable that his name will be remembered by his writings as long as by the buildings he erected; indeed, it is conceivable that, with the comparatively short lives of modern buildings, swept away, as they are, to make room for "improvements" of all sorts,—and liable, as they now-a-days are, to now and special modes of swift destruction,—that his literary achievements, "more durable than brass," will outlast all the other memorials of his genius.

But, while heartily agreeing with him as to the desirability of cultivating the literary art, I should be disposed to recommend it upon other grounds than as being conducive to professional success. In spite of some conspicuous exceptions, successful architects are not, as a rule, authors; and, conversely, successful authors are seldom prosperous architects. Mr. Street was able to pose as an example of success in both kinds; but we are not always the best judges of the forces which have placed us where we find ourselves, and he would, in all probability, have been quite as eminent as an architect if he had never written about the art at all. This is an age of specialists, and an architect runs considerable risk in cultivating too seriously any of the subsidiary arts. We have in recent years seen instances of architects who failed to obtain due recognition of their abilities as such because they had publicly identified themselves with painting, and it may well be doubted whether the reputation of a *littérateur* would not operate against, rather than in favour of, the professional prospects of any architect. Mr. Ruskin has levelled bitter reproaches against a public who still persist in looking upon him as an *amateur* artist, because of his splendid success in another field, as if one could not be ambidexterous. It is, therefore, I think, safe to advise the student who may have a literary turn not to burden himself with works which are calculated to absorb a disproportionate amount of his time and energies, and draw him off from the real aim and purpose of his life. Prolonged and elaborate inquiries into subjects which are but remotely connected with the practice of art, and, if his studies take a biographical bias, such exhaustive and comprehensive themes as, let us say, "The Lives of the Speculating Builders," may well be left to those who have leisure for such enterprises.

The world reads books less and less, and magazine articles more and more, and the student will find in exercises of this character, which can be taken up in the intervals of business and laid aside in the presence of more important concerns, ample scope for the utmost nicety of literary workmanship.

One strong recommendation of this form of literary employment is that it is fairly remunerative. It takes a good many short essays to make a book, and then it is not so easy to

publish a book,—without a risk that all cannot afford,—as it is to write one. Moreover the book may be still-born, whereas a periodical provides you at once with a circle of readers and brings your work under thousands of eyes. You obtain a hearing; and, if your work be worth anything, it stands a chance of being gathered up into a book hereafter, and, if it is worthless, it secures a decent passage to oblivion without the shame of an open failure.

There are times when the pursuit of literature is almost the only reasonable solace within our reach. "Mr. Esmond," you will remember, in his love troubles, "wrote a deal of prose and verse." When displeased with the conduct of "Miss Beatrix, he would compose a satire, in which he relieved his mind. When smarting under the faithlessness of women, he dashed off a copy of verses, in which he held the whole sex up to scorn." This is a true touch of nature, and I recommend the prescription to every perplexed and dispirited artist.

Apart from the solace which literary practice affords,—and this cannot be over-estimated,—it really forms a valuable aid to the architect in his proper employment; for in the conception and execution of good literary work there is something not altogether alien from his own. There is the general scheme, or ground-plan, the adjustment of the *ensemble*, proportion, variety, light and shade, and that elaboration and finish of the details which gives to the whole what we mean by "style."

The qualities of first-rate literary work are only really known to those who have tried to attain excellence therein, and it is something if the attempt lead one to appreciate and enjoy the more the innumerable charms,—the force, the fluency, the easy grace, the varied style, and the grand organ roll of melodious diction which inform the masterpieces of our great English writers. The labour expended in acquiring facility of expression will be its own reward in lightening many an otherwise irksome task; and if the young architect cannot scatter the flowers of rhetoric over the prosaic pages of his specifications, he can with less effort make them perspicuous and intelligible,—qualities which such documents do not always possess.

Some years ago a gentleman, well known in literary and artistic circles, but hitherto unknown to me, when engaged in organising an artistic journal, wrote to me for a series of articles on stained glass. He knew me by repute as an architect, and assumed that I knew enough about stained glass to supply him with half a dozen papers on the subject. I replied that I was gratified by his request, but that I knew no more about stained glass "than my even Christian"; that W— did know all about it, and had, moreover, the pen of a ready writer,—which I had not. My correspondent replied that he would get the stained-glass articles from W—, and that he would thank me to supply a series on "Equestrian Statues." This was too much. I answered that whereas I did know a little about glass, I knew nothing whatever about equestrian statues; that if I must write at all, I should prefer to treat of something about which I knew a little rather than of what I knew nothing. Whereupon he asked me to take up any subject which I felt most competent to handle.

You know the story of the medical student who appeared before the examiner for the fifth time? "Really," said that functionary, "I seem to have been very unfortunate in selecting subjects for your examination. Pray tell me what you are best 'up' in, and we will try that." "Sir," replied the young man, "I'm sorry to say that I feel equally unable to answer that question also!"

And his case was, in a measure, my own. However, I thought the matter over, and after some delay succeeded in producing that series of papers which the intelligent reader no doubt perused at the time with all the attention they deserved. Be that as it may, the writing of them was a source of much pleasure, for the occasion compelled me to look into some old books long forgotten, and to read some new ones which I should not else have opened; and as an incidental advantage the employment led to collateral lines of inquiry and suggested subjects for future papers. In short, so interesting, and, indeed, fascinating, did the occupation thus accidentally commenced become, that from that day to this my hand has been seldom absent long together from one or another of the artistic periodicals.

And now I can fancy that I hear the querulous reader exclaim, "This is some impostor who wishes, under cover of a misleading and mendacious title, to parade his cleverness and versatility, and, howling, hypocritically, his hard lot, to take credit for an unbroken series of successes."

Success, my irate friend, is relative. *Il y a des degrés.* The merchant who amasses a fortune;—the artist who decorates his name with a coveted alphabetical addition;—the actor who is nightly greeted with the plaudits of intelligent audiences;—the preacher whose exhortation rings like a trumpet call through the land;—these, in their several spheres, are all successful men.

It is true that I have not as yet sought the hospitality of the workhouse, nor have my children been seen begging their bread. But if a life of strenuous effort is rewarded with neither fame nor fortune, neither empty praise nor solid pudding,—if it be my lot to

"Live forgotten and die forlorn,"—

then, in spite of having earned a bare subsistence, I must be written down a failure; and my epitaph should run in the simple but touching words of the immortal Mr. Tapley (who was himself in a manner related to my profession):

"Here lies a man as *might have come out strong,*
But it was denied him."

LOCKS AND KEYS.

THE session of the Society of Antiquaries closed on Thursday, when Col. Fox Rivers gave a *visu-occe* description of a wondrous collection of locks and keys of all ages and from all countries, which occupied the table in the centre of the hall, whilst the walls were covered with drawings illustrative of the principle on which the locks themselves were constructed, and the keys used to open them. Without following Col. Fox Rivers's vivid description, which will shortly be issued to the public, it is interesting to trace the growth of these door-fastenings and treasure-keepers. The inventive Chinese had almost constructed a Bramah lock, when Egypt herself was young, and the keys found in our tumuli and tombs show how much ingenuity was expended in the construction of these supposed safeguards in all ages. The rude savage was contented, in all probability, with a combination of knots, and, indeed, Capt. Galton, in his "Art of Travel," laments the want of some form of knot which would, whilst holding tight the stores, show whether they had been tampered with or not,—thus asking for a Chubb's detector lock of sinew or string in the bush or the desert; but such a series of knots does exist, and possibly a native guide or attendant would fail to untie the famous knot which so puzzles ingenious monkeys. Alexander found it easier to cut than untie the famous Gordian knot, and many primitive locks in use, even in the British isles, depend on a combination of string and wood, which suffice to keep out cattle, if not burglars. It is to guard against the latter that modern ingenuity has been so freely expended, and it would appear really as if the latest Yale lock was only a modification of the well-known Egyptian model of some thousand years ago, and there are in existence examples of locks on the Egyptian model which have survived, and are found to answer their purpose even at the present time, and it has been suggested that with a slight modification this could be used with advantage to "lock" pictures on gallery-walls, so that they could be removed in case of fire easily and rapidly. This lock was obviously invented to secure a bar of some size, and has since been used on a much smaller scale.

Some of the earliest and most perfect specimens of locks which have come down to us are padlocks and fetter-locks, some, apparently, only adapted to fasten the girdle of a lady, whilst others are ponderous enough for the heaviest chest. Examples of these are in every museum of importance. They have been found in London, in Colchester, and in Silchester, as well as in many other Roman sites in England. Some of these might be copied with advantage by our metal-workers at a time when cheapness of production is not the rule, as at Willenhall, where good locks can be made and sold at a profit at a few half-pence a dozen. When some of the examples shown by Colonel Fox Rivers come to be more generally known it is possible

that there may be some principle which even our acute lock-makers have failed to discover. It is well known that Bramah believed his famous lock to be unpickable, because he could not pick it himself, and this has been the case with other inventors, though, perhaps, the triumph of Hobbes in 1851 in proving that the champion lock was pickable excited the most attention; but we shall not, in our desire for small keys, imitate the lock which required a species of sickle to open it, for this key has to be carried over the shoulder like the Egyptian keys which are mentioned in Isaiah and figured in the great temple of Karnak, is in use at the present day. These sicklelike keys could only be used to move a bolt on a large gate, and when, as in many modern instances, the bar was hung in an iron frame and suspended in the centre by a chain, a smaller key was required to open it, and thus gave rise to those ring keys described by Tacitus, and which answered the purpose of a signet ring as well as a key. Many of the wards of these Roman keys are so much like the ordinary flat or French latch-key in common use a generation ago as to suggest a doubt as to their antiquity. The curious implements found in Anglo-Saxon graves, and which are supposed to be keys from their being fastened together by a ring and slung at the girdle, are, as a rule, but rude pieces of bronze without a pretence to the formation of a ward, and in this particular only do they resemble the keys of the Yale locks of to-day. They could only be used to raise the rudest form of latch.

Amongst the locks which seem to have been most popular, and which are indeed the most curious, are what are known as "puzzle locks." They are found in the shape of a bird, as in India. They are hidden in the interlaced bolt-and-belt ornamentation of an Elizabethan linen-chest, or in the form of a "letter" lock, and then they are independent of a key. The former depend on a secret spring moving the escutcheon; the latter, on a certain combination of words, which require to be remembered accurately by the person using the lock or it becomes useless to him. Some of the more modern letter-locks are very ingenious,—in fact, more ingenious than secure. A couple of centuries ago they were far more popular than they are now, and in the time of our grandfathers, and even later, these secret springs and hidden mechanism were freely used by the novelists of the Mrs. Radcliffe school. They are immortalised in Beaumont and Fletcher's play of the "Noble Gentleman," where we find,—

"A cap case for your linen and your plate,
With a strange lock that opens with A M E N."

It is a somewhat singular circumstance that the best of our modern safes have locks which closely follow the secret apparatus described by the Marquis of Worcester in his "Century of Inventions." He describes a little key, not weighing more than a shilling, which shall be capable and strong enough to bolt and unbolt "round about a great chest, an hundred bolts, through fifty staples, two in each, with a direct contrary motion, and as many more from both sides and ends, and at the same time shall fasten it to the place beyond man's natural strength to take it away." He also describes a curious escutcheon, and it was for the invention of a "secret apparatus" of this kind that the Society of Arts awarded one of their first premiums to Mr. Marshall, shortly after the commencement of their Transactions, in 1784.

That there were warded keys and locks from Roman times is indisputable, and they were excellently made by the early English metal-workers. No one suspected their weakness until a century ago, and then their unreliability was proved by the easiness with which they were picked by the simplest novice in house-breaking. In vain were lock-springs invented, and French tumbler locks introduced. A simple piece of twisted steel sufficed to open them all. The ponderous wooden and iron contrivances which had been trusted as locks should be trusted if they are reliable, were found to be of little worth. The tumbler locks of Barron and of Bramah, patented as far back as 1778 and 1784 respectively, head a long list of inventors of many tumbler and wheel locks. There have been locks with master-keys invented, and changeable key-locks invented for doors of safes, and other receptacles for valuables. These hardly came within the cognisance of the Society of Antiquaries. They belong rather to the domain of the mechanical engineer.

Many of the latter are nearly perfect specimens of simplicity and security, with keys which, if not so light as those mentioned by the Marquis of Worcester, are at least sufficiently portable to be carried in the waistcoat-pocket. There are specimens of many of these ancient locks in South Kensington, and in the British Museum, with keys remarkable for beauty of design as well as workmanship; showing, if another instance were needed, how well beauty can be combined with utility.

THE PLANNING OF HOSPITALS.

In the discussion which followed the reading of Mr. Robins's paper* on this subject at the Parkes Museum, on the 28th inst.,

The Chairman (Dr. F. J. Mount, of the Local Government Board) said that before proposing a well-earned vote of thanks to Mr. Robins for his admirable paper, he hoped the meeting would be favoured with observations from some of the audience, amongst whom he saw several gentlemen who were well qualified to speak on the subject.

Dr. G. V. Poore said he desired to make a few remarks upon Mr. Robins's very excellent paper, which seemed to be a most valuable one, inasmuch as it showed how an architect was impressed with the fact that the building of a hospital was a very grave responsibility, and that if the plan of a hospital was not thoroughly well considered, what was meant for a blessing might turn out to be a curse. Now, there were certain things insisted upon by the constructors of modern hospitals as to the necessity of which he (the speaker) was to a great extent a disbeliever. Mr. Robins had described the Friedrichshain Hospital at Berlin as a one-storied pavilion hospital, but it was perfectly certain that in a great city like London, where land was sold by the square inch, one-storied pavilion hospitals were out of the question. Nor did he think that they were necessary. Certainly they presented great inconveniences, for the enormous areas which they occupied (where they were of any size) greatly increased the trouble and difficulty of administration. Take, for instance, the Johns Hopkins Hospital at Baltimore, which was built to accommodate 400 patients, but which occupied a site of about the same area as the Horticultural Gardens at Kensington. A patient lying (say) at the Albert Hall, and for whom a chop had been ordered, would have to wait for it until it could be brought (say) from the South Kensington Railway Station. It was all very well to say that in hospitals covering such large tracts of ground, tramways, speaking tubes, electric bells, and all other appliances for saving time and labour, were introduced; such appliances were apt to get out of order, and that, very often, at most critical and inconvenient times. For this and other reasons, then, he was perhaps somewhat heretical in some of his opinions as to modern hospital planning. He did not speak without having given some attention to the subject, for he had made a plan for the re-building of University College Hospital on its present site which had met with Mr. Waterhouse's approval. That plan was to be seen in the Museum. In that plan he had endeavoured to carry out what was, he felt sure, a very great and important principle in hospital planning, viz., that it should not be possible in a hospital for any person to pass from one ward to another, or from one story to another, without going into what was, practically, the open air. In other words, he would make the staircases and corridors of communication open to the air on each side. A hospital should not be considered as one large house, but rather as a series of houses, which the doctor should visit in turn just as he would go from house to house in a village, passing into the open air in going from one to another, and being clothed for out-door walking according to the weather. The great defect in many of the coldest of the pavilion hospitals was that the staircases were in the pavilions themselves. That was a vital error. Where the staircases were in the pavilions it was quite possible for a disease germ to pass up or down the staircase and along the corridor from one ward to another. But not only were staircases placed in the heels of the pavilions, but lifts going from floor to floor were sometimes placed there, with what probable result

in case of infectious disease medical men would know. When he went over a large pavilion hospital some time ago, in company with one of the medical men connected with the institution, he put his head inside the shaft of one of the lifts which were to be found there. His friend quickly and energetically warned him against what he was doing by calling out: "Take care! Take care! There is a case of scarlet fever upstairs!" That showed what his friend thought of the arrangement. A great evil in many modern hospitals was that very much money was spent, and a great deal of space was given, where both money and space might be saved. Because ample cubic capacity and floor space were essentials (though within well-defined limits) in the wards themselves, it was not therefore necessary to have every little office and adjunct planned on the scale of a palace. Some people had held up the Hospital Mémorial as an example for imitation. There the patients looked out of their wards on to 15 acres of garden ground. Much good might it do them! It should be remembered that fresh air, to do the patients in a hospital any good, must be on the inside of the panes of glass. In the same hospital the corridors and staircases were needlessly wide and too numerous. In the new Infirmary at Edinburgh, too, the width of the staircases and corridors was somewhat excessive. Another point to which he wished to call attention was that in many modern hospitals the ward kitchens, water-closets, and other offices were a great deal too large. Ward-kitchens were sometimes made ridiculously large,—big enough to roast a baron of beef. What was wanted was merely convenience for making such things as a little beef-tea or for cooking a chop, and in these days a gas-jet would answer all purposes. The water-closets at St. Thomas's Hospital were enormously big. It should be remembered that there was a limit to the advantages of spaciousness, for where height and area were in excess not only was the initial cost of the building increased, but the cost of maintenance and the difficulty of ventilation were increased also. In his (the speaker's) plan for the reconstruction of University College Hospital, the kitchen, the dead-house, the post-mortem and lecturing rooms, and, in short, everything that was likely to smell, was placed on the top story of the building. That had not been done anywhere else, he believed. [The Chairman: It has been done in America.] At any rate, it had not been done anywhere in this country. He understood that at Owens College, Manchester, the dissecting-room was on the top story, and that the arrangement was very satisfactory. Obviously that was the proper situation for such places, for at the top of a building there was a great deal more light and air than could be obtained down-stairs. As to ventilation, he thought there was no doubt that in this country, where the climate was mild, natural ventilation was the best. Where there was an elaborate system of ventilation by flues, who was to see that the flues were kept clean? He believed that at the Johns Hopkins Hospital at Baltimore there were many miles of ventilating pipes, while in the new Infirmary at Edinburgh there was a long extent of extracting pipes. The action of these extracting shafts was, no doubt, perfect in theory, but did any one ever know a chimney that did not smoke at times? Was it not possible that these extracting shafts would sometimes be found acting as inlets? Aware of the nature of the matter that collected in such extracting shafts, he should not like to be lying in a bed near such a shaft when it began to "smoke,"—i.e., to serve as an inlet.

Dr. Steele said he felt very diffident in saying anything on the subject, seeing what had been done and said by the chairman, Captain Galton, and Mr. Robins; but he was afraid he must confess himself, with Dr. Poore, the holder of somewhat heretical opinions as to hospital construction. His experience disposed him to stand up in defence of the old-fashioned quadrangular planning of hospital buildings, as against the pavilion system, which was an importation from abroad, having been in existence in Paris, Brussels, and other Continental cities, long before it was introduced into this country. In his opinion the quadrangular form of plan for hospital buildings made the administration much easier; it facilitated ventilation, afforded pleasant outlooks to the patients, and it was better adapted to clinical and scholastic purposes than the pavilion style of building. He did not object to the pavilion ward as a ward, but he

objected to taking a number of those wards and arranging them side by side on the pavilion principle. In the case of the Herbert Hospital the blocks of wards were about 100 ft. distant from each other, and were connected by corridors; being three-storied buildings, the spaces between them must be, to a certain extent, filled with stagnant air. What arrangement could be more miserable for the patients than the pavilion principle of planning, whereby the patients in one block could only look out towards the patients in another block? Again, in a large hospital planned on the pavilion principle the distance from one extremity of the building to another was often excessive; in the case of St. Thomas's Hospital it amounted to a quarter of a mile or more. How, under such a condition, was it possible for any one person to exercise any proper supervision over the building? For these reasons he was in favour of the quadrangular form of planning for hospitals, the buildings being arranged somewhat in the form of the colleges of Oxford and Cambridge, or, more nearly, in the form adopted at St. Bartholomew's Hospital, in the City of London. The blocks of this hospital were arranged on the four sides of a quadrangle, but were disconnected at the angles, leaving plenty of space for the circulation of air all round each block. In his experience there was no hospital better adapted for clinical or scholastic purposes, or more easy of supervision, than St. Bartholomew's. Although, as he had said, he had no objection to a pavilion ward as a hospital ward, it was very difficult in crowded towns and cities to obtain adequate space for the arrangement of a number of wards on what was known as the pavilion system of planning. As regarded private or civil hospitals, supported to a large extent by voluntary contributions, the cost of land would often be a bar to the adoption of the pavilion system at the outset; while as to Government and parochial hospitals, their case would be unduly augmented. To take the case of a voluntary hospital about to be established in some locality where its need had been felt. The committee looked out for a site; very likely that site would be covered with house-property of a poor character, and in a very thickly-populated locality,—for it was of no use to build hospitals except in the midst of the people for whose benefit they were intended. The site having been cleared, upon a portion of it a building was put up to contain fifty or 100 beds, and possibly the building would be rectilinear in form, and three or four stories high. In the course of a few years the growth of the community and an increase of means might render an enlargement of the institution not only desirable, but necessary; such enlargement could then be effected by building another block either facing the first block, on the opposite side of the site, or at right angles to it. Successive enlargements might follow, each one taking the shape of a separate block, until the quadrangle was enclosed on all sides, the corners, however, being left free, as at St. Bartholomew's. It was too often the case that when hospitals planned on the rectilinear system had to be enlarged, such enlargement could only be effected by putting on cross pieces either at the ends or the centre of the building, making it take the shape of the letter T or H. Such a method of enlargement was objectionable, as tending to agglomeration, and thereby rendering the buildings unfitted for their purpose. He quite agreed with Dr. Poore in saying that it was useless to attempt to build hospitals of a single story in this country, owing to the density of the population. He did not think that the pavilion system with ward blocks three or four stories high was the most economical, convenient, or efficient form of planning for hospitals, but would prefer to see detached blocks, arranged as at St. Bartholomew's, enclosing a space of about one acre in extent. As to the rate of provision of cubic space per patient, he thought that existing rules needed some modification in view of the fact that within the last fifteen or twenty years the antiseptic method of dressing wounds had come into general use, and hence the air of hospital wards was saved from contamination to an extent that would not have been possible before antiseptic dressings were in use. The air of modern hospital wards had thus every chance of being healthier and purer than formerly, and whereas it was the custom to allow from 1,500 to 2,000 cubic feet of space to each bed under the old non-antiseptic treatment of wounds, it

* See *Builder*, vol. xlv., p. 875.

was his opinion that with the general use of the antiseptic dressings from 1,000 to 1,200 cubic feet per head would be quite sufficient to allow in general hospitals, having due regard to the desirability of curing each patient as speedily as possible.

Professor Corfield said he would not attempt to add anything to what Mr. Robins had said as to the construction and planning of hospitals, as his remarks on that head had been so ample, and had been criticised by the previous speakers. But Mr. Robins had incidentally referred to the evils of the practice (once very common) of massing together patients suffering from all sorts of diseases in general hospitals, and to the overcrowding of wards. The disastrously high death-rate resulting from these practices at the old Hôtel Dieu in Paris was a lesson never to be forgotten by those who had the designing and management of hospitals committed to them. Mr. Robins, so far from over-estimating the evils of such malpractices, had underestimated them. The practice of placing cases of infectious diseases, such as small-pox, scarlet fever, measles, and other communicable diseases, in the general wards of a hospital, could not be too strongly deprecated, and there was still, he was sorry to say, necessity for deprecation on that head. In his experience he had seen communicable diseases pass round a hospital ward just as the surgeon would pass round, occasionally missing out a bed here and there, just as the surgeon would, because the patient was too well to be noticed. Not very many years ago he had considerable difficulty in preventing the introduction of scarlet fever patients into the wards of a general hospital in London; and it was still the practice in most of the London hospitals to introduce infectious cases into the general wards: he referred to cases of typhoid fever, which, there could be no question, was a communicable disease, and which he had no doubt he had seen communicated within the wards of a hospital.

Dr. Dawson Williams said it was not necessary to go so far as Manchester in order to find an instance of the placing of a mortuary on the top of a hospital, as that had been done at the new Medical Schools of the Charing-cross Hospital, which, although a separate building, really formed a part of the hospital, as connection between the buildings was effected by means of a tunnel beneath the intervening roadway. With regard to ventilating appliances, he might say that when he was clinical assistant in the Hospital for Consumption at Brompton, a committee was appointed to examine into the ventilation of the building (the older one), partly because the wards were very stuffy, and partly because they were going to erect the new building. In examining the interior of the extracting-shafts, the committee found an extraordinary deposit of material, which was of the nature of a fine reddish woolly powder. Another thing the committee found out was that there was a tremendous current outward from the main extraction shaft, which was heated by a steam coil, although the majority of the extraction openings in the wards were either useless, or were acting as inlets. The whole system of ventilation was apparently reversed in its action. It was subsequently discovered that the majority of these ward extraction-shafts, which were very high, all leaked, so that the only result of the hot coil in the main extraction-shaft was to ventilate the spaces under the roof, which were not used. He went about a good deal amongst the hospitals of London, but he had no means of making a comparison as to the death-rate of hospitals planned on different methods. The surgeons at St. Bartholomew's, however, expressed themselves in the most favourable terms as to the healthiness of that hospital, which consisted, as had been stated, of four large detached blocks arranged on the sides of a quadrangle. One of these blocks was mainly, if not exclusively, devoted to administrative purposes, but the mortuary, dissecting-room, museum, &c., were entirely separated from the main blocks. After what Dr. Steele had said, and in view of the opinion of the medical men at St. Bartholomew's, he should like to know whether there was any authoritative objection to the disposition of what was essentially a pavilion hospital in a quadrangular form. Dr. Poore had remarked that it was an absolute necessity that modern hospitals should be built three or four stories in height. No doubt that necessity was imperative, assuming that our large hospitals must be built on town sites, but he was in favour of

doing for the London hospitals what had been done for Manchester in the case of the Children's Hospital at Fendebury. The main hospital was three or four miles from the centre of the city, in which there was a small central depot for urgent cases and for cases which could not be safely transported a few miles. If our great London hospitals were taken to such localities as Hampstead or the Surrey Hills, leaving only comparatively small emergency hospitals in town for accidents and urgent cases, the results would be, he believed, in every way beneficial.

Mr. William White said that, as an architect, he desired to express his personal appreciation of the exhaustive manner in which Mr. Robins had treated his subject, his paper embodying apparently all the salient facts regarding a large number of the most modern hospitals. As Dr. Poore had said, the architect felt, and could not help feeling, a deep sense of his responsibility for the arrangements of a hospital which he might be called upon to plan; but he (Mr. White) maintained that that responsibility should not rest exclusively, or even chiefly, upon the architect, who should be able to look to the members of the medical profession for an authoritative declaration as to the requirements of a hospital. But the architect should be expected to plan and construct a hospital capable of meeting the requirements deemed necessary by the medical profession. The principles which could be most advantageously adopted in the planning of a hospital could only be laid down by medical men, and by them only after a long and tedious process of inspection and analysis of the working and results of different methods of arrangement. He was very strongly disposed to acquiesce in what Dr. Steele had said as to the needless waste involved in making the wards and offices of a hospital too large, for, of course, the larger a building, the greater the cost of its construction and maintenance, the greater the labour of administration, and the more difficult the ventilation.

The Chairman, in closing the discussion, said that great as was the amount of gratitude due to royal commissions, to Miss Nightingale, to Mr. Godwin, and others who had of late years thrown light upon the true principles to be observed in hospital construction, it should not be forgotten that every important change which had been effected was first advocated by M. Tenon, the Paris physician, who pointed out the extraordinary and awful circumstances of the old Hôtel Dieu, and whose work, although written close upon a hundred years ago, was still, in many respects, the very best book which had been written upon the subject of hospitals. Within the last few weeks he had had an opportunity of seeing, in company with Mr. Saxon Snell, the magnificent hospital near Berlin to which Mr. Robins had referred, and he had no hesitation in saying that if those gentlemen who owned to holding heretical views on the subject saw the building for themselves they would speedily discard their heresy. Nothing more perfect or more admirable could be conceived. He quite agreed with Dr. Poore and Dr. Steele in saying that the hospitals must be placed in the midst of the poor. The best town hospital he had ever seen was the New York Hospital, which was six stories in height, the kitchen, laundry, mortuary, and other places likely to cause unpleasant odours being placed on the top stories of the building. That hospital was provided with a pleasant winter garden for the use of the patients, and the perfect ventilation which existed throughout the building showed that all difficulties of site might be, by proper structural arrangement, perfectly overcome. Notwithstanding what had been said in the course of the discussion, he still held it as a cardinal doctrine that the pavilion system of planning, as usually understood, was the best for large modern hospitals. M. Tallet's system of planning went even beyond that, and with results as yet unapproached in this country. The other day, being in Paris, he visited a hospital erected by M. Tallet on one of the bastions. It was located in a manufacturing quarter of the city, and was, therefore, much in request in cases of accident. In spite of the fact that the Assistance Publique had done its best to handicap the successful working of the hospital by overcrowding it, and by diverting some portions of it to other uses, the patients got well more rapidly than similar cases could be cured in the older hospitals, and they were enthusiastic in their appreciation of the building. He had

also visited the military hospital at Bourges, constructed on M. Tallet's system, although even here the architect's views were not fully carried out, the military engineers having changed some parts of the buildings in execution. Now, although there were at Bourges extensive artillery foundries, in the carrying on of which the workmen often received very bad injuries, and although the hospital had been opened four years, there had not up to the present time been any pyæmia, or other bad results. The officers of the garrison spoke against the hospital (while admitting that the patients got well) for no other reason, it was said, than that, being three miles away from the town, its supervision by them somewhat interfered with their recreations. As to the difficulties of artificial ventilation, he was well aware of them. On a certain occasion it was his duty to inspect a Poor-law school, where he found, in one great room or dormitory, 174 children sleeping, many of them two-in-a-bed. The atmosphere was insufferably impure. In this school there was a great prevalence of eye and skin diseases, and no wonder, for all the windows of the dormitory were hermetically closed, and not made to open freely, the means of ventilation relied on being a large central shaft. This not seeming to act at all, it was examined, and was found to be blocked up, and further inquiry showed that it had been so blocked up for five-and-twenty years, and nobody knew it! Did time permit, he could recount many more incidents of a similar kind which had come under his personal observation in the course of his official duties. In conclusion, he begged to propose to the meeting a very hearty vote of thanks to Mr. Robins for his excellent and instructive paper.

The motion having been carried by acclamation,

Mr. Robins briefly replied, expressing regret that he had not included amongst the plans referred to the one proposed by Dr. Poore for the reconstruction of University College Hospital.

On the motion of Mr. Rogers Field, a vote of thanks was given to the chairman, and the proceedings terminated.

EXHIBITIONS AND CONGRESSES.

Berlin.—The medals and prizes awarded to exhibitors at the Sanitary Exhibition at Berlin will, by desire of the German Empress, be distributed by the Crown Prince. Last week the eleventh Annual Congress of German Medical Men met in Berlin, and officially inspected the exhibition, winding up the congress with a banquet within its walls on Saturday evening.

Zurich.—The committee of the Swiss National Exhibition invited the leading members of the Swiss newspapers to Zurich last week to discuss the question whether it would not be expedient to invite representatives of the entire European press to meet at the exhibition for a special journalistic festival. The reply was in the affirmative, and a committee appointed to carry out the idea. The programme for this international newspaper festival has now been arranged, and invitations sent to the leading organs throughout Europe. The festival extends from June 30 to July 2nd, and advantage is to be taken of the opportunity to found a General Swiss Journalists' Club.

Louisville.—Under the title of "The Southern Exposition at Louisville, Kentucky," an extensive exhibition of American manufacturers and raw products will be opened in the city in question on the 1st of August next, and will remain open till the middle of November. In addition to all kinds of natural produce, machinery, and manufactures, there will be an extensive collection of articles under the heads of music, literature, and art. One of the most important departments of the exhibition will be that of tobacco, in which leaf tobacco of every existing variety is to be shown, and which will be of greater interest as Louisville is the headquarters of a very extensive tobacco-growing district.

Cincinnati.—On the 5th of September the eleventh Exhibition of Industry will be held in Cincinnati. The show will embrace every kind of American manufactures, besides minerals and cereals, and objects connected with gardening, education, science, and fine art.

Railway Bridge over the Spey.—The laying the foundations of the Coast Railway bridge, at Garmouth, has been begun.

THE JEWS' FREE SCHOOL.

The school, of which we present illustrations this week, is said to be the largest school in the world. It now educates 2,900 children. On completion of the new building, it will have places for 3,100.

Founded in 1817, and supported solely by voluntary effort, at a time when state education was hardly dreamed of, even by advanced minds, the school was at first planned for 600 boys and 300 girls, and was conducted on the Lancastrian system,—a system which enabled the maximum number of children to be taught, in a fashion, with a minimum of teaching-power. In those days the 600 boys were instructed literally under one roof, in one great room, 100 ft. long and 50 ft. wide, by one master and a few monitors; and the 300 girls in another great room, 70 ft. long and 40 ft. wide, by one schoolmistress and a few monitors. In the year 1840, when Mr. Moses Angel, the present head-master, first took command, he was the sole teacher of the 600 boys. Gradually this Arcadian simplicity of scholastic method had to give way to the spirit of progress, and the great schoolrooms had to be cut up into partitioned or curtained sections, in which separate classes of the various standards could be separately taught, each by its own teacher or pupil-teacher. In 1855 further changes and enlargements were made, necessitated by the growth of the Jewish population in the district, and in 1865 the accommodation of the school was nearly doubled by the addition of eighteen class-rooms, two covered and two open playgrounds, and a gymnasium.

When the Board schools were established under the Elementary Education Act of 1870, and especially when the London School Board appointed a Jewish head-master to its school in Old Castle-street, situate within a stone's throw of the Jews' Free School, it was thought by many that the denominational institution would be gradually crowded out of existence, or, at least, that its growth would stop. But, strangely enough, the contrary has been the case; and although acres of houses formerly occupied almost entirely by Jews have lately disappeared from the neighbourhood under the destructive hand of the Artisans' Dwellings Act, the demand for education within the walls of the Jews' Free School has constantly increased, and many hundreds of children have been refused admission from want of space.

The demands of increased numbers, and the equally cogent requirements of the Education Department, which rightly deprecated the old system of instructing several classes in one room, necessitated the removal of the old school-buildings, and their reconstruction upon modern principles, as indicated by our illustrations. But before the old buildings could be removed, temporary schools had to be built on the playgrounds to accommodate all the children. This was in itself a work of no small difficulty and expense, for it was considered that even for the few months occupied by the rebuilding, the number of places should not be diminished; and the area per child should not be curtailed; and the temporary accommodation has accordingly been so arranged that the work of the school has not been disturbed for a single day during the reconstruction.

Some idea may be formed of the magnitude of the establishment by the following figures. There are at present 1,750 boys, instructed by one head-master, fourteen certificated assistants, twelve assistants who are past pupil-teachers, and twelve pupil-teachers, in all thirty-nine male teachers. There are 1,150 girls, instructed by one head-mistress, nine certificated assistants, seven assistants who were formerly pupil-teachers, eleven pupil-teachers, three teachers of needlework, and two teachers of domestic work,—in all thirty-three female teachers. The annual expenditure is about 9,500*l.*, derived from subscriptions, interest on funded property, rents, grants from the Education Department, and the penny per week paid by each child. The latter payment is generally made, but is not enforced in cases of known poverty.

The grant by the Education Department is considerable, amounting this year to 2,300*l.*, and this may be regarded as a fair measure of the educational success of the school. At the last inspection by H.M. Inspector of Schools, the passes were 98 per cent. in the boys' department, and 98½ per cent. in the girls' department. This percentage is truly remarkable, seeing that so large a proportion of children are

of foreign birth,—Germans, Dutch, Poles, and Russians,—only a short time resident in this country, and further, that all the children, girls and boys, are taught during ordinary school-hours Hebrew and religion, which are, of course, extra subjects, not counting as subjects under the Code.

The Jews' Free School is unique in another respect. Besides being an elementary school, it is a training-school for teachers; and it also gives a collegiate education to such of its male teachers as display special ability. Many of the latter have obtained degrees at the University of London, two having taken the M.A. degree, one the LL.B., twenty the B.A., while some scores have passed as undergraduates, many in honours. It is noteworthy also that all the staff of the Jews' Free School, and the principal teachers in the English and Colonial Jewish Schools, have received their training in the Free School, Mr. Angel, the head-master, and Miss Lipman, the head-mistress, giving instruction to the teachers after school hours. About a hundred teachers have, under this training, which is afforded to them free of cost, taken the certificate of the Committee of Council.

The president of the school is Sir N. M. de Rothschild, M.P. He, and many members of his family, take an active part in the management and support of the institution, and also defray annually the cost of clothing the more necessitous pupils, and supplying other needs for which the funds of the school would not be available.

The new building, which is four stories high, and has a frontage of 94 ft. to Bell-lane, and a return frontage of 116 ft. to Fryington-alley, comprises fifty-two class-rooms, arranged on three sides of a quadrangle, 80 ft. long, by 30 ft. wide. The committee-room, and the rooms for the head-master and head-mistress, are near the main entrance. The staircases are so disposed that each room is separately accessible, without any one class-room being required to be used as a gangway to another. The large number of staircases obviates the necessity for long corridors, and so enables the class-rooms to be lighted on both sides, and it also facilitates the rapid discharge of the school. The quadrangle is roofed above the second-floor ceiling-level with a skylighted roof, supported on circular laminated ribs, the walls of the quadrangle, with its cornices, friezes, panels, and other architectural features, being carried out in glazed bricks, chiefly cream-coloured, and with bands of grey, buff, and brown. The enriched panels and friezes being of glazed terra-cotta. The quadrangle, which thus forms a central hall, is intended to be used for examinations, and for distribution of prizes, and also on the high festivals as a free synagogue. The ground-floor class-rooms abutting on the central hall are divided from it by sliding sashes and framings in three heights, hung like lifting sashes, and so arranged that when raised they disappear behind a bulkhead; and in this manner the class-rooms can be thrown into, and united with, the central hall, on special occasions. Two galleries traverse the hall at the eastern end on the first and second floors, and, as the eastern class-rooms open on to these galleries by a series of sash-doors, which fold into a very small compass, these rooms also can be thrown into the central hall on special occasions, and an auditorium, 100 ft. long, and 80 ft. wide, can thus be improvised. At the west end of the central hall will be placed a raised platform and rostrum, removed from the old school. The structure with its reredos of oak, handsomely carved, was presented to the school by the committee, in memory of the late Alfred Davis, a treasurer and great benefactor of the institution.

The class-rooms, which vary in size,—the largest being for sixty children, and the smallest for thirty-two,—will be chiefly fitted with "dual" desks and seats, single desks and seats being used exceptionally. The central hall will be fitted with "convertible" desks, capable of being used either as desks, tables, or seats, with backs. The cost of the new building with its fittings will be about 21,000*l.* The architects are Messrs. N. S. Joseph & Pearson, of 45, Finsbury-pavement. The contractors for the general works are Messrs. Ashby Bros., of Kingsland-road. Mr. James Ivin is the clerk of works, and Mr. Tester is the general foreman. The glazed bricks, faience, and terra-cotta, have been supplied by Messrs. Wilcock, of Leeds.

Messrs. G. Hammer & Co. are contractors for the school fittings; Messrs. Edwards, and Messrs. C. & F. Mansfield, for the stoves and heating apparatus. The works have progressed with remarkable rapidity. The old school buildings were not removed till April last. The new buildings are already roofed in, and will be opened in September.

OLD MEETING TRUST, BIRMINGHAM.

DESIGN FOR CHURCH, CONGREGATIONAL - ROOM, COMMITTEE-ROOMS, VESTIBLES, BOYS' AND GIRLS' SCHOOLS, &c.

This design, submitted in limited competition by Messrs. Henman & Beddoe, architects, of No. 38, Bennett's-hill, Birmingham, is an attempt to provide a novel arrangement of buildings suited to the services of a Nonconformist body. While retaining purity of style in architectural detail, the conventional Church plan is entirely discarded. The treatment of the church is unique; a central octagon forms the body of the building, the peculiarity being that the octagon is placed with points, north, south, east, and west, allowing of a double nave with aisles, the latter used only as passage ways to the settings. No chancel is provided, such being a useless feature in the services of the congregation.

The advantages of the arrangement are that with the pulpit in a central position every sitting is in full view of and none are actually behind the preacher. The majority of the congregation are within a radius of 45 ft., and the greatest distance from the pulpit to any seat is but 78 ft. At the same time a striking effect of pier, column, and arch is obtained in the interior. The instructions to competing architects laid stress on the desire of the trustees to have the organ placed where the best musical effect could be obtained; consequently in this design it holds a prominent position behind the pulpit. The manuals are well in front of the instrument, allowing the organist to face the choir and be in a position to hear the combined effect of the voices and his playing.

The buildings accessory to the church have received study, and are arranged with due regard to the several purposes for which they are intended to be used. Separate entrances are provided for each department, yet by means of well-lighted corridors and convenient staircases direct access may be obtained from one to the other entirely under cover.

Entrances and exits are arranged so that large congregations may be quickly seated and as easily dispersed. Lavatories and conveniences have not been forgotten.

With every desire on the part of the trustees that the best design should be selected for erection, it is unfortunate that the result of this competition seems not to have given entire satisfaction, for although the "Suggestions" of the Royal Institute of British Architects were followed, excepting only that the assessor was not employed to draw up the "instructions." It would seem, from correspondence which has taken place, neither promoters nor competitors are satisfied that the best design has been awarded the place of honour. The indictment is that the assessor's report is inconsistent, and that only three of the seven designs were commented upon.

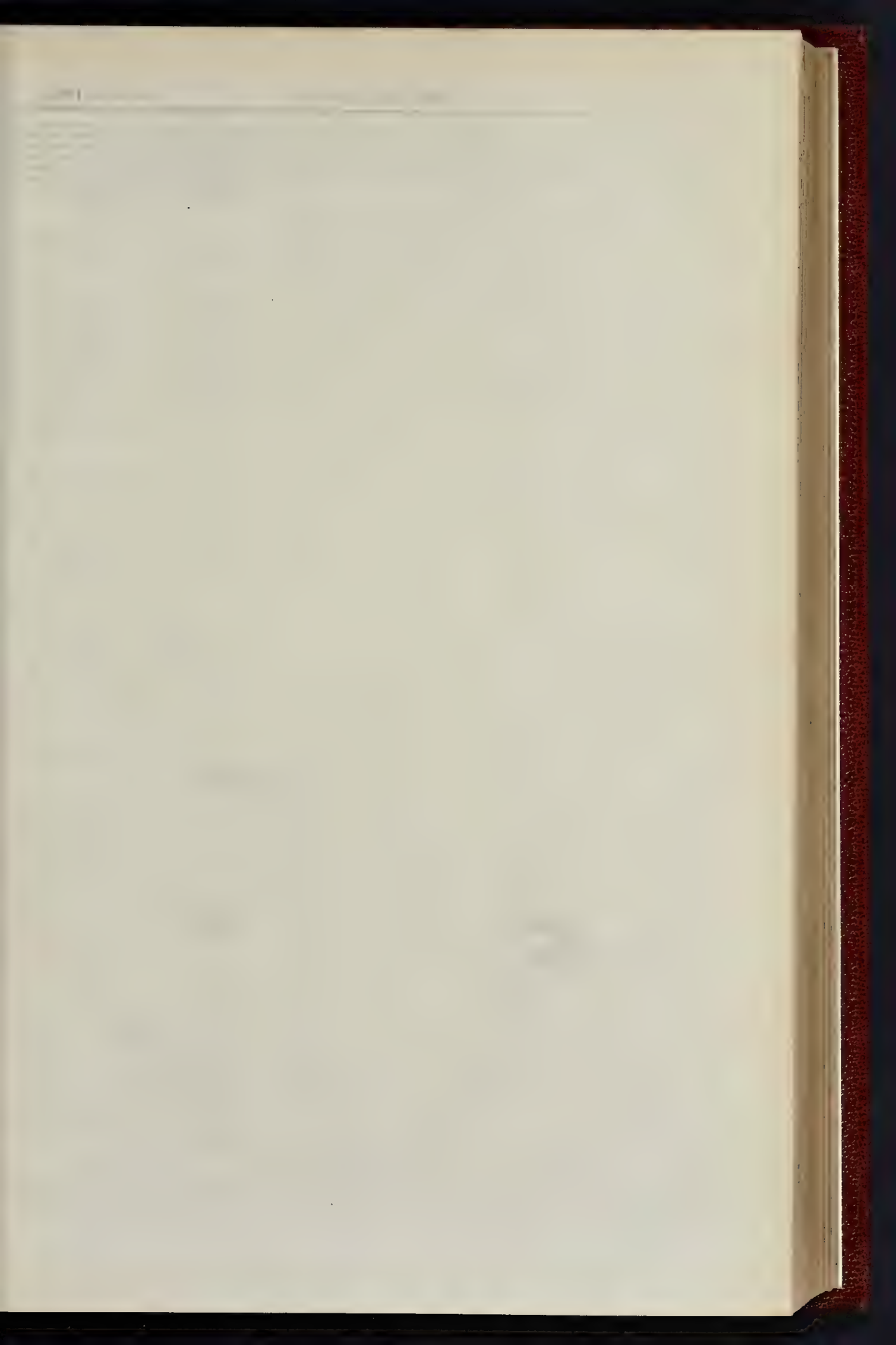
The architect whose design was placed first has been obliged to modify his plan, we are told, in several important particulars, to bring it into harmony with the requirements. The three premiated designs were placed in the following order:—

1st. The style is simple, the proportions good, and the detail free from needless repetition and the west end of the nave and tower are capable of improvement.
2nd. In many respects well worked out, and has some very good features. The western gable of the church is broad and dignified, and the east end and spire well proportioned.

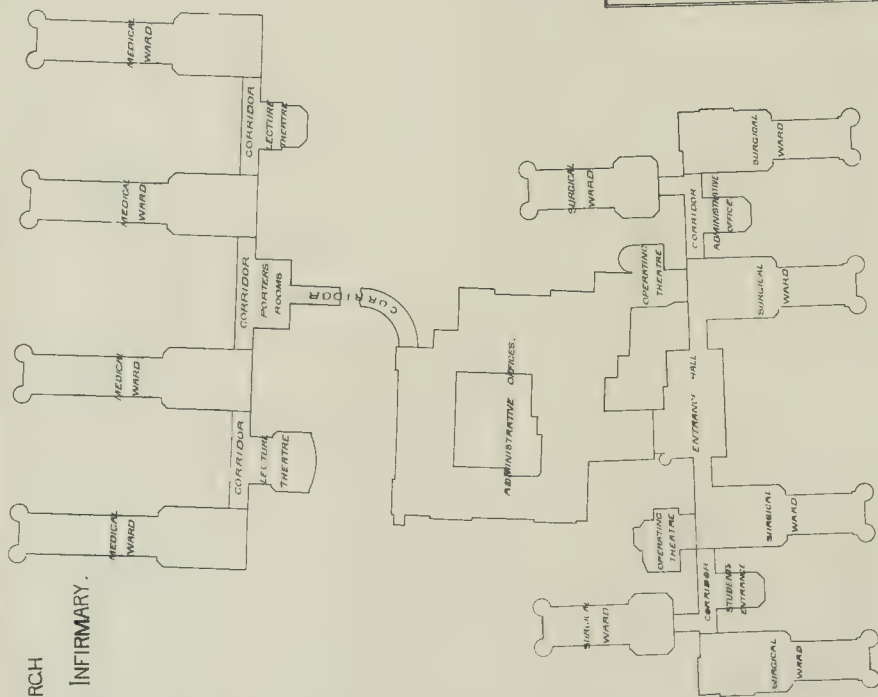
3rd. These drawings are admirably executed, and the design shows considerable ingenuity and originality, is well studied throughout, and artistic in treatment.

The design by Messrs. Henman & Beddoe, now illustrated, is the one placed third by the assessor, but some of our correspondents seem to think the report is really more in favour of this than the other designs.

Signor de Fabris, Architect.—Signor de Fabris, the architect of the new front of the cathedral at Florence, died on the 28th ult. at Florence, on the eve of the day appointed for uncovering his great work.

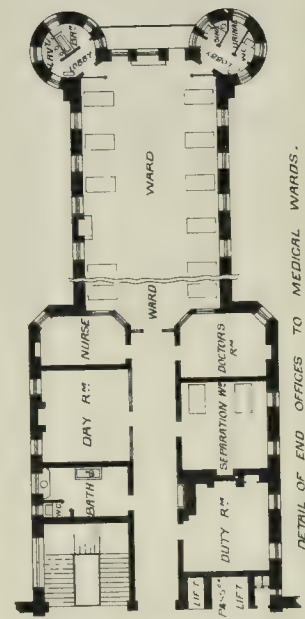
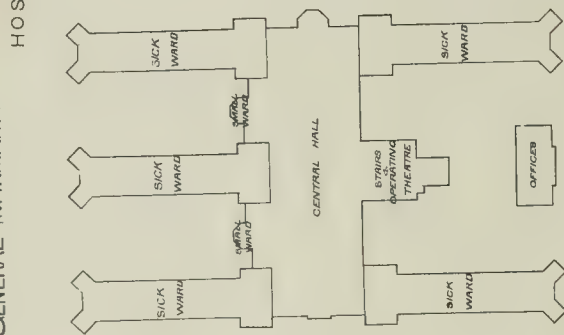


EDINBURGH ROYAL INFIRMARY.

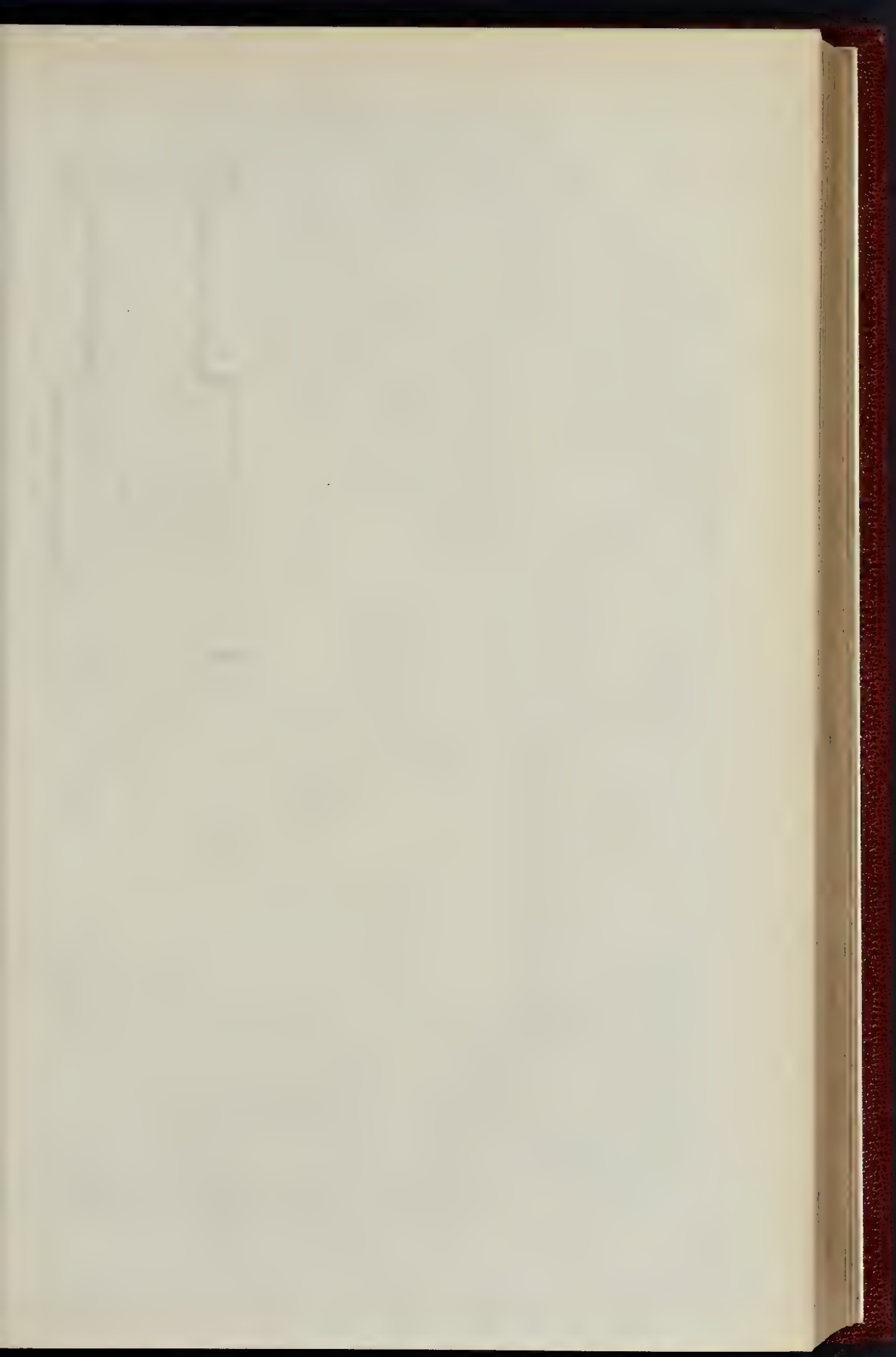


BLOCK PLAN.

LEEDS GENERAL INFIRMARY.

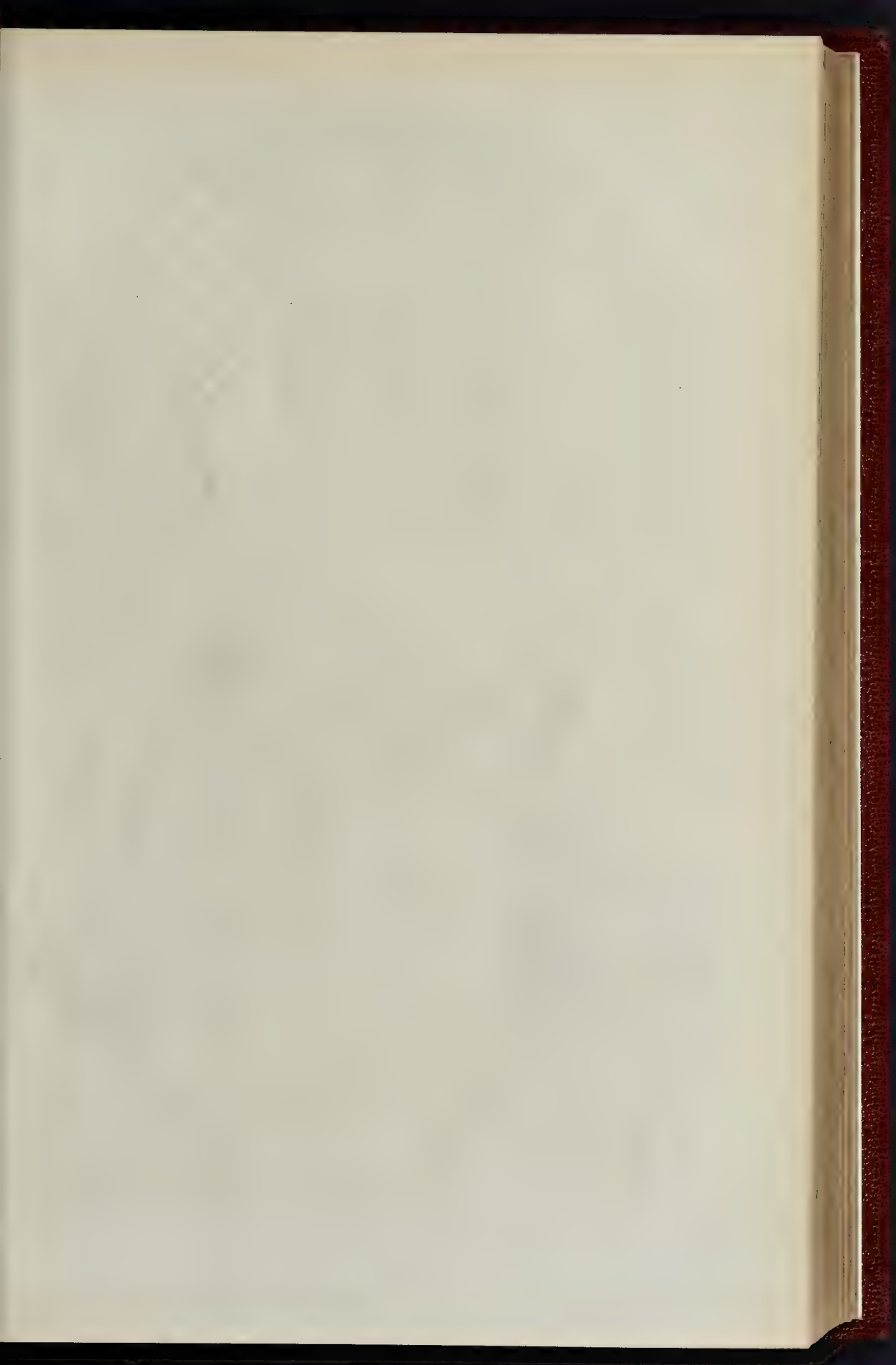


DETAIL OF END OFFICES TO MEDICAL WARDS.





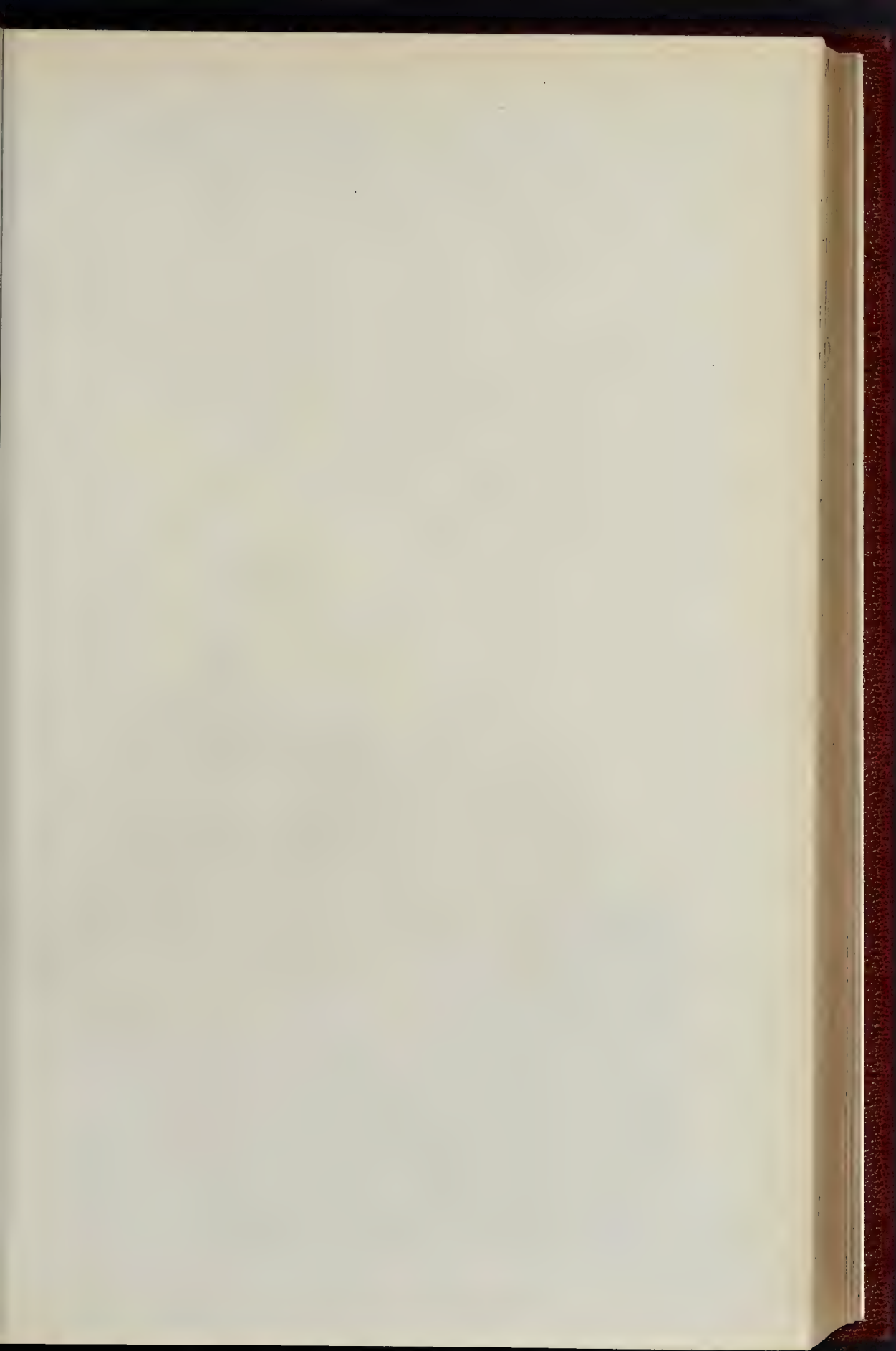
THE JEWS' FREE SCHOOL.—MESSRS. JOSEPH & PEARSON, ARCHITECTS.





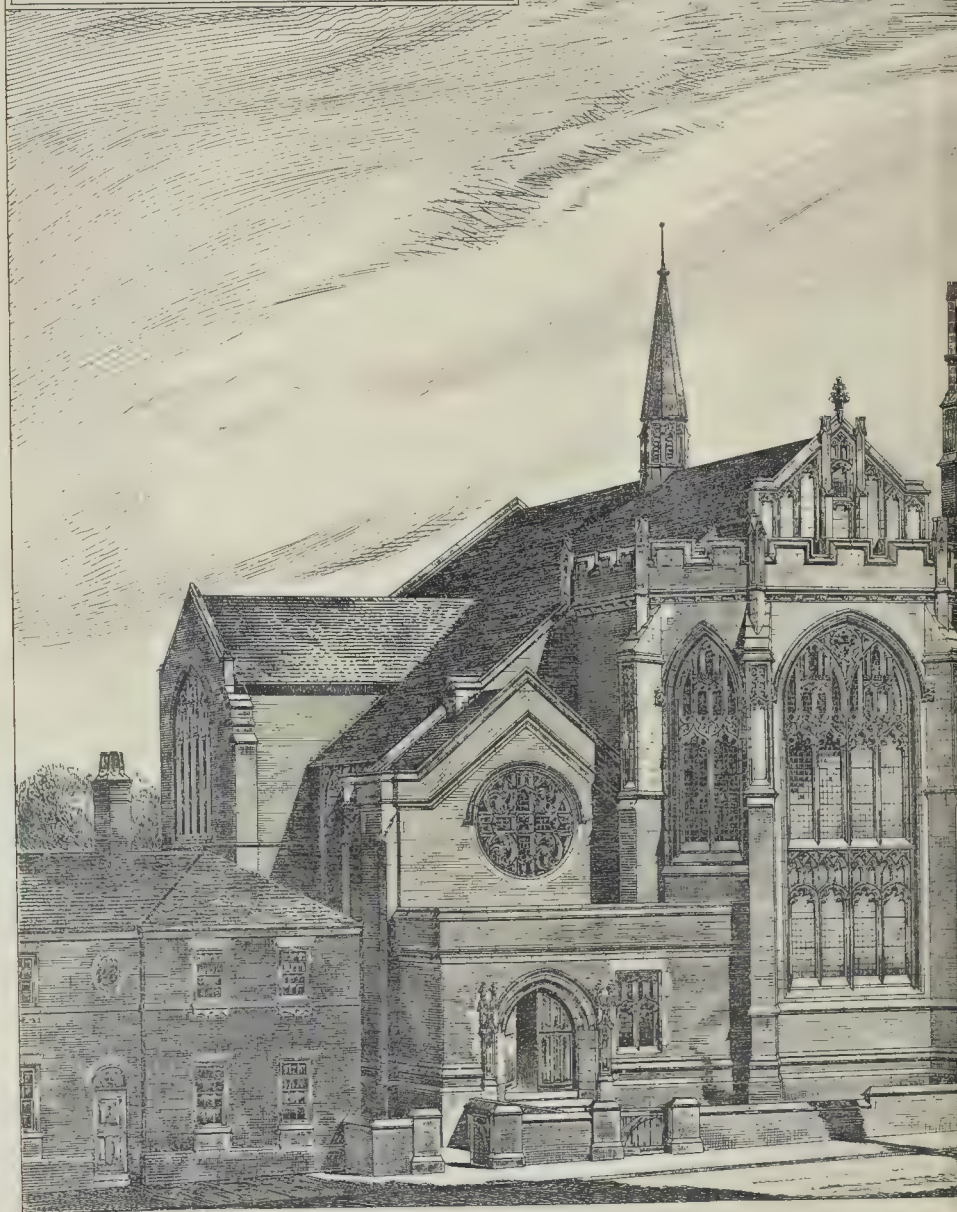
DESIGN FOR THE CHURCH, CONGREGATIONAL ROOM, &c., FOR THE OLD MEETING TRUST, BIRMINGHAM.

MESSRS. HENMAN & BEDDOE, ARCHITECTS.

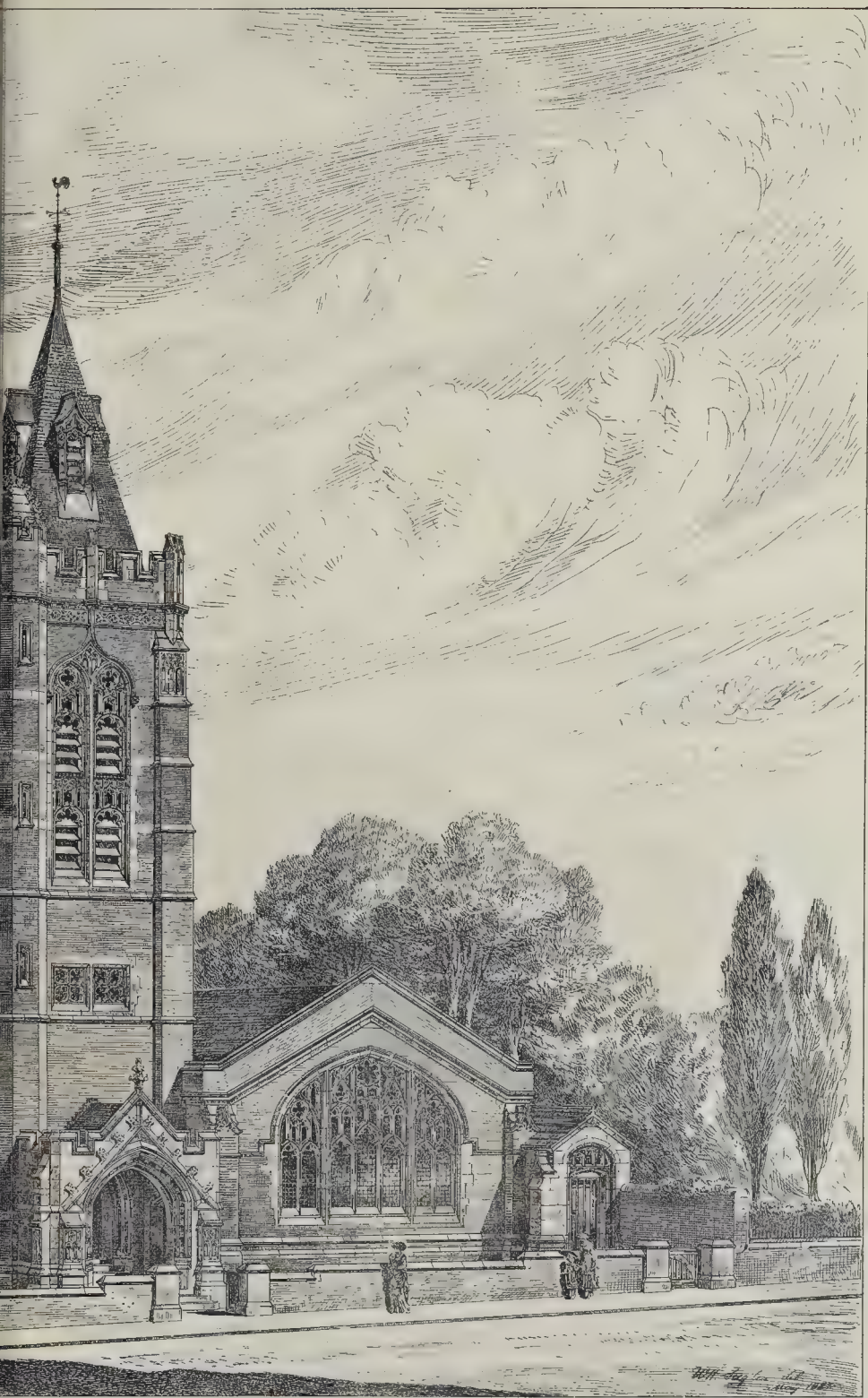


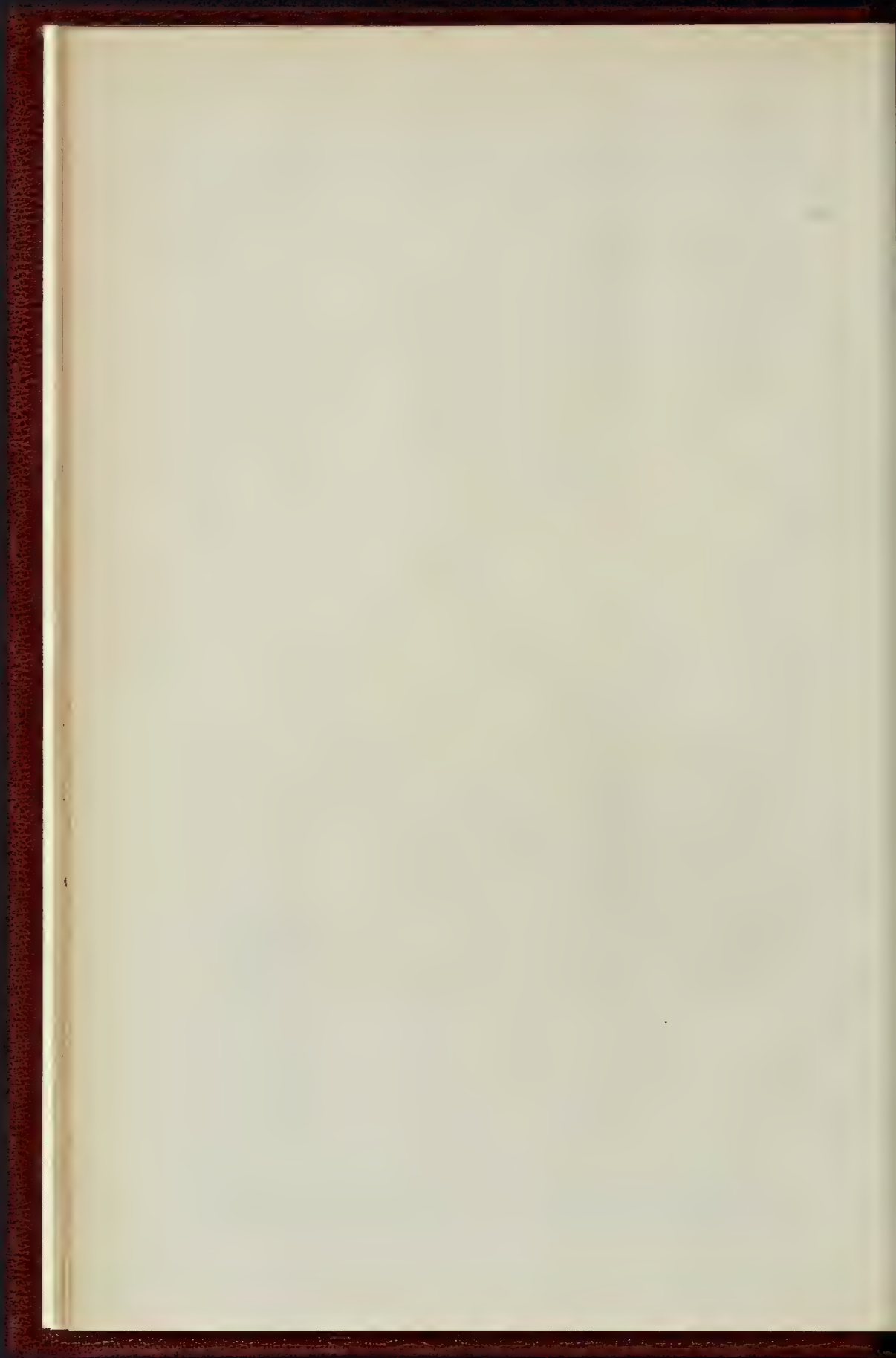
CONGREGATIONAL NEW
 TABERNACLE CHVRCH BVILD-
 -INGS at HANLEY

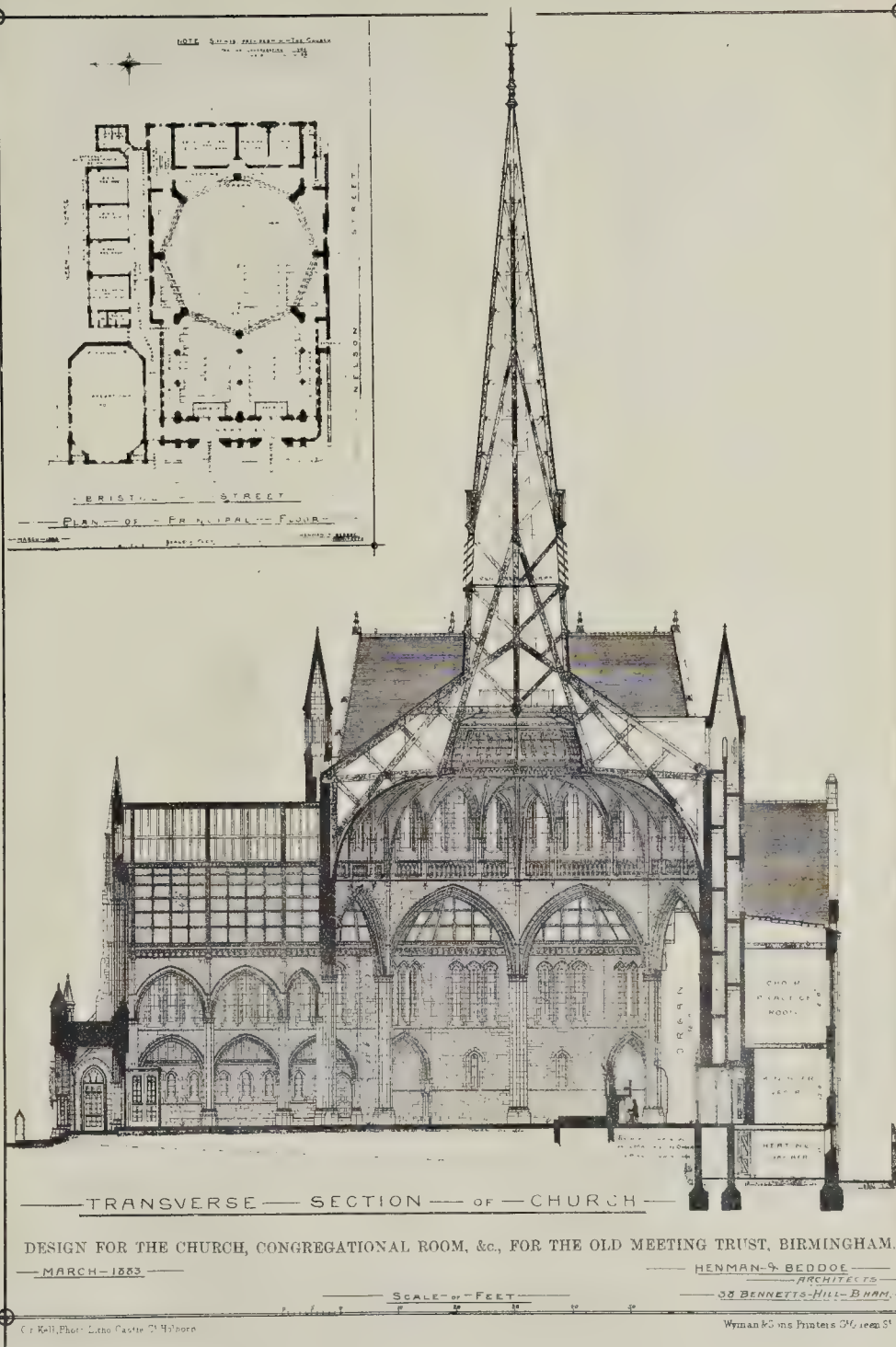
William Sugden & Son .
 Architects: Leek : 1881-2 :



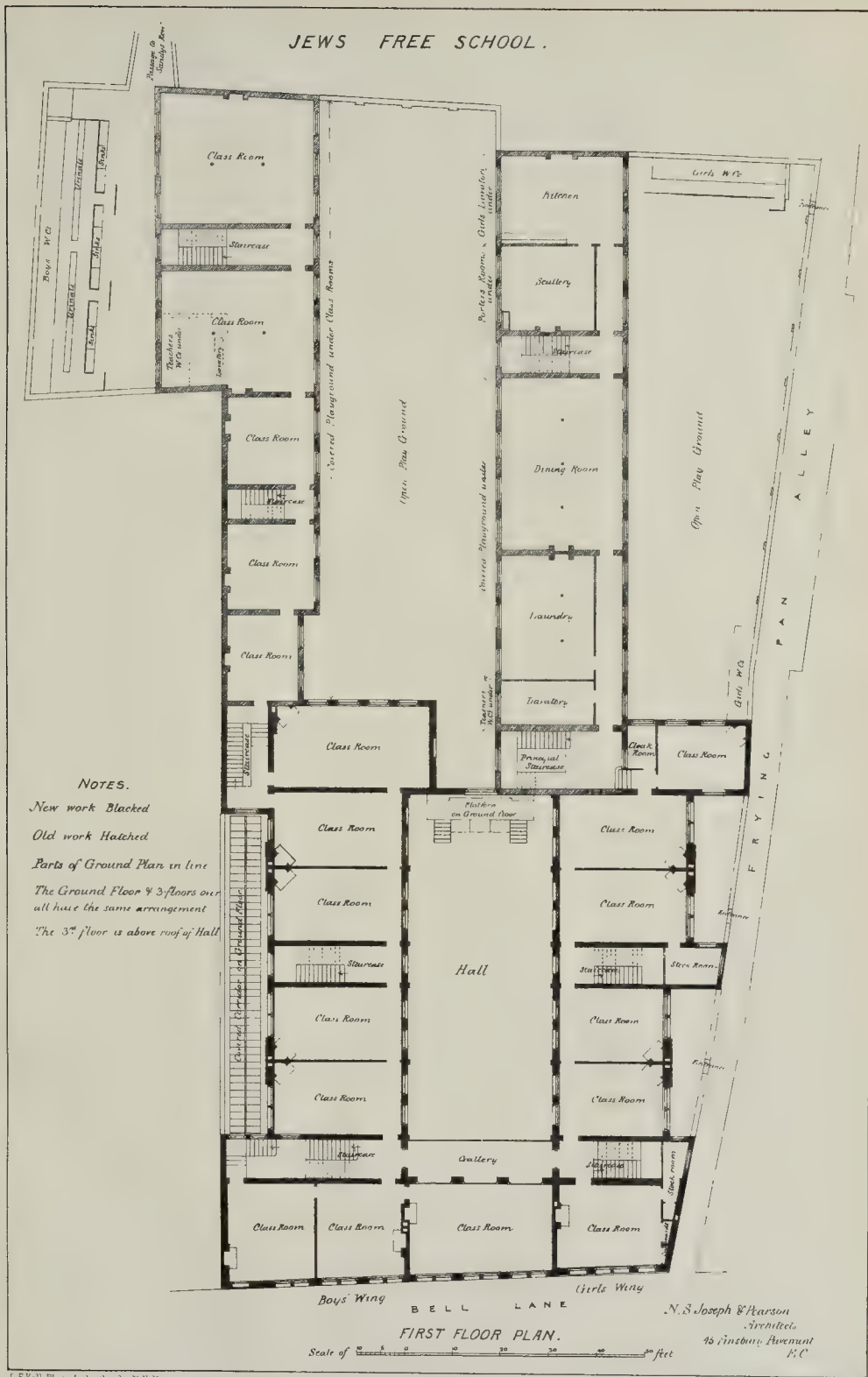
Whitcomb & Tomes, London, Printers.





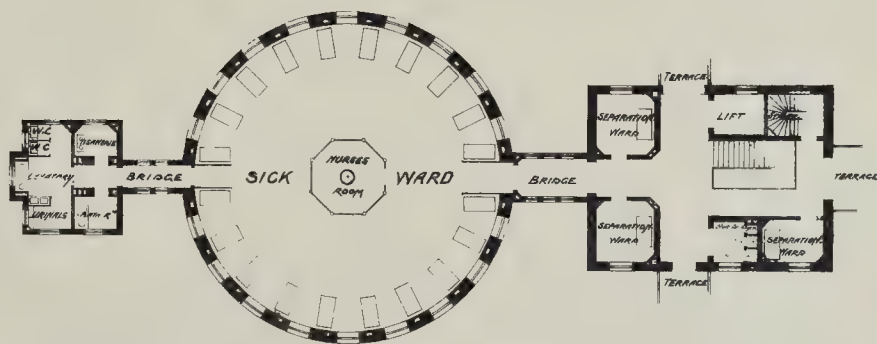
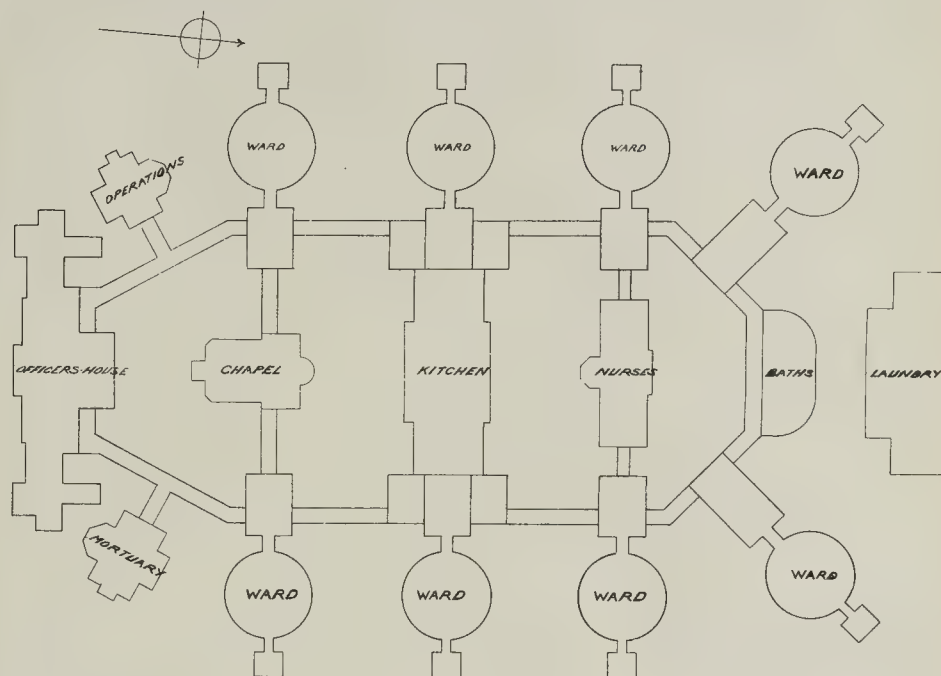


JEWS FREE SCHOOL.





CIVIL HOSPITAL ANTWERP.



HOSPITAL PLANNING.

HANLEY TABERNACLE CHURCH BUILDINGS.

THESE buildings were opened on the 24th ult. They have been erected from the designs and under the superintendence of Messrs. William Sugden & Son, architects, of Leek, whose plans were selected unanimously by the committee in a competition limited to Messrs. Sugden, Mr. John Salaman, London, and Mr. Ellison, of Liverpool.

The High-street façade has as its central feature a tower of considerable size, with octagonal domed stair turret, and with the balustrade stage enriched by traceried openings of the noble proportions which we owe to the English builders of the fifteenth century. From the battlemented parapet of the tower rises a peaked tiled roof, with dormer gables, to a height of about 150 ft. from the street. A stone spire was avoided owing to the nature of the ground, the neighbourhood being largely mined. To the right of the tower we have the gable of the lecture-hall, adorned by a traceried window of seven lights flanked by traceried buttresses. To the right of the lecture-hall gable is its entrance porch, forming also the girls' entrance to the school; and to the left, at the foot of the tower, is a spacious carved porch, the main entrance to the chapel. The front gable-end of the chapel, which lies just to the left of the tower, takes an octagonal apsidal form, and has a battlemented parapet in front of a gable panelled by tracery. This octagon has decorated angle buttresses, and a traceried window inserted in each face, that to the centre bay being about 30 ft. in height, and 12 ft. in width. The front is completed by a south porch, with a doorway and window with moulded and carved tracery, terminating by a parapet and leads under the gable of the south staircase, which is embellished by a large rose window. All the intricate stonework of the front is executed in red Hollington stone, except some of the more exposed parts, where the hard Roche stone (millstone grit) from the Leek district is used. The walls of this front are faced externally with specially-made local thin red bricks, and the roofs are covered with brown Broseley tiles. The tracery of the side windows, including the fine transept lights, is of red terra-cotta.

The following is a summary of the accommodation provided:—Chapel, with north and south transepts and galleries on three sides, containing 1,000 sittings, extreme length, including rostrum apse, 84 ft.; width, 48 ft.; width across transepts, 69 ft.; height in centre, 42 ft. Lecture-hall, containing 200 sittings: length, 43 ft.; width, 29 ft.; height, 23 ft. Organ-chambers to chapel and to lecture-hall. Tower and entrance porches and two main staircases, one descending to the school floor; narthex, 24 ft. long and 8 ft. wide, with double-swing glass doors. Entrance porch to lecture-hall and for girls' approach to school. Boys' porch and two porches for the class-rooms, minor staircase for minister and choir, minister's vestry, 16 ft. by 12 ft., with lavatory, &c.; deacons' vestry, 20 ft. by 12 ft.; large schoolroom, 55 ft. long, 44 ft. wide, 28 ft. high, with clerestory; library, 21 ft. by 17 ft.; infants' schoolroom, equal to about 33 ft. by 16 ft.; mothers' meeting-room, 20 ft. by 17 ft.; eight boys' class-rooms, each 12 ft. by 10 ft. 6 in.; five girls' class-rooms, each about 13 ft. by 9 ft. 6 in.; one young women's class-room, 25 ft. by 13 ft. and two smaller ones; young men's class-rooms, tea-room, scullery, heating apparatus, vaults, lavatories (separate for boys and girls), ample corridors, &c. Partly on account of the nature of the ground, the architects have discarded the single span roof, which in buildings of this width militates against permanency through its excessive strain both on itself and the supporting walls, and a very openly arcaded nave and aisle arrangement has been adopted in the chapel, the piers or uprights of which, being of moulded oak wood and widely spaced, do not impede sight, whilst distributing equally the load of the roof. The warming apparatus has been provided by Messrs. Haden & Son on the low-pressure hot-water system, and for ventilation, fresh air is admitted at numerous points through upright shafts, with filtering media for the arrest of fog and smoke. The foul air is drawn off by turrets on the ridges, and through the tower roof by means of special flues, whose air is rarified by fire-clay cones, heated to incandescence by gas jets. From some portion of the gas-fittings also the products of combustion are carried off direct, the waste heat being used

ful in the ventilation exhaust flues. Electric bells will probably be provided for general communication, and to call simultaneously together to the large school-room the occupants of the various class-rooms. One of the class-rooms is fitted up as a tea-room, with swing tables for service, and provided with gas boiler, &c., and hot and cold water is laid on in taps at points to meet fire emergency and to economise labour in cleaning the premises.

The gallery front is varied by being treated as a series of balconies between the oak pillars, with open tracery and linen-fold panels. The rostrum is of similar but more elaborate design, and has under it canopied seats for the officiating deacons; its situation in a domed apse, with high wainscoting, has favourable acoustic results. The organ-chamber, too, being carried clear through the gallery to a lofty height, adequate space is secured both for the instrument and for the issue of the "concours of sweet sounds." In his report on Messrs. Sugden's plans, the architect-examiner of the Congregational Church Building Society, said:—"The reports under this society's regulations are for the simple purpose of friendly practical suggestion. They are not for criticism. If they were, it would be very pleasant for us to say much which a critic in justice ought to say of the complete planning and effective design and careful specification under examination." The secretary of this society added:—"I do not hesitate to pronounce the plans, as a whole, A1, containing minuteness of detail, great regard to practical convenience, good proportion, and real solid beauty."

The contractor for the erection of the buildings was Mr. Samuel Warburton, of Harpurhey, Manchester, and the result reflects great credit upon him. His sub-contractors were, for the terra-cotta work, Mr. Jabez Thompson, Northwich; for the carving, Messrs. Bonehill, Manchester; for the stained-glass work, Messrs. R. B. Edmundson & Son, of Manchester; and for the gasfittings, Messrs. Thomas Brawn & Co., of Birmingham. Mr. Thomas Heywood very efficiently discharged the onerous duties of general foreman of the works.

MODERN HOSPITAL CONSTRUCTION.

OF the series of special drawings prepared by Mr. E. C. Robins, in illustration of his paper on the above subject published in our last number, we have selected the Royal Infirmary, Edinburgh, and the Leeds General Infirmary on one page. Also the Antwerp Civil Hospital, with an enlarged plan of the circular sick wards of the same, on another, the particular description of which will be found on p. 877, vol. xlv.

WEST HARTLEPOOL AND ITS PUBLIC PARK.

THE opening of the new public park at West Hartlepool directs attention to the upgrowth of that young and thriving town, which occupies a situation that was, thirty-five years ago, barren shores, bleak agricultural lands, and sandy dunes. Two miles to the north-east was the ancient town of Hartlepool, that, after centuries of sleep had been awoken by the construction of a railway from the adjacent coal-field, and was a busy little coal shipping and fishing port. But the facilities for shipment at that port were not large, and misunderstandings arose as to the charges for the use of these facilities. In the year 1844 a Bill for constructing the "West Harbour and Dock" was passed, and in the spring of the following year the construction of that dock and works commenced in the township and parish of Stranton, then an agricultural parish, with a population in the township of 381, and described in one of the best gazetteers of the time as "inconsiderable." On the 16th of June, 1847, the "Hartlepool West Harbour and Docks" were opened, the harbour being thirteen acres and the dock eight more; and in the same year the company owning them obtained powers to construct other docks. A railway had been made previously,—the Stockton and Hartlepool Railway, used for the conveyance of coal first in 1840, and for passengers in 1841, and incorporated by Act of the following year. It leased the Clarence Railway,—one of the earliest in Durham,—and so obtained access to the coal-field; and finally it and the Dock Company amalgamated in 1851. It is from this latter date that the history of West Hartlepool and

the growth of its trade commences. In 1852 a second and larger dock was opened; a third followed in the same decade. Continuous additions to the timber ponds were needful, and finally, a year ago, a splendid addition to the docks united the new and the old port, and gave a deep-water dock system that is unequalled north of Hull. Before that time the West Hartlepool Harbour and Railway Company had ceased to exist. Its capital had exceeded Parliamentary limits, and after prolonged litigation it passed into the ownership of the North-Eastern Railway, which has acquired a monopoly of the service,—with the exception of five or six miles,—of the whole of Northumberland and Durham; and not the least valuable of the territory it has acquired is that of the great port which was built up by labours of no little difficulty.

The trade of West Hartlepool was first coal exporting; then imports and now manufactures and shipbuilding have been added. The coal shipments began with the opening of the first dock, with 54,000 tons in the year 1847, rising and falling with the state of the local consumption and other causes, and amounting to, for last year, about one million tons. As the system of railways became perfected, and as the facilities of the port and its splendid warehouses became known, the value of the merchandise exported rose,—from 23,846*l.* for the first year of that export, 1853,—to about 1,850,000*l.* yearly now on the average of recent years. In the import trades, timber, grain, cattle, and general goods, begun thirty years ago, have been wonderfully developed, and now lines of steamers to Hamburg, Sweden, New York, and Boston contribute largely to the trade. In 1854 shipbuilding was begun, under the olden wooden style, gradually changing to iron, and now the largest of the three firms of shipbuilders at West Hartlepool occupies second or third rank from year to year in the tonnage roll of the builders of the kingdom, and the port contributes from thirty-five to forty-five steamers to the merchant navy of the kingdom. Its three blast-furnaces melt a considerable quantity of pig-iron; rolling-mills adjacent manufacture this into plates for the ship-yards; and one by one there have grown up a mass of industries that have created and developed a town.

The population rose from the three hundred we have stated to 4,700 in 1851, to 13,600 in 1861, to 22,000 in 1871; and now it is estimated at 33,000. Three churches and about a score of chapels have been erected and freed from debt; schools and institutes have been built, and slowly other than the bodily needs of the town have been cared for. One of these is that just completed, and now devoted to the public use,—the Ward-Jackson Memorial Park, a park of seventeen acres bought as a memorial to Mr. Ralph Ward-Jackson. To this gentleman much of the development of West Hartlepool is due. He was one of the firm of solicitors who projected the Stockton and Hartlepool Railway to "afford to the numerous and valuable collieries in the south-western districts of the county of Durham a cheaper, safer, and more expeditious means of export" than they possessed when the prospectus of that railway was issued. He was the projector of the first docks; and of the West Hartlepool Harbour and Railway it has been truly said that, down to twenty years ago, he "took upon himself the management of the company," and "all the offices,—directors', solicitors', secretaries', treasurer's, engineer's,—in fact everything connected with the company vested in him." He enlarged the harbour, built other docks, bought collieries, built vast warehouses, opened communication with great manufacturing districts, and in the face of a strenuous opposition created a vast trade that has not been since cared for as he cared for it. Twenty years ago, it was shown that the Parliamentary powers of what may be called Mr. Jackson's company, were largely exceeded,—the 60,000*l.* of the old Stockton and Darlington Railway were swollen into millions spent in building up a port, but millions for which no Parliamentary powers were possessed. The company passed into difficulties, the directors retired, and the ownership of the port passed into other hands. But West Hartlepool was not ungrateful to its developer. It had given him all the local honours it could; and when, in the year 1867, the Reform Bill recognised the growth of the great South Durham port, and created "The Hartlepoons" a distinct Parliamentary constituency, the borough returned as

its first member Mr. Ralph Ward-Jackson, though after-elections have proved that his politics were not those of the bulk of the electors. And when death took him from commercial conflict, victory, and defeat, the townspeople decided that a public park should be a memorial of him, and thus near where the town of his love "is swinging its clamorous iron fall," there will be the memorial to all time of the labours of the chief builder of the port and town of West Hartlepool.

THE GREAT FIRE AT AIX-LA-CHAPELLE.

The destructive fire which broke out in the afternoon of Friday, June 29th, at Aachen, why this essentially German town should go by the name of Aix-la-Chapelle is a mystery to us, — has resulted in the partial destruction of a venerable relic of the past; another equally ancient building, the neighbouring cathedral, being only saved by the extraordinary exertions of the local fire-brigade. As it is, the loss, — not to reckon the destruction of private property, — has been quite serious enough, for the two towers, the eastern and western, of the Rathhaus or town-hall have been entirely burned out. Still, when it is considered that the fire broke out in a chemical manufactory, full of highly combustible materials, belonging to the Messrs. Monheim, which, for some unexplained reason, had been permitted to be established in a crowded neighbourhood and in close proximity (1,000 yards) to two such venerable piles, matters might have been still worse. Aachen, at least its older portion, is very closely built, and it is, therefore, no wonder that the conflagration found ample food in the neighbouring roofs, rendered inflammable by the previous great heat, whence it was communicated by fragments of burning paper saturated with benzine, driven by the prevailing east wind, first to the eastern tower of the town-hall (the Gransturm). Tradition dates this old tower back to the time of the Emperor Nero, one of whose brothers, whose name is unknown to history, is said to have been the builder; but its erection is placed more correctly by archaeologists in the first decade of the thirteenth century. No wonder the Aacheners trembled for their old Rathhaus, as dear to them as the Tower or Westminster Abbey is to Londoners. An eye-witness describes the scene as thrilling. "Shoulder on shoulder," he says, "they stood awe-struck by the spectacle enacted before them. Every true Aachen breast trembled for the treasures of the town-hall, that splendid building, dating from the most glorious period of German history. Here a Merovingian castle stood once; here the great Charles, whom French and Germans alike claim as their own, erected his palace. Here in the old Kaisersaal a long series of German emperors during the Middle Ages placed the German crown on their heads with their own hands. A cry of anguish arose when also the western tower had been burned by the flames. . . . The Graues tower had burned for twenty-five minutes only when it inclined, and went down with a great crash upon the neighbouring roofs. The western tower, on the contrary, collapsed. But here, in the so-called Stadthurm, two brave fellows of the Aachen fire-brigade boldly kept their post, notwithstanding the fiery furnace below and around them, and the burning timbers falling on all sides; and, by directing the hose upon threatened spots, saved the remainder of the Rathhaus." Fortunately, the old vaults of the Kaisersaal, this pearl of Aachen, resisted the fire. It was only through an opening in the crown of the arch that burning masses of wood fell into the hall below, and threatened destruction to the frescos of Bethel and Kohen. But, excepting slight damage by water and a few cracks, no serious injury was done. The celebrated picture of Charles the Great was saved by timely removal into the vaulted basement below.

While the fire was still raging around the town-hall, the manuscripts and records and vaults and tower walls of which, however, were preserved, all eyes were involuntarily and anxiously turned in another direction. Fears were entertained that the flames would seize upon another pile round which the name of the great Charles has shed a halo. It was for some time a question whether the cathedral would escape unhurt, or whether this treasury of national glories would be sacrificed. But, thanks also to the almost superhuman exertions

of the local fire brigade, which, no doubt, will have due recognition, the venerable building was saved by keeping its roof, and especially Charles's Chapel, almost covered with water. Although these two national relics were preserved for future generations of archaeologists, the damage done to private property has been very great, for twenty-five houses have been either totally or partially destroyed. The cause of the fire is at present unknown, but it is stated that it arose from spontaneous combustion in the roof of the chemical factory, where large quantities of benzine were stored.

BERLIN.

For the past few years Berlin has been increasing her population at the rate of about 40,000 annually, — a number which, if kept up, will bring the inhabitants of the German capital up to 2,000,000 by the end of the present century. The population of Berlin at the present time is in round numbers 1,250,000. Since the period of the crash, following on the mad speculation of 1872 and 1873, house-building in Berlin has been carried on only within moderate and safe proportions. For some years after 1874 rents fell, but as there was no interruption in the constant increase of the population of the city, dwellings at length became very crowded and the demand for new houses again became urgent. For many months past accordingly the building trades of the city have been very active. An unusual number of houses have been erected and have let without difficulty. At the present moment there is greater activity in house-building in Berlin than has ever been known.

The value of ground in that city is so great that builders have constantly been tempted to diminish the size of court-yards and to increase the number of dwellings at the back as much as possible. Owing to this and other abuses which have crept up, the Municipal Authorities have co-operated with the Chief of the Police in drawing up an amended code of regulations controlling all buildings and building operations in the German capital. The rules are, however, not to be issued or put in force until next year. Among the new regulations is one providing that all basement dwelling-rooms must be not less than two-thirds above the level of the ground. Carpenters' and other workshops are henceforth to be limited to separate buildings. In regard to fire-proof staircases the present rule is that every dwelling must be accessible from one fire-proof staircase. In future the regulation will be that every floor above the second must have two fire-proof flights of stairs. This provision is only just and necessary when we consider the shape and size of the average dwelling-houses of Berlin. They are built in the form of a hollow square, round the narrow and contracted court-yard in the centre, and the average number of persons resident in a single house is from fifty to sixty. Under the new rules, again, the minimum dimensions of the court-yard are to be sixty square metres, the minimum breadth being five metres. Smaller courts are only to be permitted in the case of corner houses. With regard to the height of houses, the maximum height to be permitted in future is 24 metres, and there are to be no more than five floors let out as dwellings in any house. At present houses are being built over 27 metres high, and with seven and eight stories. Altogether the new regulations appear only what are reasonable and absolutely necessary for the health of a dense and growing population like that of the capital on the Spree. Another improvement long keenly wanted in Berlin appears likely shortly to be supplied. This will be by the erection of one or more extensive market-halls. Berlin has hitherto been without any such sheltered convenience in spite of the intense inclemency of the weather in the winter season. The Corporation has just purchased a suitable site in a very central district, including parts of Zimmer Strasse and Maur Strasse with excellent approaches, and the erection of the new buildings is to be begun in the course of next spring at the latest.

Appointment of Borough Engineer for Cardiff.—Mr. Harpur, formerly assistant engineer to the borough, has been appointed by the Cardiff Town Council Borough Engineer, at a salary of 400l. a year.

MONUMENTS.

The Niederwald Monument.—The colossal figure of Germania, which has been cast in parts at Munich and Dresden, is now being erected on its intended resting-place in the Niederwald, overlooking the Rhine. The figure is designed to commemorate the German victories over the French in 1870 and 1871, and is a metaphorical embodiment of the popular German idea of the Watch on the Rhine. The German Emperor, who has arranged to attend the military manoeuvres of part of his army in Hesse Nassau towards the end of September, has consented to inaugurate the monument on the 27th of that month. The occasion will undoubtedly be one of a very memorable character, as all the reigning princes of Germany have been invited to attend the ceremony, and few of them will care to be absent at such a demonstration. After the event, the Emperor and his princely guests will return to Wiesbaden, where in the latter portion of the day a banquet, and a ball will continue, and wind up the festival.

New York.—Statue of Liberty.—The French are making the Americans a present of a colossal statue of Liberty, which stands 150 ft. high. It is to be erected at the entrance to the harbour of New York, and to serve the purpose of a lighthouse. In height it completely dwarfs the Colossus of Rhodes, of ancient celebrity, the latter having been only 105 ft. high. The new lighthouse statue of Liberty is to be illuminated with the electric light. It is to be set up on a pedestal, itself 148 ft. high, and it is with regard to this matter that formidable difficulties have arisen. How is the statue to be lifted and placed in position at that height? As the French have not provided the necessary funds for the pedestal, a subscription is being got up in America for the purpose; but the chief difficulty will still remain, how to place the statue in position. An American engineer, Mr. Goodridge, proposes to envelop the statue in an iron cage and, as has been done with houses and hotels, to lift it up and build in the masonry underneath, constantly raising the Colossus and adding to the masonry until the desired height has been attained. To prevent the danger of the statue being blown over by a storm, it is proposed nearly to fill in the lower parts with masonry.

Mosart Monument, Vienna.—By the 16th of the past month the subscription which has been opened for the erection of a monument to Mosart, amounted to 48,584 florins, or rather more than 4,048l. sterling.

Rome.—Monument to Semper.—A simple monument, erected in the Protestant cemetery at Rome, to the celebrated German architect, Gottfried Semper, was inaugurated on the 9th ult., in the presence of the German ambassador, Prince Thurn and Taxis, and a large and distinguished assembly of Italian and foreign artists. The monument was almost covered with wreaths of laurel, immortelles, and spring flowers, which had been sent not only by Roman, but by many German, Austrian, and Swiss admirers of the deceased. The ceremony was of the simplest character, and concluded with the handing of the monument over to the protection of the German ambassador.

FOREIGN NOTES.

Prussian Medals for Services to the National Architecture.—In the year 1881 the Prussian Government determined to found three annual medals to be awarded, one to the architect, another to the architectural engineer, and the third to the mechanical engineer, who should be adjudged to have performed the greatest services within the twelve months to the general cause of architecture in the country. The first distribution of these medals has just taken place, and the Gold Medal has been awarded to his Excellency, Dr. Hagen, and the two Silver Medals to Professor Ende, of Berlin, and Herr Wöhler, of Strassburg.

Museum of Trade at Düsseldorf.—The surplus obtained from the Düsseldorf Exhibition in 1880 was so considerable that it has been sufficient to found a permanent Museum of Industry in the city in question. The new Institution was opened on the 9th ult. By this Museum Düsseldorf, which already possessed a renowned School of Painting and a new and flourishing School of Industrial Art has become more than ever the capital of art in the Rhenish provinces.

THE ARTISTS' BENEVOLENT FUND.

ANNIVERSARY DINNER.

The seventy-fourth anniversary dinner of this Fund was held on Wednesday evening last, the Right Hon. Lord Thurlow in the chair. The usual loyal and patriotic toasts were proposed by the Chairman, who adverted to the fact that her Majesty the Queen had for the forty-fourth time graciously sent her annual donation of 100 guineas to the Fund. The Chairman also referred to the interest taken in art by other members of the royal family, some of whom were not only patrons of artists but artists themselves. Captain C. B. Dimond responded for the "Reserve Forces" in a brief, soldier-like speech.

In proposing the toast of the evening, "Prosperity to the Artists' Benevolent Fund," the Chairman observed that in looking through the artistic little red book which was presented to each lady and gentleman attending the dinner, and which was not only a souvenir of the occasion but a record of the work which had been done by the Fund, he felt some diffidence in occupying the chair, which had been filled in former years by so many distinguished men, to none of whom did he yield, however, in the great interest which he felt in the welfare of the Fund. He had derived so much solace, in the course of a somewhat nomadic existence, from the works of artists, that nothing could render him callous to the sufferings and wants of artists in the present day, when the struggle for existence was much harder than it used to be. There was no doubt whatever that the great increase in the number of artists which had taken place during the past few years had very greatly increased the demands made upon the Fund, and added to the labours of the gentlemen who administered it. There was one consolatory reflection, however, and that was that if the number of artists had increased of late years, the number of those who bought and appreciated the artists' productions had largely increased also, and there was, too, an increasing demand for artistic designs for carpets, furniture, and other household requisites or ornaments. But unfortunately little or nothing of an artistic character was to be found in the homes of the poorer classes, not because an artistic object was necessarily expensive, but because large masses of the people had no opportunities of contemplating and learning to appreciate works of art. He was one of those who had striven for years, and who intended yet to strive, for the attainment of what he believed would be a very great boon to the people, viz., the opening of our national art galleries and museums on Sunday afternoons, in order that the toiling poor might receive pleasure and instruction from the contemplation of works which they could never otherwise see. He was very glad to say that there was a great and growing feeling in favour of the movement, both in and out of Parliament, and he felt that the attainment of the end in view was only a question of time, and of a very short time. It was outrageous that this boon, which was so urgently needed in London (owing to its enormous population, and to its great size, rendering it impossible for people living in the more central portions to reach the country within a walk of reasonable limits), was still denied to the capital, though it was enjoyed and appreciated in such towns as Leeds, Middlesbrough, Birmingham, Manchester, Glasgow, Dublin, and many other large towns in the United Kingdom. In conclusion, his lordship referred with satisfaction to the financial prosperity of the Artists' Annuity Fund, which was a commendable effort on the part of artists themselves to provide for their own and their families' necessities in times of misfortune without appealing to the hand of charity. But his appeal was on behalf of the Benevolent Fund, upon which, for the reason he had already given, there were increasing demands. With the toast he had much pleasure in associating the name of Mr. John Absolon, a member of the committee.

Mr. Absolon responded, making feeling allusion to the loss which the Fund had sustained by the death of its late honorary secretary, Mr. C. J. Dimond. The blow which they had received was a heavy one, but he was pleased to say that they had, in the person of Mr. C. B. Dimond, a new honorary secretary who gave evidence of being a worthy successor to his father and grandfather. Referring to the

Annuity Fund, Mr. Absolon cited one or two instances showing the benefits which had been received by the families of artists who had been members of it, and he urged young artists to come forward and join it in greater numbers than they did.

Mr. Lambton Young, the secretary, announced subscriptions and donations amounting to upwards of 500*l.*, including the Queen's annual donation of one hundred guineas.

The remaining toasts included the following:—"The Chairman," proposed by Mr. Juland Danvers; "The Royal Academy," proposed by the Chairman, and responded to by Mr. C. B. Birch, A.R.A., who good-humouredly referred to the comparative neglect which the Artists' Benevolent Fund experienced at the hands of the Academy; "The Artists' Annuity Fund," tersely proposed by Professor Kerr (who pointed out that this Annuity Fund is raised and wholly supported by the contributions of its members for their own relief in sickness or old age,* and that it neither asks for nor receives any help from the public) and responded to by Mr. Thomas H. Maguire in a brief but interesting speech; "The Societies connected with the Fine Arts," proposed by Mr. Forbes Robertson, and spoken to by the Rev. Lawford Dale; and "The Stewards," proposed by the Chairman and coupled with the name of Mr. G. M. Atkinson.

BRISTOL AND CLIFTON JUNIOR ARCHITECTS' SOCIETY.

OPENING DAY.

This young and useful society celebrated its opening day on Saturday, St. Mary's Church, Bitton, being visited by the members. Upon arriving at the church, the venerable rector (the Rev. H. N. Ellacombe, M.A.) met the party, and conducted them over the sacred edifice, pointing out its many interesting architectural features. Mr. Ellacombe expressed his belief that, with many others, St. Mary's was a very large and long pre-Norman church. He pointed out the remains of two Norman windows on the northern side of the building, and said there was no doubt that at one time an immense pre-Norman church, for the foundations had been found a few feet below the present nave. He drew the party's attention to the fact that the chancel was a small one for so large a church, and added that above the present arch were the remains of an old Norman arch. There was a beautiful chantry on the north side of the church, built in the year 1299. He was certain of that date, because he had the key of the consecration. The window in the chancel was the exact type of one in St. Mary Redcliff Church, Bristol. Some twenty years ago it was found necessary to put a new roof to the church, and he therefore adopted a form of roof which was very uncommon in this country. About the same number of years since the church was re-seated, and the whole work was done by the parishioners; for he designed the seats, a native of the village carved them, and a native carpenter set them up. The visitors then proceeded to the outside of the church, where Mr. Ellacombe pointed out the beautiful way in which the tower was constructed, and stated that it was designed in the fourteenth century.

Mr. J. C. Moncrieff proposed, and Mr. S. E. Ford seconded, a vote of thanks to the guide for the kind manner in which he had received them.

The motion was passed, and the rev. gentleman acknowledged the compliment and said he was very pleased to see the party there that day.

The members of the Society who were dispersed for the purpose of sketching the sacred edifice, returned to Bristol by an evening train. The Council of the Society have arranged a capital programme for the coming season, the buildings to be inspected being St. Peter's Church, the Old Mint, Temple Church, St. James's Church, and Redland Park Chapel, all in Bristol, while the country visits include, Bitton, Bath, Backwell, Nailsea, Wraxall, Cadbury, and Portbury. It has also been decided that the annual excursion this year shall take the form of a day's trip, by break, through a part of Somersetshire. The Society,

* We may add that "all artists in Painting, Sculpture, Architecture, and Engraving are eligible to become members."

which is doing a good work, seems to be following the course pursued by the Bristol Society of Architects, which existed some fifteen years ago.

IGNORANCE OF THE BEAUTY OF NATURE AND ITS RESULTS.

This is the subject of a letter addressed by Mr. T. C. Horsfall, treasurer of the Manchester Art Museum, to the Manchester papers, pleading for help and sympathy in the work which the Committee of the Museum have undertaken. Mr. Horsfall writes:—

"Every one who knows what a large English town is like must also know that a great many of the people who live in it can have little familiarity with nature; but probably few persons are aware that an almost complete ignorance of nature is common amongst young people in the most crowded parts of our towns. Mr. H. E. Oakeley, Her Majesty's Inspector of Schools, told me not long ago that he has often found that children in places like Ancoats and Bradford scarcely know what a flower is, and have seldom, if ever, seen a primrose or violet, and that he once found in a school in Ancoats that a whole class had no idea what a bee is like or where it is to be found. Much evidence of the same kind has been given me by other observers. Such ignorance cannot fail to have very evil results. Of those persons who live in the country or spend some time there comparatively few seem to have much knowledge or love of nature; but, in fact, knowledge of it plays a very important part in the life of almost all of them. Taken as a class, perhaps the level of their thought, feeling, and conduct is not very high, but no member of the class who thinks about his own life will doubt that the level would be very much lower if the class were deprived of the 'admiration, hope, and love,' which it gains through the knowledge of the beauty of nature. Whoever admits this will also admit that the non-existence in many townspeople of feeling and thought gained from knowledge of beauty would keep their life at a low level even if the place remained empty in them which is filled in other people by the results of the knowledge of nature. When one remembers that the place cannot be empty, but must be filled by thoughts and feelings springing indirectly from their surroundings as our thoughts and feelings do from our surroundings,—when one remembers this and remembers also what are the surroundings in Ancoats and Bradford of the children who hardly know what a flower is, one must feel that this ignorance of natural beauty must have almost insuperable power to keep their life at a very low level indeed. Modes of thought and feeling gained in childhood are so persistent, so hard to change, that it may be taken for granted that if familiarity with the beauty of nature is to prevent the existence of a life-long low level of thought and feeling, it must be gained in childhood. Only by help of our school system is it possible to make means of gaining some measure of familiarity with natural beauty reach the majority of children. The people in towns who are most ignorant of nature may be divided into two classes,—those who never or very rarely see beautiful natural objects, but could see them sometimes, either in the country nearest to the town where they live or in town parks, if they wished to do so; and those who sometimes see beautiful natural objects, but have eyes and minds so untrained for the perception of beauty that they hardly notice them. A passage in Mr. Browning's 'Fra Lippo Lippi' indicates the means which will be most useful for helping people of both these classes:—

'We're made so that we love
First when we see them painted, things we have pass'd
Perhaps a hundred times nor cared to see;
And so they are better, painted,—better to us,
Which is the same thing. Art was given for that,—
God uses us to help each other so,
Sending our minds out.'

The committee of the Manchester Art Museum are working on that principle. They know that if a few good pictures of the beautiful things which are found near every town, of the commonest wild and garden flowers, of common kinds of trees, birds, butterflies, of the simplest country scenes, lanes, fields, woods, be placed in schools, and the scholars be induced to notice them and feel something of their beauty, and to learn the names of, and gain ever so little knowledge about the things represented in the

pictures, the knowledge and feeling thus gained are not only sure to be added to whenever the children see beautiful things in the country and town parks, but will also give some of the scholars, both while and after they are children, motives for trying to see such things, and for trying to alter the conditions which now make the existence of such things in our towns impossible. The collections of works of art, which the committee are going to lend to schools in Manchester and Salford, will contain many other kinds of art; but they must contain good representations of the beautiful common objects which I have mentioned. Representations of such objects of a kind suitable for use in schools,—that is, of considerable size, and excellent in respect both of truth to nature and artistic quality,—are at present hard to get. No pictures of trees, except costly original drawings, are obtainable, and suitable pictures of other natural objects are very expensive. The action which Mr. Mundella promised that the Science and Art Department shall take will soon create a supply of the kind of pictures we need, but even when a supply exists, they will, of course, not be of any use to us unless we can buy them. At present we have so much other work to do in connexion with the art museum, all of which is as necessary as our school work, that we cannot afford to spend as much money on our school collections as is needed for them. We have received about 2,800, in money, and gifts of works of art worth about 4,000, and we have annual subscriptions of 1000, promised for four years. We need at least 5,000, more, and an annual income of 600, for four years. The Earl of Derby and the Earl of Wilton have both promised to help us if we receive a fair amount of local support. We need, besides money, the help of persons willing to take part in the pleasant work of giving explanations of pictures and art processes in schools and in the Queen's Park Gallery when it is finished."

ARCHITECTURE AT UNIVERSITY COLLEGE, LONDON.

THE following are the results of the examination of students in the Architectural Classes, 1883, under Professor T. Roger Smith:—

Fine Art Class.—Donaldson Silver Medal, H. H. Mow; prize of books, W. E. Potts; first-class certificate, * E. W. Knight; second-class certificates, H. Berney, A. T. Bolton, T. Leadbitter, S. H. Seager, R. H. Weymouth; third-class certificates, T. D. Atkinson, A. M. Buller, J. A. Minty, A. C. Wood, F. Taylor.

Construction Class.—Donaldson Silver Medal, H. Berney; prize of books, E. L. Conder; first-class certificate, * H. C. Harston, H. M. Buller; second-class certificate, H. S. Flower, T. Leadbitter, S. H. Seager, H. C. Wood; third-class certificate, E. Boardman, S. Clarke, J. A. Minty, J. F. O'Connor, W. H. Radfies, R. H. Weymouth.

Modern Practice Class.—Prize, T. Leadbitter; first-class certificate, * H. Berney, S. H. Seager; second-class certificate, F. Massie, J. A. Minty; third-class certificate, * C. H. Aitken, T. D. Atkinson, E. T. Boardman.

GATESHEAD HIGH SCHOOL FOR BOYS.

THE building known as the "High School for Boys" was opened last week. The building stands on a site of seven acres, sloping to the south and west, with a sunny aspect, and overlooking Ravensworth Vale. On entering the gateway the visitor is attracted by a porter's lodge. After walking a short distance the school is reached. It is built of red brick with stone dressings in the Tudor style, with diapered slate roof. At a prominent corner of the building stands out in bold relief a massive tower, in which it is proposed to place a large illuminated clock. Underneath is an observatory, which not only commands a beautiful view of the surrounding country, but will also be suitable for the instruction of the youths in the study of astronomy. The interior of the building is thus arranged:—There are six class-rooms, each of which is arranged for the use of thirty boys. Then there is a class-room for sixty boys; next a large chemical laboratory for the use of a number of students. In the centre of the building is a large assemblage-hall, capable of seating between 300 and 400 people, and a

dining-hall for youths attending the school from a distance. Not far apart are the private rooms for the head and under masters, the library, and a room for conversation. Underneath are capacious kitchens and sculleries. In each of the rooms are open fireplaces, and they are lighted in such a manner as to cause the light to fall on the left-hand side of the occupants. Besides this, arrangements are made for maintaining an equable temperature throughout the building by means of hot-water pipes. At the back part of the premises there is a cricket-field and lawn-tennis ground, and completely surrounding the field is a bicycle track. The head-master, the Rev. Thomas Adams, intends, we understand, to erect a house for the accommodation of a large number of boarders, on the Eton principle. It is also intended to build a large gymnasium, a cricket pavilion, and workshops, in which pupils will be taught carving, joiner-work, and other trades, the idea being that each boy shall learn some handicraft, in addition to a first-class education.

Messrs. Oliver & Leeson, of Newcastle, are the architects; Mr. J. S. Millar, the contractor; and Mr. David Lindsay, the clerk of the works.

VALUE OF BUILDING LAND AT HENDON.

ON Tuesday evening Mr. Richard J. Collier submitted for sale, at the Old Welsh Harp Hotel, Hendon, a number of building plots on a property called the Upper Welsh Harp Estate, situated on high ground, with a commanding view of Harrow and the surrounding neighbourhood, the expansive sheet of lake water at the Welsh Harp meandering at the foot of the property. The printed particulars stated that 82 lots would be submitted, but at the commencement of the sale the auctioneer stated that 39 of the lots had been disposed of by private contract. The remaining 43 lots were offered, several of them being sold, those fronting the Edgware-road, having a frontage of 18 ft. and 80 ft. in depth realising 1000, each. Other lots with similar frontages and depths, to new roads on the estate, were sold for sums varying from 600, to 620, each. A building estate at Hendon, immediately adjoining the above, has also just been disposed of by Mr. Collier. The estate, which comprises 27 acres, was offered for sale at the Auction Mart, about a fortnight ago, in three lots. One lot of 12 acres was sold for 8,500, being at the rate of a little more than 7000, per acre. The other two lots, consisting of 15 acres, were withdrawn, but last week they were disposed of by private treaty for 10,000, being at the rate of about 7500, per acre.

THE BUILDING CLAUSES OF THE POLICE BILL, SCOTLAND.

A DEPUTATION from the Glasgow Institute of Architects waited upon the Lord-Advocate at the House of Commons to urge the deletion from the Burgh Police and Health (Scotland) Bill of all clauses relating to building, and to advocate the incorporation of those clauses in a separate Act. The gentlemen present were:—Mr. James Thompson, president of the Institute, Mr. John Honeyman, and Mr. Campbell-Douglas.

Mr. Thompson stated that the members of this deputation had advocated for many years the adoption of regulations for building separated from the Police Bill. They were convinced that it was hopeless to expect many different corporations to act in concert in a matter of this kind, and they did not think that such a measure as they desired should be introduced by a private member, but by the Government. The principle they desired to state was that laws relating to the construction of buildings could be best framed and carried out by architects, who devoted their whole time and attention to the subject. The laws that were necessary for the proper use of buildings they proposed to leave to the administration of the Police Commissioners. In London there existed such an Act as they desired to see passed,—the Metropolitan Buildings Act,—which became law in 1855. This Act had worked satisfactorily since that year, and they desired to see a similar measure passed for Scotland, and particularly for Glasgow. They did not appear as owners of house property, but as advisers of the owners of property accustomed to appreciate the effect of those laws which related to heritable property of proprietary rights. They agreed with the Glasgow Landlords' Association in thinking that many of the clauses in the Police Bill were objectionable, but they highly approved of it in so far as it dealt with the subject of Mr. Honeyman corroborated what had been stated by Mr. Thompson,—that their earnest desire was that the Legislature should adopt precisely the same course with regard to Glasgow and other towns in Scotland as it had followed with respect to London in 1855. They had the Metropolitan Local Management Act of 1855, and the Metropolitan Building Act of 1855, and now they desired to have a Burgh Police and Health (Scotland) Act and a Burgh Building

(Scotland) Act. They submitted that the experience of the past twenty-eight years had amply proved the wisdom of separating the building clauses from the General Police Act, especially by the working of the Building Act, under which it is an enormous amount of work had been done. The London Act secured more substantial benefit to the public, and more even-handed justice to the building owner, than any other building law that had been devised. The proposal to apply it to Scotland would meet much opposition, but he did not think that should be considered an insuperable objection in view of the benefit that would be conferred.

Mr. Campbell-Douglas also spoke.

The Lord-Advocate, addressing the deputation generally, said the ideas which they had laid before him were somewhat new. The measure which they proposed would be a wide-reaching one, affecting a great many people, and it would be necessary to have the sanction of prevalent public opinion before proceeding with it. He did not think it would be advisable that any man or any Government should introduce such a bill into Parliament without having well ascertained the general feeling of the public upon the subject.

THE DWELLINGS OF THE LABOURING CLASSES.

ON the 27th ult. the annual meeting of the Society for Improving the Condition of the Labouring Classes was held in Willis's Rooms, St. James's, the Rev. Canon Nisbet, in the unavoidable absence of Lord Shaftesbury, the president, occupying the chair.

The secretary submitted the annual report, which stated that the model house in Strentham-street, Bloomsbury, comprising 54 dwellings for families, was fully occupied. The Portpool-lane houses, which accommodated 20 families and 128 single women, had been satisfactorily occupied. The public wash-house in St. Giles's was largely resorted to and much appreciated by the poor in the neighbourhood, the number of washings during the year being no less than 26,000. The Dyott-street, Bloomsbury, lodging-house for 104 single men returned an average of 87, but this was owing to depression in trade and so many men being out of employment. Mackintosh-street lodging-house for 72 single men had averaged 70, and the renovated dwellings in Wild-court were fully tenanted. There were 73 families in Clarke's-buildings, and the Tyndall-buildings, Gray's Inn-road, for 87 families and lodging-houses had had an average tenancy. The building, however, was about to be removed to permit of improvements. The balance-sheet showed that the receipts for the past year from all sources were 5,814. 6s. 6d., and with the balance in hand at the beginning of 1882 of 10,000, the total was 15,814. 6s. 6d., and the total expenditure was 5,944. 9s. 5d., leaving a balance of 2421. 13s. 2d. The property belonging to the society was estimated at 35,371. 11s. 11d., and the general liabilities amounted to 2,010. 6s. 6d., leaving assets to the amount of 15,265. 4s. 5d.

Captain Douglas Galton, in moving the adoption of the report, said that this society had initiated one of the grandest movements that ever was begun in this country, which was to improve the dwellings of the poor. It meant the diminishing of the bare, dreary, and sickness, while it provided them with homes which cultivated in the minds of the occupants morality and patriotism. He had often directed attention to the death-rate in the metropolis, and it was said to be a low death-rate when it was 21 per 1,000; but when they went into the back streets and narrow courts, and saw the death-rate rose to 40-50, and in some cases 60 per 1,000, and that was due to the wretched dwellings which the very poor were compelled to occupy. There were no means by which the dirt could be removed from these houses, and where pure air could not circulate through them the result was sickness and death. It was now nearly forty years ago when that society stepped forward to provide better dwellings for the labouring classes, and the result was that many other societies had since sprung up having the same objects in view.

The Marquis of Hertford moved the re-election of the committee, and said that he regretted the absence of his noble friend, who had always been present at their annual meetings, and given them his valuable advice. It was Lord Ashley who drew the attention of the late Prince Albert to the deplorable state of the dwellings of the poor in Windsor, and he at once took up the matter, and had erected some forty or fifty houses. The result was that builders followed his good example, and in a short time the poor had excellent houses. There were model dwellings all over the country in imitation of those which they had erected.

Legislation against Panics.—Mr. Keir-nard, in the House of Commons, asked the Home Secretary whether he was prepared to extend the scope of the Buildings Act, now applicable only to the metropolis, to the provinces, and the amendments requisite for diminishing the dangers of panic in crowded assemblies.—Sir W. Harcourt replied that he had a draft Bill prepared with the object mentioned last year, and if he saw any chance of its passing into law he should be happy to introduce it this year.

* With marks sufficient to qualify for a prize.

BUILDING PATENT RECORD.*

APPLICATIONS FOR LETTERS PATENT.

- 3,109. E. G. Banner, London. Construction of pavements and roadways to accommodate telegraph wires, &c. June 22, 1883.
- 3,146. M. Syer, J. Gilmore, and W. R. Clark, London. Flushing apparatus and waste-no valves. June 25, 1883.
- 3,151. W. Corliss, Providence, U.S.A. Fire-proof buildings, &c. June 26, 1883.
- 3,154. J. McI. Shaw, Glasgow. Cooking-ranges. June 26, 1883.
- 3,157. T. H. Rees, London. Manufacture of tiles, &c., for the covering of walls, floors, &c. June 26, 1883.
- 3,169. W. R. Lake, London. Manufacture of matting, &c., for covering floors. (Com. by J. Bray, Washington, U.S.A.) June 26, 1883.
- 3,181. C. W. H. Brock, Bishop's Waltham. Means for holding and adjusting roller-blind cords. June 26, 1883.
- 3,191. P. Efferly, London. Brick-making machine. (Comp. spec.) June 27, 1883.
- 3,200. H. Burgin, Walthamstow. Appliances for inducing air from chimneys, &c. June 27, 1883.
- 3,204. J. Farrimond and J. Whittaker, Southport. Ventilating water-closets, &c. June 28, 1883.
- 3,212. W. E. Diehl, Philadelphia, U.S.A. Door-retention stop. June 28, 1883.

NOTICE TO PROCEED

has been given by the following applicants on the dates named:—

June 26, 1883.

923. T. J. Mullings, London. Sash-fasteners. Feb. 20, 1883.
933. W. Lee, and D. F. Lee, Maidstone. Arrangement of blocks for walls and building structures. Feb. 20, 1883.
971. P. H. Collins, Winchester. Window-fasteners. Feb. 22, 1883.
988. H. Longden and C. F. Longden, Sheffield. Apparatus for heating by hot water. Feb. 23, 1883.
- 1,028. W. Shepherd, London. Construction of furniture and other repositories. Feb. 26, 1883.

June 29, 1883.

- 1,191. W. G. Hudson, Manchester. Construction of chimney flues, &c. March 6, 1883.
- 2,576. J. Garlick, Birmingham. Construction of floorings, platforms, &c. May 23, 1883.
- 2,698. J. Waple, London. Chimney tops and ventilators. May 30, 1883.

ABRIDGMENTS OF SPECIFICATIONS,

Published during the Week ending June 30, 1883.

- 5,058. G. G. Page, London, and E. Nunn, Salisbury. Bathing and promenade piers. Oct. 24, 1882. Price 6d.
- The piers are built up to enclose a space in which is suspended a cage or frame, with a perforated bottom, which can be raised or lowered by hydraulic or other power out of or into the water.
- 5,107. W. T. Goulden and C. F. Casella, London. Instruments for indicating excessive variations of temperature in buildings, &c. Oct. 27, 1882. Price 6d.
- A wire is sealed within the tube that contains the mercury, to which is connected an adjustable wire, and when the mercury has reached a certain height, as determined by the adjustable wire, it makes an electrical current, and rings an alarm.
- 5,115. T. H. Collins, Winchester. Manhole doors for passages leading down to sewers, &c. Oct. 27, 1882. Price 6d.
- A tray-shaped cover rests on the manhole frame, the bottom of which is raised dome-shaped in the centre, and an open basket suspended therefrom contains charcoal, through which the sewer-gas as it issues has to pass, whereby the same is disinfected. The surface-water passes off by the sides of the dome-shaped bottom into the sewer, through pipes terminating at their lower ends in a bend, by which they are sealed.
- 5,125. A. J. Boulton, London. Door-checks or governors. (Com. by the Elliott Pneumatic Door-check Company, Boston, U.S.A.) Oct. 27, 1882. Price 6d.
- A cylinder which is secured preferably to the lintel of the door contains two pistons, one being fixed on the rod; the other, which is on the power side of the former, travelling loosely on the rod. In the loose piston are valves or passages for the air, so that there is a double cushioning force exerted when the fixed piston is being driven back. A coiled spring is placed in the other end of the cylinder, which acts on the fixed piston to force it back, and the rod is connected by levers with the door in such a manner that when the door is opened an equilibrium is created, which keeps the door in position, but a slight

exertion of force only is required to close the door, when the double cushioning prevents any slamming.

5,186. J. Weller, London. Stove-pipe attachments. (Com. by C. Lovell, Massachusetts, U.S.A.) Oct. 31, 1882. Price 2d.

A quadrantal elbow is pivoted on the lower end of the main pipe, which is of a square section, and flexible aprons are fitted to the ends of the elbow, which extend inside the pipe. The stove clungs are attached to the bottom part of the elbow. (Pro. Pro.)

5,250. W. D. Scott-Moncrieff and W. Dodds, London. Valve apparatus for supplying baths, &c., with water. Nov. 3, 1882. Price 6d.

Hot or cold water is admitted through separate valves into the same pipe, whence it is discharged mixed in such proportions as may be desired into the bath, &c., through independent valves.

5,259. A. E. Crisp, London. Window-fasteners. Nov. 4, 1882. Price 6d.

A spring clip is fastened on the lower sash, which catches the knob of the lever when it is brought over from the upper sash to receive the window, and prevents the lever being turned back from the outside.

5,266. R. Chapman, Patricroft, & J. Hibbert, Manchester. Apparatus for closing doors and windows. Nov. 4, 1882. Price 6d.

The bottom of the door is mounted in a shoe, with a vertical spindle, on which is a double cam, against which rest projections on loose tappets on the spindle above and below the cam. In the box in the floor which encloses the apparatus are mounted two levers and chains are led from the tappets to the long ends of the levers, the other ends of which are held by springs. When the door is opened the cam moves the tappet, which actuates the lever, drawing out the spring, which last, when the door is released, returns it to its former position.

5,283. W. Kennedy, Glasgow. Translucent plates or sheets, for use as substitutes for glass in roof-lights, &c. Nov. 6, 1882. Price 4d.

These are made of perforated metal sheets or plates, the perforations in which are closed with translucent paper, woven fabric, or gelatine, &c.

5,310. J. G. White, Bo'ness. Cooking-ranges. Nov. 7, 1882. Price 6d.

These have revolving fire-baskets, combined with suitable dampers, &c.

1,204. W. R. Lake, London. Tongs for domestic purposes. (Com. by A. S. Adams, Boston, U.S.A.) March 6, 1883. Price 6d.

In a hollow handle is a rod, controlled by a spring, and two movable jaws are pivoted to the handle and connected with the rod in such a manner that when the rod is depressed the jaws are extended, and vice versa.

ARCHITECTURE AND LITERATURE.

SIR,—The articles which have appeared in the *Builder* of late have deeply interested me. They exhibit an uncommon appreciation and deep research into the subject which has called forth much admiration. I would offer a few remarks which shall be, at least, brief. While perusing the writing of some of the Elizabethan dramatists I was struck by a most beautiful scene in a play written by John Webster, about the year 1623. The play in which it appears is called "The Tragedy of the Duchess of Malfi." It exhibits a feeling of interest in the ruins of past ages seldom to be met with at that period:—

"Yond's the cardinal's window. This fortification
Grew from the ruin of an ancient abbey;
And to yond side o' the river lies a wall,
Piece of a cloister, which, in my opinion,
Gives the best echo that you ever heard,
So hollow and so dismal.

I do love these ancient ruins.
We never tread upon them but we set
Our foot upon some reverend history."

Savage possessed, or professed, a greater love for architecture than, perhaps, any poet. I will but quote one passage; it occurs in his poem "The Slanderer." After complimenting "Gibbs" in a lavish manner, he proceeds:—

"The sun shines broken, through yon arch, that rears
This once round fabric, half deprived by years,
Which rose a stately colonnade, and crown'd
Encircling pillars, now unfaithful found;
In fragments these the fall of those forbode
Which, nodding, just upheave their crumbling load.

An equidistant across yon vale is laid,
To descend through a ruin'd arch betray'd,
Whirl'd down a steep." &c.

Ben Jonson, at least, looked upon architects as "designing fellows," and in the play "Every Man in his Humour" we come across the following remarkable colloquy:—

Wellborn. "Why, Brainworm, who would have thought thou hadst been such an artificer?"

Knowell. "An artificer! An architect. Except a man had studded begging all his lifetime and been a weaver of language from his infancy for the clothing of it, I never saw his rival."

He also shows his knowledge of architects' instruments in the play of the "Silent Woman," where he puts these words into the mouth of one of his characters:—"For the mathematics,

his square, his compasses, his brass pen, and black-lead to draw maps of every place and person where he comes."

But I fear I digress. I remember to have perused an essay which was read before the Archaeological Association, the exact title of which I forget, but the writer treated on prose writers as you have on poets; also an article on "Shakespeare as a Builder." If you would kindly refer me to the numbers containing these papers I should feel indebted to you.

W. NORMAN GETTING.

SCHOOL BOARD CONTRACTS.

SIR,—The system of contracts for the School Board of London is not honest to the overburdened ratepayers: it ought to be, and it shall be, opened to the whole of the builders of London. In my opinion the schools that cost the most are built the worst. Mr. Lobb said 82. per head ought to be the limit. I say the schools can be built for 61. per head for children, not including the land, while some have cost 141. and as high as 161. 10s. I will ask any practical man to look for himself at the school at Whitefield-street, Tottenham-court-road, costing over 161.; then go and look at the school at North-end-road, Fulham, 87.; and he will say for himself the 87. school is the best. Then let him go to Tottenham and see one of the best-built schools near London, with a hall capable of holding 1,000 people, closely packed; deduct for this hall 22. per head. Here is the best school in London for 61. per head. I always understood the custom was, when certain articles were mentioned by the architect in the specification, for the builder to pay for them, and get his discount; but see what is the rule at this Board. There is provision for a lump sum; this sum the builder puts in his contract; the architect deducts it from the builder and pays the sub-contractor by cheque direct from the Board, thus showing the twenty-one builders on the list were not respectable. I am afraid, sir, the quantities will want looking into. We want a few good practical men on the Board. In my opinion it would be cheaper to get ten good practical workmen and pay them 100l. per annum; by this means the Board would save 100,000l. per annum.

ONE OF THE BOARD.

BUILDERS AND SUPPLIES.

SIR,—I have been lately brought into contact with builders, and I find that many of them, especially those who cover estates with houses, are merely tools in the hands of the ground landlord and the lawyers. Money is advanced at first in sufficient sums to enable the builder to obtain a name for prompt payment, and thus to get credit on monthly account; but just before completion of the estate he tells you he is going to have a draw; but there is some slight legal difficulty, and you go on supplying materials to the end of the month, when you are rewarded by a notice of the bankruptcy of your customer. In one case that came recently under my notice, when the builder went to receive 1,000l. to enable him to meet his engagement, the lawyers presented him with a bill of costs receipted for 960l. and a cheque for 40l. It is needless to state that the creditors did not get 20s. in the pound. Could not a society be formed of manufacturers of, and dealers in, building materials, called the Builders' Trade Protection Society, and a manager appointed who would, at the request of any member, examine into the relations between the money-lender and the builder, and where necessary take the estate in hand, and pay off the mortgage? I am sure thousands of pounds annually would be saved to the trade, which now go into the hands of men who advance money on mortgage, not to obtain the interest, but to obtain the property at about two thirds or one half its value. I enclose my card, but subscribe myself,

AN EXECUTOR.

"THE COST OF GETTING YOUR OWN."

Your correspondent is wise in calling attention to the above. I am, however, afraid that "the cost of getting your own" will never be materially and substantially altered until we of the mercantile community look out for ourselves. There are too many lawyers in Parliament, and they are looking after their own and the own of others too. Let us have some commercial men there in their places,—matters would soon be altered then.

M.

LAND DRAINS IN GROUND SOLD IN BUILDING PLOTS.

SIR,—There are old land drain-pipes which, now that I have lowered my ground, discharge their water into my premises. Also, mine being the lowest piece of ground, the water from the hard gravel paths, &c., runs into and floods my yard. What can I legally do, or require the adjoining owner to do, to prevent such

IMPOSITION?

* Compiled by Hart & Co., Patent Agents, 186, Fleet-street.

VILLAGE MUSEUMS.

SIR.—Every village ought to have its museum. A 2000. room, 40 ft. by 25 ft., will do where no more can be afforded. It should contain a plan of the parish and views of the principal buildings and mansions. Specimens of minerals from all parts of the parish and from different strata depths, with complete geological sections, north to south and east to west, cases of insects, and stuffed birds and animals peculiar to the district. Also dried or living plants growing in the neighbourhood with the names appended. Such an institution would be of great value to collectors of topographic notes, and would afford employment for the many spare hours of the well-educated classes of the village. Of course, any spare room could be allotted to objects of universal interest for the enlightenment of the inhabitants. If any village near this town of Colchester will be first to carry out this idea, I will volunteer to make a coloured view of their parish church, or any other interesting local building, as a contribution.

WALTER SCARROILL.

THE EAST-END BRIDGES QUESTION.

THE residents at the East End continue to agitate the subject of additional bridges across the Thames below London Bridge. Last week a meeting was held in the Vestry Hall, Cable-street, St. George's-in-the-East, at which the rector of the parish, who presided, said it was fair ground for complaint when half the population of London had twelve bridges, whilst the other half had no bridge accommodation worth mentioning. A resolution was passed at the meeting to the effect that at least three bridge communications across the Thames, east of London Bridge, were justified by the wants of the commercial and industrial population at the east end of the metropolis. It was endeavoured to be shown that this additional bridge accommodation could be given without interfering with the river traffic. The feeling of the meeting appeared to be in favour of low-level bridges, on the ground that high-level bridges and tunnels under the river alike presented difficulties. Mr. Ritchie, one of the members for the Tower Hamlets, in addressing the meeting, said he held it to be a public scandal that the great industrial population in East London, and on the south side of the Thames, containing such a vast number of people, should, for such a length of time, have remained without the advantages of communication across the river. He strongly supported three additional means of communication, observing, however, that these three communications would, of necessity, involve a vast expenditure, and it was a question whether they should not endeavour to press upon the powers that be that if one or another of the schemes should have priority, it should be in a central position. If they could obtain the coal and wine dues towards the expense of constructing these bridges, well and good, but they must have the communications, and whether the money was to be raised by a tax upon coal and wine, or by a rate over the whole of the metropolis. If the governing body of London had made up its mind that these communications were necessary it would be a disguise if they were not completed, whatever source the money had to come from.

The New South Wales College.—The Cardiff Town Council, at a meeting on Monday, considered a resolution of the South Wales College Committee asking the Corporation to acquire the old infirmary, as the committee considered it a very suitable building in which to commence operations. The Infirmary Committee were also willing to dispose of the building and site for 10,000l. The Council considered the building most suitable, and they resolved to ask the Free Library Committee to arrange for the classes in connexion with the college to commence there.

Civil and Mechanical Engineers' Society.—A large number of members of this Society visited the City Extension of the Metropolitan and District Railway, on the 25th of June, and were conducted over the works by Mr. E. P. Seaton, the Resident Engineer. Among those present were the President, Mr. R. H. Twigg, M.I.C.E., and Messrs. Street, Walmisley, Munday, G. R. W. Wheeler, Willcocks, and Cuxon (hon. secretary).

LIABILITY OF TENANTS FOR ROAD REPAIRS.

A NOVEL DEFENCE.

A CASE of importance to occupiers of houses came before the Lord Mayor's Court last week, in which the Rev. W. D. Morrice, owner of the Aberdeen Park Estate, was the plaintiff, and Mr. Alfred Donnison was the defendant. The defendant is one of the plaintiff's tenants on the estate, and the action was brought to recover 7l., the amount said to be due from him for his apportionment of the repair of the roads in the park, which is a private estate. On behalf of the plaintiff it was stated that by deed he let the house to the defendant on lease for eighty-six years from September, 1868, he covenanting to pay, in conjunction with the other tenants, his proportion of expenses of repairing the pavement. These were apportioned upon the assessed value of the houses, and the defendant had twice paid for repairs on this principle. When the last call was made upon him for the amount now sued for, he objected to the system on which it was levied, contending that it should be upon the frontage of the house and not upon the value. Upon this principle his liability amounted to 4l., and this sum he paid into court. The question before the jury, therefore, was upon which of the two principles the charge should be made, and expert evidence was called on each side in favour of the two contentions.

The jury returned a verdict for the plaintiff, in which the judge said he agreed, observing that it seemed to him that it would be monstrous to charge by frontage where one person who occupied a house of no greater value than his neighbours, but who chanced to reside in a corner house, would have to pay not only for the frontage of his house, but for the side of the house and garden also.

THE GOVERNMENT AND THE BUILDING ACTS.

AT Worship-street Her Majesty's Commissioners of Works were summoned by the Metropolitan Board of Works to show cause why they, being the owners of a structure in Victoria Park, should not be ordered to pay 1l. 2s. 3d., the fees incurred by the surveying of the building by Mr. Alexander Payne, district surveyor, The Hon. A. Gathorne-Hardy appeared to oppose the claim for the Commissioners; Mr. Norman Bevan appeared for the Metropolitan Board of Works.

The summons was taken under the Metropolitan Building Act, 1885, part II., which gives power to district surveyors to survey any structure, and if found dangerous, to give notice, and send an account of fees. The Board of Works, Mr. Bevan explained, maintained that they had a right to interfere with any building within their area.

The Hon. A. Gathorne-Hardy said this was a very important question, and had not been raised since 1865. The contention he should argue for the Commissioners of Works was that the buildings employed for Her Majesty's use and service were exempted in the second part of the Act, as in the first part. He agreed that there was no special exemption in part II., but the words of the first part, section 2, viz., "The following buildings and works shall be exempt from the operations of the first part of this Act:—Bridges, &c., Her Majesty's royal palaces, and any buildings in the possession of Her Majesty, her heirs and successors, or employed for Her Majesty's use or service," implied a similar exemption throughout the whole Act. He maintained that, notwithstanding these exemptions were not specified in part II., it did not do away with the general principle of law, that the Crown was not bound by any Act of Parliament unless it was specially provided accordingly.

Mr. Bevan challenged Mr. Gathorne-Hardy's assertion that the Crown property was exempt. It would not be competent for the public authorities to pass a dilapidated building which might be dangerous to passers-by simply because it was Crown property.

Evidence having been given by the District Surveyor as to surveying and condemning the building (a lodge in Victoria Park), the magistrate adjourned his decision for a fortnight.

Mr. Hannay, in giving judgment, said it was generally understood that the Royal palaces, great public buildings such as the Bank of England, and other places, were exempt from the minute provisions made for the care of the ordinary class of house property. Other provisions of the statute, again, were quite impossible of application to Crown property. The 73rd, 74th, and 80th sections of the Act went beyond prerogatives, and he considered

that the argument for the Commissioners that the exemption of part I. applied by implication to the whole of the Act was overpowering. He had come to the clear conclusion that Crown property came within the operation of part II. of the Act, and should, therefore, dismiss the summons, but would grant a case if desired.

Mr. Bevan, for the Board of Works, asked if he might take the decision as meaning that the Board had no jurisdiction over Crown buildings?

Mr. Hannay said that in some cases the Act gave them jurisdiction, but the Commissioners of Works had surveyors of their own, who were responsible for the safety of the buildings belonging to the Crown.

Miscellaneous.

The Calamity at Sunderland: Verdict of the Jury.—The coroner's inquest was resumed on Monday, and concluded on Wednesday, when the jury returned the following verdict:—

"We find that Frederick Mills and others met their deaths by suffocation on the stairs leading from the gallery in the Victoria Hall, on the 16th of June, 1883, through the partial closing of a door on the landing, fixed in its position by a bolt in the door, but by whom there is not sufficient evidence to show; that the managers of the entertainment be censured for not having provided sufficient caretakers and assistants to preserve order in the Hall on that occasion, and to believe that a partnership existed between Mr. Coates and Mr. Fay. We consider the modes of entrance and exit in the Hall are sufficient, except the door at which the fatality occurred, and we would recommend its removal at once. We attach no blame to the caretaker, but suggest that in future the proprietor of the Hall should instruct him to show to all the persons who engage the Hall all its means of ingress and egress."

The evidence seems quite clear that the architect of the building, Mr. Hoskins, had nothing whatever to do with placing the door on the "fatal landing," and it seems somewhat more than careless that the contrary assertion should still be occasionally made.

Salisbury Cathedral Organ.—The work of encasing this organ has been finished. The case is made of wainscot oak. The fronts, or those parts towards the choir, are divided in height into two divisions, the width being also divided into three principal panels or divisions, which are subdivided each into three elaborate tracery panels, the spandrels of which are filled with richly carved foliage of an Early English character. Each front is surmounted by a coved head, having an embattled and carved cornice. The paeuelling of the casing towards the aisles is similar in treatment to that already described, but the upper panels only are tracery. The return ends of the casing consist of merely plain paeuelling. There is much beautifully-designed detail in the work, which has been as skilfully executed, the carving being chaste and elaborate. The work has been executed from the designs of the late Mr. Street, by Mr. A. Robinson, of the Bloomsbury Art Carving Works, London.

British Master Builders' Association.—On Tuesday, the 10th inst., the annual meeting of Master Builders' Association of Bristol will take place, the programme arranged being of a most attractive character. The party purposes leaving Bristol by train in the morning for Chepstow, and upon arrival at the latter place, the visitors will proceed in breaks to Raglan Castle, a delightful drive of fourteen miles. Luncheon will be partaken of in the castle grounds, the party returning to Chepstow in the afternoon for dinner.

Society of Arts Conversazione.—It has been found necessary to alter the date of the *conversations* from the 11th to the 25th July, on account of the entertainment proposed to be given by the Savage Club. It will be held, as previously announced, at the Fisheries Exhibition, South Kensington, and their Royal Highnesses the Prince and Princess of Wales will be present. The members' invitation cards will be sent out shortly.

A New Pier for Swansea.—The new east pier, which stretches out into the sea for a distance of 1,200 ft. from the entrance of the new Prince of Wales Dock, has now been completed by Mr. Walker, of Cannon-street, London, the contractor. It is partly of concrete and partly of creosoted wood, and stone. There is on the top a wide promenade, and a handsome railing.

Public Buildings and Dwellings in the United States.—It is stated that the Federal Government has paid for public buildings \$3,404,000 dollars, those in Washington and the ports not included. The total appropriation was \$10,000 dollars for a Custom-house in New Orleans in 1807. The buildings which cost upwards of 1,000,000 dollars are the following:—Custom-houses and Post-offices.—Chicago, \$816,000 dollars; St. Louis, \$5,620,000 dollars; and Cincinnati, 4,650,000 dollars. Custom-houses only.—Boston, 1,192,000 dollars; New York (now used as Sub-Treasury), 1,131,000 dollars; New Orleans, 4,156,000 dollars; and Charleston, 2,802,000 dollars. The Court-house and Post-office at New York cost 9,341,000 dollars; and that of Philadelphia 5,134,000 dollars; the Post-office and Sub-Treasury at Boston, 5,271,000 dollars. In the year 1882 more than 300 houses were erected in New Orleans, at a cost of 2,600,000 dollars; and a large number of superior houses are now going up in various parts of the city. In New York City 2,561 houses were built in brick and stone, at an outlay of 49,041,167 dollars, being upwards of double the average for several years past, which was only 20,000,000 dollars annually. Of the above dwellings, 585 were single houses, 1,267 were in flats, and there were eight hotels. The average cost of the buildings was no less than 19,200 dollars, or nearly 4,000l.

The Value of Property in Somersetshire. Mr. J. C. Wallop sold by public auction some very valuable building and pasture land situated in the neighbourhood of Tatten, Somerset, last week, the amount realised by the sale being £888. The chief lots were Bishop's Well Farm, Tatten, about nine acres and a half in extent, sold for 800l.; 3a. 1r. 11p. of pasture and orchard land at Tatten for 450l.; and 4a. 2r. 4p. of land known as Stowell's Paddock and Quarry Ground, Tatten, for 425l. Mr. George Nichols, auctioneer, of Bristol, disposed of by sale on Wednesday, 2,940l. worth of valuable accommodation land, eligible for building purposes. The lots sold included a farm-house with 13a. 2r. 5p. of land situate at Cockshot Hill, near Bristol, knocked down to Mr. Robert Jones for 1,400l. Mr. E. Jones was the purchaser for 420l. of lot O, consisting of 5a. 3r. 35p. of pasture land in the parish of Mangotsfield. A close of building and of nearly 2 acres in extent was sold for 400l. At Wilton Messrs. Hawks & Risdon, auctioneers, sold four cottages and three building sites, the former making 300l., and the latter, of 25p. in extent, was disposed of for 90l. Last week Mr. George Nichols, Bristol, put up to the hammer a freehold estate, called Church Farm, containing together 112 acres, 59 being pasture, and 53 arable, situated in the parishes of Telford and Woolverton. Mr. Gouldsmith was the purchaser of the property for 4,900l.

Opening of New Board Schools at Teworth, near Gateshead-on-Tyne.—The fifth block of school buildings erected by the Teworth School Board at Windy Nook has just been opened for the reception of scholars. The schools previously erected by the Board are situate at High Felling, Bill Quay, Felling, Felling Shore, and Wardley, and these, with the new buildings, will, it is expected, meet for the present the educational wants of the district. The new buildings are placed upon an open site to the east of the village. They are built entirely of stone. A lofty bell-turret surmounts the main roof, and the buildings form a pleasing and substantial group. Accommodation is provided for 450 children. Private rooms are attached to each department for the use of the teachers, and cap-rooms and lavatories for the children. Provision is also made for a caretaker to reside near the premises in a detached cottage. The buildings are heated throughout by means of hot-water in pipes and coils, and special attention has been given to the ventilation of the schoolrooms. The works have been carried out in a satisfactory manner by Messrs. Greason & Stockdale, of Gateshead, their subcontractors being Mr. Hutchinson, mason; Mr. Rule, plasterer; Mr. Blenkey, plumber; Mr. Burn, slater; Mr. Almond, painter and glazier; and Messrs. Walker & Emley, hot-water engineers. The Wardley schools were designed by Mr. Ord, of Durham; and those at High Felling, Bill Quay, Felling, Felling Shore, and the Windy Nook schools, just completed, by Messrs. Oliver & Leeson, of Newcastle-on-Tyne.

Exhibition at Cork.—The Industrial and Fine Art Exhibition at Cork was opened on Tuesday last. We shall say something more about the building and its contents next week.

Tricycle Union.—We have before us a prospectus of the Tricycle Union, a special central organisation originated by the chief metropolitan tricycle clubs for the protection and encouragement of tricycling throughout the kingdom. The Tricycle Union is open to club-men, unattached riders, and all persons interested in tricycling. As the subscription for 1883 is fixed at the nominal sum of 1s., the Tricycle Union will doubtless obtain the practical support of all lovers of this new means of amusements and locomotion. Forms of application for membership can be obtained by sending a post-card to the hon. treasurer, Mr. F. S. Cobb, 8, Church-road, Willesden.

Corporation Finances.—From the report of the accounts of the Chamberlain and Bridge-masters presented at the Common Hall on Monday, we gather that in respect of the City's cash the receipts for the past year (including the sum of 19,248l. 5s. 3d. received from the sale of premises, 1,005l. 10s. from the sale of securities, 354,450l. 10s. from loans raised, and 80,000l. from the reserve fund) were 769,273l. 5s. 3d.

TENDERS.

For repairs and painting to 12a, Myddleton-square, Clerkenwell. Mr. W. P. Griffith, architect.
Lidstone.....£109 0 0
Steel Bros.....98 0 0
Minton.....96 0 0
Fricker.....96 10 0
Egan (accepted).....84 17 0

For the erection of new premises at the corner of St. Mary-street, and High-street, Wallingford, for Mr. Harry Harris. Messrs. Brown & Albany, architects, Reading.
Dodd.....£1,646 0 0
Smallbone.....1,564 0 0
Williams.....1,469 0 0
Brashear & Son.....1,444 0 0
Werham.....1,392 0 0
Weaver.....1,383 0 0
Bottrill.....1,384 0 0
Kingerlee (accepted).....1,374 0 0

For the erection of new premises, Broad-street, Reading, for Mr. R. Brigham. Messrs. Brown & Albany, architects, Reading.
Woodroffe & Son.....£2,300 0 0
Strong Bros.....2,338 0 0
Werham.....2,266 0 0
Weaver.....2,229 0 0
Bourton.....2,170 0 0
Kingerlee.....2,140 0 0
Higgs.....2,130 0 0
Bottrill.....2,086 0 0
Seale.....2,037 0 0
Simonds (accepted).....1,967 0 0

For the erection of a pair of villas, Lorne-street, Reading, for Mr. John Grimes. Messrs. Brown & Albany, architects, Reading.
Bottrill.....£1,050 0 0
Kingerlee.....949 0 0
Taylor (accepted).....892 0 0

For villa residences, Lower Cross-road, Hemel Hempstead, for Mr. H. Mutton, of Queen-street, Hemel Hempstead. Mr. P. Foster Woodman, architect, St. Albans, and Hemel Hempstead.
L. Scar.....£720 0 0
W. Seal.....660 0 0
C. Monk.....660 0 0
E. Horn (accepted).....600 0 0

For reinstatement after fire, and additions to, straw-bale factory, Redbourne, for Mr. A. Allen, of Redbourne. Mr. T. Foster Woodman, architect, St. Albans, and Hemel Hempstead.
J. & W. Savage.....£271 0 0
E. Horn.....235 0 0
G. Philbey.....230 0 0
J. Pratt (accepted).....202 0 0

For alterations and decorations at 17, Belize Park, Hampstead, for Dr. Westland. Messrs. Chadwick & Sons, architects, 17, Belize Park-terrace (accepted).
G. Snow, Belize Park-terrace (accepted).

For rebuilding "Hatchett's" Hotel and White Horse Cellars, Piccadilly. Contract No. 1. Messrs. W. S. Weatherley and F. E. Jones, architects. Quantities supplied:—

	Bath.	Ancestor.
Mowlem.....	£24,400 0 0	£25,000 0 0
Manley.....	23,850 0 0	24,750 0 0
Ansell.....	23,870 0 0	23,890 0 0
Macey.....	23,355 0 0	23,845 0 0
Boycroft.....	23,296 0 0	23,890 0 0
Brass.....	23,230 0 0	23,607 0 0
McLachlan.....	23,032 0 0	23,322 0 0
Ryder.....	22,960 0 0	23,270 0 0
Collis.....	22,786 0 0	23,695 0 0
Shaw.....	22,628 0 0	23,126 0 0
Chappell.....	22,570 0 0	22,868 0 0
Grover.....	21,848 0 0	22,268 0 0
Higgs & Hill.....	21,604 0 0	22,000 0 0

For rebuilding the Coopers' Arms, Tower-street, Lambeth, for Mr. Broughton. Mr. George Treacher, architect, No. 28, Carter-lane.
Langmead & Way.....£2,790 0 0
Canning & Mullins.....2,627 0 0
Pickersill Bros.....2,358 0 0
Jackson & Todd.....2,242 0 0
J. Beale.....2,196 0 0

For the erection of proposed Sunday-school buildings and other works at Portland Canal, Southampton. Mr. W. H. Mitchell, architect.
H. J. Sanders, Southampton*.....£1,574 0 0
* Accepted.

For the erection of proposed infant school for 200 children at St. Mark's, Woolston, for the St. Mark's Extra School Board. Mr. W. H. Mitchell, Southampton, architect:—

Crook.....	£11,34 0 0
Rowland & Hewitt.....	1,094 0 0
Sanders.....	1,045 0 0
Warden.....	990 0 0
Dyer & Sons.....	981 0 0
John Hall.....	979 0 0
J. W. Rowland.....	929 0 0
Stevens & Sons.....	925 0 0
Goodvee.....	796 0 0

For Manchester-street School, for the School Board for London. Mr. E. R. Robson, architect:—

T. Boys.....	£4,414 0 0
J. F. Sargant.....	4,330 0 0
G. T. Pritchard.....	3,959 0 0
Wall Bros.....	3,890 0 0
W. Shurmer.....	3,879 0 0
W. Oldrey.....	3,800 0 0
J. Grover.....	3,782 0 0
I. R. Hunt.....	3,583 0 0

For Deptford Lower-road School, for the School Board for London. Mr. E. R. Robson, architect:—

F. Johnson & Co.....	£3,468 0 0
W. Shurmer.....	3,342 0 0
Kirk & Randall.....	3,106 0 0
W. Oldrey.....	3,087 0 0
W. Tongue.....	3,033 0 0
E. J. Jerrard.....	3,044 0 0
C. Wall.....	3,773 0 0
Atherton & Latta.....	3,700 0 0

For alterations and other works, less allowance for old materials, at 35, Bloomsbury-street, for Mr. Peter S. Bruff. Messrs. Hames & Darling, architects:—

Tiles & Son.....	£1,254 0 0
Stank.....	1,175 0 0
C. Ansell.....	1,069 0 0
Fisher.....	1,097 0 0
Spencer & Co.....	1,065 0 0
Love.....	1,019 5 0

For alterations and additions to Bearwood-road Schools for the Harborne School Board. Quantities supplied by the architects, Messrs. J. P. Sharp & Co.:—
Thos. Hughes, Hockley-hill.....£1,900 0 0
J. Stockton, Oldbury.....1,669 0 0
Sapcote & Sons, Birmingham.....1,660 0 0
E. Walton, Smethwick.....1,569 0 0
J. Wilson & Son, Handsworth.....1,584 0 0
Harley & Son, Smethwick.....1,600 0 0
Jeffrey & Son, Birmingham.....1,470 0 0
G. H. Marshall, Smethwick.....1,438 0 0
Whitehouse & Jones, Ladywood.....1,429 0 0

For Congregational chapel, Sebert-road, Forest-gate.

Mr. Francis J. Sturdy, architect.	
Perry & Co.....	£7,393 0 0
Adams & Son.....	7,272 0 0
F. Mark.....	7,169 0 0
Hunt & Co.....	7,150 0 0
Norton & Co.....	7,007 0 0
Bangs & Co.....	7,000 0 0
Faulkner.....	6,997 0 0
J. Morter.....	6,899 0 0
Holland.....	6,893 0 0
Rider & Sons.....	6,850 0 0
Woodward.....	6,698 0 0
Sabey & Sons.....	6,472 0 0
Corder, R.....	6,400 0 0

For the erection of residential chambers at the corner of Old Brompton-road and Gloucester-road, South Kensington. Mr. W. H. Collbran, architect, 91, Gloucester-road.

Corder.....	£14,500 0 0
Huey.....	14,221 0 0
Boyes.....	14,200 0 0
Martin, Wells, & Co.....	14,200 0 0
Perry & Co.....	13,500 0 0
Nightingale.....	12,909 0 0
H. Smith.....	11,975 0 0
Tuten & Sons.....	11,975 0 0
Stimpson & Co.....	11,470 0 0

For making and sewerage Wolsey-road, Crouch Hall Estate, Crouch-out, for the Imperial Property Investment Company (Limited). Mr. G. H. L. Stephenson, surveyor:—
Wilson, Walthamstow (accepted).

For alterations and additions to the Laytner Schools Hammersmith, for the Trustees of the Laytner Charity Mr. G. Saunders, architect:—

Brathwaite.....	£1,689 0 0
Pratt.....	1,681 0 0
Manvell.....	1,659 0 0
Chamberlain Bros.....	1,619 0 0

For the erection of new School Buildings, North-street, Guildford, for the Building Committee of the Congregational Church. Messrs. Peak, Lunn, & Peak, architects. Quantities supplied by architects:—

	Deduct for old Materials.
Geo. Huclie, Norbiton.....	£3,932 10 0
H. R. Swain, London.....	3,633 0 0
Robert Pink, Milford.....	3,544 0 0
G. Strudwick, Guildford.....	3,490 10 0
Goddard & Sons, Farnham.....	3,405 0 0
Ham.....	3,000 0 0
Martin, Wells, & Co., Aldershot.....	3,350 0 0
James Dunford, Poole.....	3,370 0 0
Mitchell Bros., Stratford.....	3,267 0 0
W. Garland, Aldershot.....	3,249 0 0
Thomas Henry Kingerlee, Banbury.....	3,175 0 0

* Accepted.

For rebuilding the Princess Alice public-house, Commercial-street, for Messrs. Truman, Hanbury, Buxton, & Co. Mr. Bruce J. Capell, architect:—
J. & E. Cocks.....£4,536 0 0
Staines & Co.....4,484 0 0
C. Marr.....4,370 0 0
J. Anley.....4,300 0 0
W. Shurmer (accepted).....4,167 0 0

For the erection of the National Hospital for the Paralyzed and Epileptic, Queen's-square, Bloomsbury, Messrs. Manning & Simpson, architects, 6, Mitre-court Chambers, Temple. Quantities by Mr. D. J. Brown, No. 61, Lincoln's Inn-fields.

No. 1. Green	£12,145	0	0
Wentner, Smith, & Son	40,888	0	0
J. Beale	40,875	0	0
Kirk & Randall	40,732	0	0
Hobson	40,650	0	0
Longmire & Burge	40,495	0	0
Manley	40,461	0	0
W. B. Downs	40,354	0	0
A. Thom	40,200	0	0
Simpson & Son	40,045	0	0
Howard & Dorrell	39,990	0	0
Macey & Son	39,900	0	0
Wall Bros.	39,580	0	0
Brass	39,600	0	0
Peto Bros.	39,439	0	0
Rider & Sons	39,379	0	0
C. H. & A. Bywaters	39,363	0	0
J. W. Beale	39,346	0	0
Mowlem & Co.	39,300	0	0
Higgs & Hill	39,284	0	0
Ashby Bros.	39,654	0	0
J. T. Chappell (accepted)	37,970	0	0
Merritt & Ashby	37,770	0	0

For Saint Anne's School and Chapel, Messrs. G. R. Crickmay & Son, architects. Quantities supplied by Mr. R. Roberts—

J. T. Chappell	£4,760	0	0
G. Candler	43,543	0	0
G. Grimwood & Sons	42,494	0	0
W. Bangs & Co.	41,141	0	0
H. Lonsdale	40,371	0	0
Wal. Bros.	39,900	0	0
Perry & Co.	39,250	0	0
Booth Bros.	39,183	0	0
Patman & Fotheringham	38,800	0	0
B. E. Nightingale	38,697	0	0
J. Farnell & Sons	38,396	0	0
Peto Bros.	38,366	0	0
Vernon, Ewens, & Co.	37,888	0	0
Kirk & Randall	36,850	0	0
E. Lawrence	36,768	0	0

For pulling down stables and coach-house, and building dwelling offices and business premises for Mr. W. Grogan, at 135, Piccadilly, Mr. J. T. Wimpers, architect—

Verrall & Griffiths	£1,478	0	0
Clark & Mannoch	1,597	0	0
Lea	1,561	0	0
Boys	1,511	0	0
Brass	1,475	0	0
Flah, Prestage, & Co.	1,483	0	0
Bywaters	1,445	0	0
Scrivener & Co.	1,393	0	0

For Wood Green schools for the School Board for Tottenham, Messrs. E. Ellis & Sons, architects. Mr. W. B. Brown, surveyor—

J. U.E.	£11,378	0	0
W. J. Hach	11,377	0	0
J. Fields & Sons	11,283	0	0
W. Avis	11,047	0	0
Mattock Bros.	10,691	0	0
F. Anstee	10,371	0	0
Howell & Son	10,230	0	0
H. H. Hobbs	10,230	0	0
J. Tyerman	10,073	0	0
D. & C. A. Brown	9,600	0	0
W. Tongue	9,400	0	0
M. Humphreys & Son	9,250	0	0
C. Wall	8,990	0	0

For proposed new offices at Edmonton, for the Edmonton Local Board. Mr. E. R. Eschus, C.E., architect. Quantities supplied—

	Bath Stone.	Portland Stone.
Perry & Co.	£9,300	0
Humphreys & Son	8,723	0
Nightingale	8,040	0
Linzell	7,838	0
Wilkinson Bros.	7,793	0
Higgs & Hill	7,790	0
Mowlem & Co.	7,673	0
Tongue	7,235	0

For rebuilding 23, Milk-street, for Mr. F. N. W. Lloyd. Messrs. Ford & Hesloth, architects—

B. Conder	£1,049	0	0
-----------	--------	---	---

For alterations and repairs at the Dyers' Almshouses, Mr. W. Waymouth, architect—

W. Sharnur (accepted).			
------------------------	--	--	--

For the erection of Middle Class schools, Poplar. Mr. John Sulman, architect. Quantities by Mr. George Fleetwood—

Dore Bros.	£12,295	0	0
L. H. & R. Roberts	11,967	0	0
Outwaite & Son	11,254	0	0
Hearle & Son	11,067	0	0
Bangs & Co.	10,860	0	0
Perry & Co.	10,620	0	0
Atherton & Latta	10,670	0	0
Ashby Bros.	10,596	0	0

For the erection of Presbyterian Church, Stoke Newington. Mr. John Sulman, architect. Quantities by Mr. George Fleetwood—

Ashby Bros.	£5,474	0	0
T. Boyce	5,465	0	0
W. Hines	5,185	0	0
W. & F. Crocker	5,182	0	0
J. Grover	5,094	0	0
L. H. & R. Roberts	4,965	0	0
Harris Wardrop	4,884	0	0
J. Chessum	4,660	0	0

For alterations and additions to No. 181, High-street, Borough. Mr. R. W. H. Mason, architect, Derby—

W. R. Hough	£230	0	0
W. & F. Crocker, Gt. Dover-st., Here.	220	0	0

TO CORRESPONDENTS.

J. F. W. G. A. W. Mel. W. P. T. R. W. E. M. M. P. R. J. E. M. C. W. H. W. H. C. C. & Son. G. A. P. C. J. C. M. J. R. S. G. W. R. C. T. E. K. T. W. C. D. Bro. M. R. S. D. M. R. T. B. D. E. W. H. H. W. S. H. W. (continuation to our practice).

Correspondents should address the Editor, and not the Publisher, except in cases of business.

All statements of facts, facts of trade, &c., must be accompanied by the name and address of the sender, not necessary for publication.

We are compelled to decline printing out books and giving addresses.

Note.—The responsibility of signed articles, and papers read at public meetings, rests, of course, with the authors.

NOTICE TO SUBSCRIBERS.

THE INDEX and TITLE-PAGE for Volume XLIV. (January to June, 1883) will be given as a Supplement with the LAST VOLUME.

A COLOURED TITLE-PAGE may be had, gratis, on personal application to the Office.

CLOTH CASES for Binding the Numbers are now ready, price 2s. 6d. each, also

READING-CASES (cloth, with Straps, to hold a month's numbers) 12s. 6d. each.

THE FORTY-FOURTH VOLUME of "The Builder" (monthly) will be ready on the 15th inst. price 12s. 6d.

SUBSCRIBERS VOLUMES, on being sent to the Office, will be bound at a cost of 2s. 6d. each.

NOTICE TO ADVERTISERS.

Persons advertising in the Builder may have

REPLIES ADDRESSED TO THE OFFICE

46, Catherine-street, Covent-garden, W.C.,

FREE OF CHARGE.

Letters will be forwarded if addressed envelopes are sent, together with sufficient stamps to cover the postage.

CHARGES FOR ADVERTISEMENTS.

SITUATIONS VACANT, PARTNERSHIPS, APPRENTICESHIPS, TRADE, AND GENERAL ADVERTISEMENTS.

Six lines (about fifty words) or under..... 6s. 6d.

Each additional line (about ten words)..... 6s. 6d.

Terms for Series of Trade Advertisements, also for Special Advertisements on front page, Competitions, Contracts, Sales by Auction, &c., may be obtained on application to the Publisher.

FOUR Lines (about thirty words) or under..... 2s. 6d.

Each additional line (about ten words)..... 2s. 6d.

* PREPAYMENT IS ABSOLUTELY NECESSARY.

* Stamp must not be sent, but all small sums should be remitted by Cash in Registered Letter or by Money Order, payable at the Post-office, Covent-garden, W.C.

DOUGLAS FOURDRINER, Publisher.

Addressed to No. 46, Catherine-street, W.C.

Avertisements for the current week will not reach the Office before THREE o'clock p.m. on THURSDAY.

The Publisher cannot be responsible for DRAWINGS, TESTIMONIALS, &c. left at the Office in reply to advertisements, and strongly recommends that of the latter COPIES only should be sent.

TERMS OF SUBSCRIPTION.

"THE BUILDER" is supplied gratis from the Office to residents in any part of the United Kingdom at the rate of 12s. per annum, F.P.A.D. Remittance payable to DOUGLAS FOURDRINER, Publisher, 46, Catherine-street, W.C.

Best Bath Stone.

WESTWOOD GROUND, Box Ground, Combe Down,

Corsham Down, And Farleigh Down.

RADELL, SAUNDERS, & CO., Limited, Corsham, Wilts. [Adv.]

Bath Stone.

Facilities for selection and quality unequalled, having upwards of

350,000 Feet Cube

In Stock of all known descriptions.

PICTOR & SONS, Box, Wilts. [Adv.]

Doubling Freestone and Ham Hill Stone.

of best quality, in blocks, or prepared ready for fixing. An inspection of the Doubling Quarries is respectfully solicited; and Architects and others are CAUTIONED against inferior stone.

Prices, delivered to any part of the United Kingdom, given on application to CHARLES

TRASK, Norton-sub-Hamdon, Somerset.

Somerset.—Agent, Mr. E. WILLIAMS, 73, Charlotte-street, Portland-place, W. [Adv.]

Doubling Freestone, Of best quality, supplied from their own Quarries

and Kilns by STAPLE & HANS, Stoke, Somerset.

Agent, Mr. H. MURRAY, 6, Augusta-road, Hammersmith, London, W. [Adv.]

BLUE LIAS LIME

(Ground or Lump)

Asphalte.

Seyssel, Patent Metallic Lava, and White Asphalte.

M. STODART & CO.

Office:

No. 90, Cannon-street, E.C. [Adv.]

Asphalte.—The Seyssel and Metallic Lava Asphalte Company (Mr. H. Glenn), Office, 38, Foubert, E.C.—The best and cheapest materials for damp courses, railway arches, warehouse floors, flat roofs, stables, cow-sheds and milk-rooms, granaries, tan-rooms, and terraces. [Adv.]

Immensely quantities of

DRY WAINSCOT,

DRY MAHOGANY,

DRY WALNUT,

in all thicknesses.

B. J. HUDSON & SONS,

Whitfield-st., W., and Great Peter-st., S.W. [Adv.]

Electric House Bells.

Architects and Builders supplied with our improved ELECTRIC BELLS and INDICATORS, Fire and Burglar Alarms. Best goods only. Estimates and Illustrated Catalogue free. The Trade Supplied.

FRANCIS & CO. (Batton Garden, London. [Adv.]

J. L. BACON & CO.,

MANUFACTURERS OF IMPROVED

STEAM AND HOT-WATER

APPARATUS,

FOR WARMING AND VENTILATING

Private Houses, Churches, Schools, Hospitals, Manufactories, Greenhouses, &c.

OFFICES AND SHOW-ROOMS:—

No. 34, UPPER GLOUCESTER PLACE,

DORSET SQUARE, LONDON, N.W.

And at DUBLIN, BELFAST, and NEWCASTLE.

Illustrated Pamphlet on "Heating" post free.

SPECIALLY PATRONISED BY H.R.M. THE PRINCE OF WALES.

BARNARD, BISHOP, & BARNARDS,

Original and Sole Manufacturers of the

SLOW COMBUSTION

(Registered), Specially adapted for burning "Anthracite" or Smokeless Coal, as advocated by the Fog and Smoke Committee of the National Health and Kyrie Societies.

Known as the "Country Parson's Fire-Grate." "NORWICH" STOVES.

DESCRIPTIVE CATALOGUES POST FREE.

OR

One of the great advantages of these Stoves (amongst others) is that they will burn "Anthracite," or Smokeless Coal, which has been so strongly recommended by the various speakers at the recent discussions at the Society of Arts on the subject of "London Fogs."

"DIAMOND," "UNIVERSAL," AND "NORFOLK" RANGES,

As supplied to the Great Eastern Railway, London and South-Western Railway, Eastern and Midland Railways, and Lancashire and Yorkshire Railway.

BARNARD, BISHOP, & BARNARDS,

Norfolk Iron Works, Norwich.

London Show-rooms, 91, 93, & 95, Queen Victoria-street, E.C.

The Builder.

VOL. XLV. No. 3110.

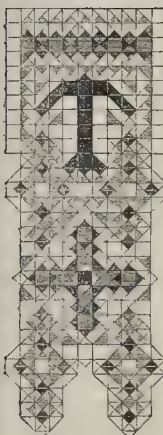
SATURDAY, JULY 14, 1903.

ILLUSTRATIONS.

New Town-hall for Dover.—The late William Burges, A.R.A., Architect	43
Proposed Church, Westgate-on-Sea, Thanet (Double-page Engraving).—Mr. C. N. Beazley, Architect	46
Sanatorium at Reetham (Plans, &c.).—Professor T. Roger Smith, Architect	48
St. Mary's Catholic Church, Croydon, Altered and Enlarged (Double-page Engraving).—Mr. F. A. Walters, Architect	50, 51

CONTENTS.

Sculpture, Architecture, and Colour	37	Fine Art Exhibition and Technical Schools at Halifax	59	School Board Contracts	63
"The History of Freemasonry"	37	Electric Works at the General Post Office	59	Fireproof Floors	62
Something about sculpture and its Conspicuous Home	39	Rebuilding the "Cock" Tavern	59	Protection from Fire	62
Strength of Materials	40	Crickit Match, between the Students of the Royal Academy of Arts, and St. John's Wood Art School	59	Flues	62
The Burning of the Rathmum Towers at Aix-la-Chapelle	41	Westminster Jewish Free Schools	59	Building Patent Record	61
Light and Air	42	Foreign Notes	59	Light and Air Case: The Patent Silvering Company v. R. H. Fabbury, W. C. Watts, and H. Barnum	61
International Exhibition at Nice	42	Fire Insurance in Berlin	59	Admissions to the Royal Academy of Arts	61
The Institution of Civil Engineers: Previous Award	42	Practical Education	59	Church-building News	61
Dover Town Hall	42	The New Railway Station and Bridge across the Thames at Blackfriars	59	Dissecting Church-building News	61
Proposed Church, Westgate-on-Sea	42	The Rebuilding and Metal Trades Exhibition	59	Books: Church's Precious Stones (Chapman & Hall); Scott's Draining and Embanking (Lockwood); Tramway Acts (Stevens); The Joiner and Cabinetmaker (Houlston); The Lead of Morgan (Whiting)	61
St. Mary's (R. C.) Church, Croydon	42	A Public Winter Garden and a Theatre at Eastbourne	59	Various	61
The Sanatorium at the Reetham Asylum for Fatherless Children	42	Scottish News	59	Miscellaneous	61
The Principles of House Drainage: Parker Museum	42	The Extra Scale of Payment for Overtime	59		
The late Mr. C. H. Stuck	42				
The Peinting of Rubble Walls	42				



Sculpture, Architecture, and Colour.

THE account which we published two or three weeks ago as to the experiments which had been made by a German sculptor, Herr Cauer, with the view of arriving at a better understanding in regard to the process by which the Greeks coloured their sculpture, seems to indicate, as was then observed, the probability of a revived interest in the discussion of the question of colour in Greek sculpture, as well as

that of the principle of colouring sculpture generally. The subject has a direct bearing, also, on certain sources of architectural effect and expression.

In regard to sculpture considered separately, there are two theories or systems on which colour may be applied. It may be done either with the view of producing realism in flesh tints and costume, or merely with the view of producing a softened and more harmonious effect, or of getting rid of the too great coldness of uncoloured stone or marble, without any attempt at realism. This latter form of colouring may be carried out on three different systems. It may consist of a colouring of the entire surfaces of a figure, both flesh and drapery, with tints or tones much less pronounced than those of a real figure or of real draperies, but having the same kind of ratio to one another, in character and strength of tone, as would be the case in a living figure, forming a kind of suggestion of realistic colour in a much lower and quieter key; or the colour element may take the form of a special decorative treatment, in a tolerably marked manner, of some of the adjuncts of the figure or of the costume, such as gilding applied to the outline of the drapery, or a gilded fillet in the hair of a Ceres perhaps, or a gilded spear and sword in the hand of a warrior or of a warlike god, a Mars or a Pallas. Such accessory decoration has the effect of brightening up the whole, if of white marble, without detracting materially from that purity and simplicity of artistic expression which is generally considered to belong to marble, and without in any way spoiling the lustre and semi-transparency of the surface, which is in this case supposed to be left untouched except at salient points. There is the third method, of not touching the actual figure with either colour or gilding, but placing it against a background of colour in order to

relieve and throw out the more the pure and colourless marble, which is, at present, the most accepted material for high-class sculpture.

As to the realistic colouring, there is, as all artists will agree, but one thing to be said; it is and always must be wrong: for two main reasons, in themselves quite sufficient, without mentioning other subsidiary ones. In the first place, the object of sculpture is to idealise, to present in palpable form an abstract ideal or thought of the sculptor. The labour and costliness of the art are not worth undertaking for the sake of mere imitation of everyday life. The vulgar piece of coloured realistic sculpture now in the Royal Academy, and on which we have before commented, is an example of this; it is undoubtedly clever in execution, which has been the excuse for its admission, but it is cleverness and costliness of work bestowed on an object which we feel to be utterly unworthy of so much pains. The other reason is that in attempting realism we are attempting what it is palpably impossible to carry out in the materials and with the methods used in sculpture. The very fact of the solidity of modelled form in sculpture emphasises the impotence of the colourist to convey anything like an adequate imitation of nature. In painting, we have not the round form, with its actual solidity of proportion, to betray any one into looking on the work as an attempt at absolute and deceptive realism. The painting is executed on the flat, not in the round; and what it does attempt, the realisation of the delicacy of colour in nature, is attempted with a medium capable of very delicate manipulation, and having a surface with something of the soft texture of nature. Even so, however, a painter would be convicted of a certain vulgarity of imitation, and of a failure to achieve what he aimed at, if his canvas could be suddenly changed from a flat surface to a round, or a model, retaining the same characteristics of execution. Some kind of conventionalism we must have in art, because it is fatal to come into actual rivalry with the realism of nature; the artist in endeavouring to do so is at once convicted of presumption and failure: and this even more strikingly if he attempts to convert the rounded modelled form of the statue into a realistic imitation of nature and of drapery. Far more full and minute imitation of the texture and colour of the reality would be here required to give anything like success, because the solid imitation of form by the modelled figure calls attention the more emphatically to the attempt to realise; while at the same time the means at the artist's command are less tractable and less capable of delicate manipulation than those which can be used in painting on canvas on the flat. The surface of the marble, for instance, is hard, its texture smooth; it cannot with any colouring present any real imitation or rivalry of the softness of nature. The artist would be overcome by the comparatively unimportant detail of the

hair at once, to begin with. He can produce in plain marble a treatment of hair which may be fine and effective as a translation of hair into sculptural treatment; but let him once put realistic colour on it, and his sculptural treatment will be a horrible travesty, provoking even laughter. An attempt at realism in that direction can only end in affixing real hair to the head of the statue, giving it a wig. Let the artist go on from that, and he will find it necessary to have real drapery, not to make the hair seem too flimsy and light. Let him proceed to colour the face and other exposed portions as realistically as he can, and he will arrive at presenting us with something which, however fine in conception, will have about the same relation to the nature which it claims to imitate as a waxwork figure, save that the waxwork will probably be the best imitation of the two. The idea of the figure may be very fine, very poetic even; but the contrast between the actual life and the attempted imitation will force itself upon the spectator so strongly that all admiration for the sculptor's conception will be lost in derision for the futility of his attempted imitation of nature.

This method of treatment, in fact, is only practised in modern civilised countries by vulgar artists for vulgar people ("wax-works" representing the most common form of this sort of art); and when practised by the best artists of a period in their best efforts, usually seems to mark a half-civilised period, a semi-barbaric state of taste. How tawdry the effect of such treatment is we were practically reminded at the recent "Tale of Troy" performance, where a realistically-draped and highly-coloured image of Athens was introduced in a shrine in one of the scenes, forming a curious contrast with the living draped figures on the stage. That the Athenians of the great Classical period attempted any such realism with their great statue in the Parthenon we do not for a moment believe, though there is little doubt that the statue was gorgeously decorated in one way or another; precisely how, we do not and never can know now. But in that case it may be said that religious superstition operated as well as artistic perception; and the sacred statue might very probably be decorated in a manner to satisfy the superstitious feelings of the people rather than the purer artistic light of Pericles and Phidias, and their intellectual peers. That statue may be therefore regarded as an exceptional case, not coming within the strict limits of the question as to the manner in which the Greeks applied colour to their architectural sculpture. But how did they colour

* This has its limits, however. The attempt made once or twice to treat a Sisyphus in sculpture has only resulted in giving the idea of a jagged mass of marble, and the sculptor of a bust of an eminent man who had thin, slight whiskers (exhibited at the Academy some little time since) was so troubled as to the treatment of the whiskers that he got out of the difficulty by omitting all indication of them—thereby, however, greatly impairing the resemblance to the original.

the frieze and the metopes? That is the question of more immediate interest. That they did colour them is, of course, beyond question now; and more, one may say that the idea that the frieze was coloured, so as to throw it out with tolerable brilliancy, affords the only explanation hitherto of the fact that the builders of the Parthenon should have placed so beautiful a piece of sculpture in the position which it occupies. If without colour,—if merely carved, as used to be supposed, in the plain marble, that low relief must have been almost lost in the position assigned to it, at the top of the *cella* wall and under the shadow of the colonnade roof. We are certainly not prepared to come to the conclusion, without further proof in the way of facts (so hard to come at now), that Herr Cauer's theory of a general ground of gilding with the special colours overlaid on it, represents the actual facts of the case. That it would have a very good effect, soft yet brilliant, we are quite ready to believe; but it is a somewhat roundabout process, the belief in which is based on rather roundabout reasoning; and it strikes us on the whole, though very interesting and ingenious, as being a little too clever to be quite probable. Besides, the theory of the gold ground might be accepted or rejected without affecting the question what degree of colour was applied and what degree of colour effect was intended. Herr Cauer's suggestion is one of process rather than of principle. But in regard to the principle adopted, our impression would be that it would probably be a union of the first and third methods of conventional colouring which we suggested above: a union of rather low-toned local colour, realistic in relation of tones, but not in actual tones, with a tolerably strongly-coloured ground to throw the figures out into relief, and render them properly apparent in the subdued half-light in which they were placed. That the figures were painted with realistic flesh colour, the horses likewise in natural colours as well as the dresses of the riders, as shown in Mr. Tadmey's painting of Phidias exhibiting the work to his friends before the scaffold was taken down, we cannot believe. If it were so, we should say that the Greeks for once made a mistake, and spoiled their own beautiful work by vulgarising it into a kind of picture in relief. The absence of any indication of brides in the carving, though the hands are carved as in the act of holding them, does suggest the idea that the brides may have been inserted in gold laid upon the surface of the carved work; an idea which is not very happy, and would be called barbaric if not done by Greeks; but gold is one thing, colour another; and the existence of the gold would not in itself necessitate the employment of very strong and realistic colours in the other portions. The strong background (of dark blue?) would be practically necessary to throw out the design as seen from below; but there was no such practical necessity for realistic colouring in detail and in strong colours, and we cannot believe that this could have been resorted to. We may instance, as a practical reason against such a belief, the want of any definite or strongly-marked remains of colour on the sculptures themselves. With great difficulty, and by the closest observation, faint traces of what may be gold stains, which may be the remains of colour, can be made out on them; that is all that the naked eye can detect on the slabs that now hang on the wall in the British Museum. But go up to the Greek vase-room, and look at the group of little figures from Tanagra,—of probably nearly the same age as the Parthenon work; there is no difficulty or doubt about those little figures. They were coloured like dolls almost,—possibly were made for some such purpose. The colour still remains strong upon them in many places; no faint suspicions, no "traces of colour," just discernible with a microscope or on chemical analysis, but strong coarse patches of red and blue, and natural colour on the hair, &c. If the sculptures of the Parthenon frieze were painted in this kind of way, how is it that they present no similar appearance on any part of their surfaces? The inference to be drawn from such a comparison is surely too strong to be put aside, more especially when it points in the same direction as our æsthetic feeling on the subject would in itself lead us to look again at the strong colour still left on some Egyptian coloured capitals and other details, centuries older than the Parthenon. If any part of the Parthenon was coloured as strongly as these

examples, why are there no similar remains of it?

Our conclusion is, that the Parthenon frieze was relieved on a ground darker than the rest, with some addition of gilding, and with a low tinting rather than colouring of the figures and draperies. Leaving for the moment the question of sculpture in connexion with architecture, and considering the question of colour as applied to sculpture for its own sake, we may ask, in what way, if at all, should this be applied so as really to heighten the effect of sculpture without drawing it down too much from its abstract and ideal character as an art, dealing in the main with pure form. As implied, we hold it to be still a question whether any colour at all is an advantage; whether anything is really more beautiful and more suitable for the calm severity which properly characterises this branch of art, than the white marble which has been so long the favourite material of sculptors. Gibson's experiments, of course, occur to every one when the subject is mentioned. In the "Hebe," the tinted hair and painted eyes give a doll-like look to the head, though the general appearance of the figure, with its warm tints and gilded ornaments, is harmonious and pleasing; the coloured edging to the dress, which is already fading off the ground, looks flimsy; and the tinting of the flesh surfaces has certainly spoiled the lustre of the marble, and given it a somewhat wax-like surface. The "Venus," in which the tinting is lighter and more delicate, is much more successful, nor can we say on the whole that the work, a very favourable specimen of Gibson's power, does not gain by this slight addition of colour. Whether on the basis of this example we would recommend that all statues be coloured, is another question. One thing, in the first place, must be laid down as a "rule absolute,"—that the method of colouring must never be such as to hide or dim the lustre and semi-transparency of the marble, which are among its most beautiful characteristics. It must be a stain, very thin in consistency, rather than a colour or pigment of any kind; nothing that will choke the surface of the marble can be tolerated. Then there is some difference in the case, accordingly as we have to consider an entirely nude statue or one partially draped. When a statue is to be considered *per se*, apart from architecture, it is obvious that the only colour which can suitably be placed on it is one which tends towards a representation of the natural colour of flesh; it may be very much less strong than that, still the tint added to the marble must be a very pale flesh tint, tending towards a suggestion of realism without approaching it very closely; that is the only kind of tint which can logically be added to a white marble nude statue, or to the nude portions of it. It may be doubted whether such a tint is in itself more pleasing or more suitable for high class statuary than untouched marble; it may be decidedly better when it becomes a question of connecting the statue with a scheme of decoration of which it is to form part, but that is a somewhat different case. In the case of a semi-draped statue the further difficulty arises as to the treatment of the drapery. A tint slightly approaching towards flesh colour is not suitable for drapery, and there then comes in the very important incident of making the drapery of a different tint from the figure, which is introducing quite a new element, giving a touch of pictorial effect to the work, breaking up the apparent unity of the material, and making it in some cases appear almost like the union of two materials cut from different blocks; an idea very detrimental to the appearance of durability of the whole, and at variance with the notion which properly belongs to sculpture, of being hewn out of a solid block of material. The effect is liable to degenerate into prettiness, and to be at variance with grandeur and dignity. There is a small statue of a bather, by Morton Edwards, in the corridor of the South Kensington Museum, in which the body has just a hint of flesh tint, the drapery is a very light warm pink, and the hair is coloured with a tone nearly that of nature, a light auburn; in this small work, a figure standing about 20 in. high, and rather sentimental in style, the effect is certainly pretty, but how would it be if done? Or how would it be in the case of a statue of more serious and elevated style and intention? We cannot but think that in such a case the effect would seem rather an impertinence, and would interfere with the abstract

and ideal character of the work. Take, as an instance, Mr. Simonds's well-remembered work, "Bacchus" on the tiger. Imagine the Bacchus with even a slight flesh tint; the tiger must then inevitably have had a slight but decisive representation of tiger-colour and stripes. Can any one say it would be possible to do that without materially injuring the abstract and poetic expression of the work,—vulgarising it, in fact? In proportion as we approach realism in such a work, we lose ideality and abstraction; the statue becomes, instead of the ideal Bacchus, only a man riding on a tiger.

The gilding of any object introduced as an accessory in a work of sculpture is often a very legitimate and perfectly suitable means of giving some brightness of effect without interfering with the abstract expression of the work. We should see no objection, for instance, to a Pallas with a gilt spear and shield, a Cupid with a golden dart; and there are often other accessory ornaments which may be gilt with good effect (as in Gibson's "Hebe," before mentioned). Gilding, as before observed, stands on a different footing from colour; it is more abstract in effect, and it serves to give brightness while bringing out more forcibly by contrast the cold chaste white of the marble. Gilding applied all over a statue is quite another affair. In most cases this is undesirable, even vulgar; the cases in which it is defensible are only those in which sculpture is used as part of a decorative scheme; as in the House of Lords. In such a case, however, the sculpture proportionately loses its separate value and interest as sculpture; it becomes rather an *objet de luse*, a kind of high light in the decoration. Where sculpture is to be considered separately and for its own sake, a nude figure entirely gilt would seem an incongruity, and the surface produced by the process certainly does not tend to bring out delicacies of modelling, but rather to confuse them under a general glitter of reflected lights. There may be a difference in the case of very highly draped statues elaborately costumed; where the surroundings will justify it, gilding may sometimes carry off the realism of a costume statue better, at least, than marble would; but there must be sufficiently rich and sumptuous surroundings to keep it in its place and prevent it appearing gaudy; so that after all this comes back nearly to the question of sculpture in relation to architecture. There is no doubt, however, that the more costume in a statue is elaborated, the less is marble suitable for its execution. That material, with its pure tint, transparent lustre, and capability of delicate and sharp finish, is thrown away upon such work as the cutting of corners and trimmings, and button-holes and lace. Where the intention of a work is such that realistic costume must be adopted, this looks far more suitable in bronze, when the effect may become to some extent decorative in a way in which it could not in marble. Browning, who is always true in his insight on matters of art, glances at this in "Pippa Passes," where the sculptor is showing the works in the studio to his bride; his ideals, his Greek subjects, are in marble, but when she turns to the model for the statue of an emperor in a ceremonial costume, he says:—

"Ah, do not mind that,—better that will look
When cast in bronze,—an Almain Kaiser, that,
Swart-green and gold, with truncheon based on hip."

Common consent has tended towards the use of bronze for statues of this class; one of the most spirited of recent statues, Mr. Birch's, representing the gallant stand of Lieutenant Pollock against the mutineers at Cabul (at present in the Albert Hall Gallery), is an admirable example of a realistic work which tells with great force in bronze, but which would be quite out of place in marble. The misfortune is that in this climate, except under cover, the "swart-green and gold," so happily touched by Browning as the characteristic effect of bright bronze, soon loses its lustre. Partial gilding, we may suggest, might often be used on bronze statues with brilliant and not unsuitable effect.

The third method which we mentioned, of combining colour with sculpture, by giving the sculpture a coloured background, belongs almost necessarily to the connexion of sculpture with architecture. When sculpture is used in direct connexion with architecture it must be to a great extent rather decorative sculpture for its own sake. Sculpture of the highest class can hardly in general be introduced as a part of architectural design, on the mere ground of its costliness. Independently of that, the

introduction of statues in considerable numbers as a portion of the decorative design of a building is in itself at variance with the idea of making such statues of very marked separate interest. They must have a meaning, if possible an easily recognisable meaning, but they must also fall into their place as parts of a general architectural scheme, and not claim too much exclusive and individual attention. The place for a statue of the highest and most thoughtful class, in relation to architecture, is either in front of a building which forms an architectural background to it, or as the prominent and obviously central object in the design of a façade. A series of statues on an "attic" story, or statues on the pinnacles, like those of Milan, or covering a whole front, as at Wells, cannot pretend to the highest individual interest; at least, such work would be thrown away by being so placed, even if statues of the highest order could be procured and paid for *ad lib.* What are wanted in such a position are figures which will add life and effect to the building when considered *en masse*, and possess sufficient individual interest to have something more to give to the spectator if he is minded to study them separately. With a good deal of our architectural sculpture, the interest of the work seems to vanish as soon as one comes to study it in detail. It is hardly high enough in style to be worth putting up at all, except where it is so far from the eye that its details are lost, and it appears merely as conveying the general idea of a figure. And for this object a somewhat rougher and bolder execution than that generally adopted would be better and more effective. A mistake is often made,—as, for instance, in the Foreign Office buildings,—in putting sculpture, on which a good deal of care and talent seems to have been bestowed, at the very top of a building, where whatever merit it has is nearly lost. Sculpture, executed with any delicacy or care in details of modelling and of drapery, should be placed lower down on a building, not hoisted up to the top; and sculpture which is intended to "crown the edifice" should be treated with appropriate breadth and largeness of style. In this matter we seem too often to fall between two stools, and our architectural sculpture is hardly of sufficient interest for separate study, and yet not effective enough in style for giving life to the architecture and asserting itself when placed in position at a distance from the eye, and regarded in relation to the general effect. If such sculpture, placed on buildings, is to have a definite meaning and expression in each figure, and to be worked out in detail to this end, then it should be placed on the lower part of the building and near the eye; if intended for the upper portion of the building, it should be very bold and broad in style and very simple and obvious in *motif*. To place statues on the attic or against the sky-line, which are obviously rather elaborately finished, and which have a definite expression and signification, if we could only get near enough to see it,—this is only to evoke the sculptor's talent in making a kind of puzzle for the spectator.

But in considering sculpture as a decorative addition to architecture, one cannot but think that just here the element of contrast or harmony of colour between the sculpture and its framework comes more naturally than in any other relation of sculpture, and seems to be most unaccountably neglected. The introduction of brown stone sculpture in the niches of a brown stone building has a very tame effect; and the sculpture itself, regarded from a decorative point of view, might be brought out so much better by either adopting a different coloured material from the architecture, or by giving a special colouring to the niche which sets off the figure. Without adopting colour at all in the statue itself, the introduction of gold mosaic, or of a coloured tile diaper, in the niche or panel against which the figure is placed and from which it is to be relieved, would be an obvious and very effective method of introducing brightness and variety of colour into a building in a perfectly suitable manner. Again, in architectural sculpture we might find admirable effects from the employment of self-coloured marble for the sculpture; a use of material which is not so good for sculpture when regarded separately and for its own sake only, but which would come in admirably in the case of the bolder and less minutely expressive style of work which is wanted when sculpture is to be used for decorative architectural effect. Bronze sculpture, again, has an admirable deco-

rative effect in combination with marble, as Mr. Tadema has taught us over and over again in his paintings; and, though we cannot have buildings all of marble, the insertion of a marble niche or panel in combination with a bronze statue would be a very decisive addition to the effectiveness of a building in which the less salient portions of the work must be of stone. Browning, again, has hinted at this, in a passage very much recalling some of Mr. Tadema's combinations in painting:—

"Did I say basalt for my slab, sons? Black,—
"Twas ever antique-black I meant! How else
Should ye contrast my frieze to come beneath?"

The intended frieze being of bronze. For such "contrasts" of tone and surface, in the application of sculpture to architecture, there are almost endless materials available, and often at a cost very slight in comparison with the increased effect which would result from a judicious contrast of colours between the statue or frieze and its background. If we cannot decide exactly how the Greeks carried out this idea, we may at least set ourselves to consider how we can do it, with the money, means, and materials at our disposal under more or less favourable circumstances.

"THE HISTORY OF FREEMASONRY."*

SINCE the review in the number of the *Builder* for March 3 (vol. xlv., p. 286), the second volume of this carefully-compiled "History" has been published. The erudition and detailed study of the various subjects considered advisable to discuss is maintained. To the five chapters already published, Mr. Gould has added six others in this volume, comprising Medieval Operative Masonry; the Statutes relating to the Freemasons, Early British Freemasonry (Scotland); Masons' Marks; the Quatuor Coronati (the four crowned or four holy martyrs); and Apocryphal Manuscripts. Seven portraits of Grand Masters, and one plate of "Masons' Marks," comprise the illustrations.

Under chapter VI., "Medieval Operative Masonry," a very comprehensive description is given of the history of Medieval architecture. It commences with the elucidation of the term "Gothic," formerly in such common use, and still frequently so, being taken in opposition to "Classic." The origin of the style is well considered, the opinions of such old writers as Walpole, Wren, Whitaker, Ledwich, Kerrich, Lascelles, Stokely, and a host of others, being fully quoted; and Hope and Dallaway, with others of the moderns, ending with a quotation from Sir Gilbert Scott's "Lectures on Medieval Architecture," affording the latest opinion on the subject. To the readers of the *Builder*, the details of this chapter will be familiar as one in a general history of architecture. It is also peculiarly interesting, as expressing the views of a learned barrister on the art. He is to be congratulated on the result, for an unusually readable and intelligent account of the works of the masons of the countries where Medieval architecture flourished, has been produced, the facts and arguments being far above the usual level of such histories as written for Masonic publications, and rendering it a somewhat ungracious task to note any errors. However, there are two not to be passed over. He states in one place that Norman churches were not vaulted, the only instance given being the little chapel of St. John in the Tower of London; and in another place, that none of the Norman buildings were, or were intended to be so, and all vaulting on Norman piers and walls is subsequent. But he must have forgotten that the Norman crypts were all vaulted, as were also the aisles of Norman churches; probably he meant to write that the *naves* of Norman churches were not vaulted, and why they were not so finished has yet, perhaps, to be discovered, for shafts were in most cases carried up to receive vaulting. I do not agree that "it originated in the clumsiness of the Saxon workmen, they (the Normans) were forced to employ." "William of Sens, 1179, was the first to introduce stone vaulting in this country, at Canterbury," he states, which may, perhaps, be admitted if the vaulting of the crypts be excluded. The other correction is the doubt, expressed in two places, that the

fine vaulting of the Gothic staircase at Oxford erected as late as 1640 for Dr. Fell, is of stone. As access can be obtained above the vaulting, a friend, resident at Oxford, has lately assured me that it is of stone and not plaster, as asserted. The architect, or mason, whose name is attached to the work is "Smith," of whom, unfortunately, nothing more is known: he was evidently one of the last masons holding Medieval traditions. Mr. Gould does not help us to account for the peculiar design shown at Roslin Chapel; he quotes the usual assertion that it is the work of a foreign architect, most probably a Spaniard; but as he has dethroned Sir William Sinclair from the post assigned to him of having been hereditary Grand Master of Freemasonry in Scotland, we had hoped that his researches into the Scottish records would have enabled him to afford true particulars of the design and erection of this eccentric work. Sufficient credit is not given to the "Five Sisters" in York Cathedral, which, instead of being 50 ft. in height, as stated, are really 60 ft., and each light is 5 ft. 7 in. wide. Having ourselves experienced the difficulty of ascertaining the exact dimensions of this most magnificent group of windows, we are glad of this opportunity of making the sizes better known.

Our author is rather inclined to think little of the occupation of this island by the Romans. "I must be allowed to state my belief that the architectural efforts of Rome were, in Britain, comparatively inferior," and while citing the camps and remains of walled cities and military roads, adds, "the efforts of luxury and refinement are few and far between, although, in the solitary instance of Woodchester, a villa has been found whose dimensions almost equalled the Laurentine one described by Pliny." I think a reference to Mr. Henry Godwin's "English Archaeologist's Handbook," 1867, pp. 18-70, would have assisted him towards a better appreciation of the numerous edifices erected by the Romans amongst us.

In the pages following Mr. Gould writes,— "It may be as well to dispel, as far as possible, the exaggerated notions current concerning the piety and devotion, or, as some would prefer to call it, the extravagance and superstition of the Middle Ages, and the enormous cost and sacrifices required for the erection of Medieval ecclesiastical structures." He describes several of the then ecclesiastical ways of "raising the wind," and remarks, "Nor was the expense of these buildings as great as would at first sight appear. One of the most eminent of our engineers once amused himself towards the commencement of the present century by making an estimate for Lincoln; the result was that he would take the contract for about 1,000,000. present money, presuming that he had only the same means of transport and the same mechanical appliances that were available in the Middle Ages. At this rate it could have been built for 7,000. a year present money. York, presumably rather more costly, but which lasted (was in erection) much longer, would have cost less." "On the whole, we may compute the expenditure of the 9,000 parish churches or thereabouts, existing at the Reformation, at between fifty millions and sixty millions pounds present value, taking the modern average cost of a church, and that of the cathedrals, twenty in number, at from six millions to seven million pounds, a total of about sixty-five million pounds spread over a period of more than 400 years. The amount (approximate, but pretty closely calculated) spent on church—not chapel—building, restoration, and enlargement has, since 1818, when people first began to move in these things, amounted to fifty million pounds, of which one million has gone to cathedrals. Putting schools in the place of abbeys will allow of a still further comparison. The amount spent upon church school buildings has been eight millions. At the Reformation there were 645 monasteries, 90 colleges, 2,374 chantries, and 110 hospitals, or, without the chantries, 845. Could they have been built, on an average, for 10,000. a-piece? I think not, although the really costly and magnificent buildings were much fewer in number than are usually supposed. Their aggregate revenue, though very different estimates have been made, amounted at that time to about 150,000. a-year, which, from various calculations, has been proved equal to five millions at the present day, or, at least, the rent-roll of the estates would now amount to that sum. The income of the clergy during the past fifty years has increased by about one million per annum from

* The History of Freemasonry: its Antiquities, Symbols, Constitutions, Customs, &c. Derived from Official Sources. By Robert Freke Gould, Barrister-at-law. Past Senior Grand Deacon of England. Vol. II., 4to., pp. 283 to 504. London: Thos. C. Jack, 45, Ludgate-hill.

various sources, and the endowed charities (including schools), almost all of which owe their origin to within the last 300 years, to as yet as much more." These calculations are interesting, but may be open to much criticism, as, for instance, Kirkwall Cathedral is put down "to cost 20,000l." At the present day this would give a regular annual expenditure of 50l.; it was founded 1138 and not finished until 1540." But if the history of this building is looked into somewhat more closely it will be found that in 1511 three pillars and a new east end were added, and in 1540 three pillars and a new west end, which were never completed, were added. "The original design has been carried out with tolerable consistency," writes Mr. Gould; but if the above dates be correct it would seem that almost the whole of the church was rebuilt, in about thirty years, and therefore at a cost of about 700l. per annum. The numerous rebuildings and repairs to the cathedrals and to the other buildings above named, must also be taken into account as part of the large sums spent on them. This has been a long extract, but not an unnecessary one.

"I must now proceed," writes Mr. Gould, "to show who were the men who erected the great buildings just described"; and again, "Who were the actual architects and designers of the Medieval edifices? and were they operative masons, or at least men belonging to that body?" "We somehow know the names of all the architects in Italy," he very justly observes. Vasari and others, including Gays, as well as the compilers of biographies of artists, in almost every town of importance, have done this for Italy; for Spain, Caen Bermudez and Llaguno are the authorities; Raczyński for Portugal; Kelbien, and several modern writers, as Lance, for France, and Otte for Germany; while Belgium and Holland have not been neglected. But if we except Britton's "Glossary of Architecture," there is no exclusive work proclaiming the designers of the Medieval buildings in the British Empire. Such a work has been in preparation for many years, in extension of the two papers before referred to, as read by myself at the Royal Institute of British Architects, and may yet be published if time permits. Of the names of the masons that have come down to us, but few betray a foreign origin, the great majority being those of persons who, apparently, were natives of the districts in which the edifices were reared, with which their names are connected. This will account, in a great measure, for the local peculiarities, such as are constantly met with, and which seem to indicate the existence of local schools." He quotes the following words of the late Mr. Street:—"Of the churches of the early Middle Ages, I could have told you how they may be classified into groups, speaking to us of the skill and genius of individual architects, each in his own district or diocese." It is a pity he had not been able to do so. Mr. Gould writes—"The first theory, that of a *united brotherhood*, is contradicted by the absolute silence of all history, no less than by the very strong negative evidence on the other side, and that on evidence afforded not merely by history, but by the appearance of the actual edifices. When, if we accord him the credit of the outline of Masonic history given in the 'Parentalia,' blended conjecture with tradition." This included the travelling bodies of Freemasons headed by a chief. "No great art was ever practised by roving bodies moving from country to country; still less could it have been so, when, in the Middle Ages, the means of locomotion were so few, and especially was it impossible to transfer large bodies of skilled labourers from one country to another." On this word "locomotion," much might be written to prove the immense amount of it that took place during the periods under consideration. The monarch and his court, the abbot who had to attend the annual consensus of his Order; and the great number of pilgrimages, all tend to prove that "locomotion" was general, if not easy; why then should not the Master Masons have journeyed? Mr. Gould refers to a few examples in his work,—as, the Englishman Briginthe* employed at Vercelli in 1219; Constantius, the father of Constantine the Great, who is said to have rebuilt Autun in 276, by the aid of artificers from Britain, which was

then renowned for its skilful workmen. This very early statement would refute the assertion of "difficulty of locomotion" and "impossibility of transferring large bodies of skilled labourers." Again, William of Sens was selected from other skilled artificers, 1179, to design the work at Canterbury. Etienne de Bonneuil, of Paris, travelled, 1287, to Upsala, in Sweden, to erect the cathedral, being accompanied by ten *compagnons* and ten *bacheliers*. Mr. Gould cruelly adds, "Was he a designer, or, rather, a mere contractor, with the power of drawing, or, at least, of paying some one who could?" As if such things were done in those days.

In the foregoing and following remarks, taken from Mr. Gould's carefully-considered pages, it will be observed that he much insists upon local peculiarities produced by local schools; but possibly, from not having studied in this art, he has not perceived the difference between the *styles* or periods of architecture and the more differences in the *style* caused by local influences and materials. This is a vexed question, and he has not solved it. We see the reason for the Norman style, on being introduced into England, being continued alike all over the country, with more or less modification. But, how came the transition to Early English, as we call it, and then that style or period worked throughout the country, and so on so uniformly, unless there was a leading institution, guild, or lodge, from which the change emanated, and spread by its professors having received their lessons in the new system of "proportion with outlines of moulds and details." "I may remark here," writes Mr. Gould, "as showing how much local peculiarities have to do with our Medieval churches, and how little ground there is for supposing one universal consensus, that almost every district in England has its distinct architectural features. The northern counties are a class apart; so are the eastern counties. Northamptonshire, which boasts a very fine and complete series,—showing a distinct school. A no less distinct school in Somerset, independent, apparently, of Wells, and St. Mary Redcliff." "The sculptures of the facade of Wells are a truly national monument,—they were finished 1242. They are English in design, and wholly different from the contemporary works executed in Edward the Confessor's Chapel, Westminster, by Benvenuto and Torelli: these are the words of Professor Cookerell." The author adds,—

"There is every evidence that the building of the nave is of the same date, and is like the front, the work of a local school of masons whose influence can be traced to a very considerable extent in the neighbouring district." "Devonshire, again, and Cornwall have their own peculiarities, not to mention numerous other districts, but taking only the most striking. Gloucestershire, also, had very decidedly a school of its own." Again, he continues, "Gloucester seems to have been a regular school of masons,—a kind of architectural college, in which theory was very properly mingled with practice, and from which, according to the best authorities, fan-vaulting took its rise. There was also, probably, another but earlier school at Wells." Yes; but was it not the case at each cathedral? As stated by me before, each cathedral had its own lodge of Masons attached to it; from whence came the lovely early work at Lincoln Cathedral, the grand, masterly-proportioned work at York, and so on, but from the local workshop, each endeavouring to outstrip and outshine the other, only limited by experience and funds at their command? "The fan-vaulting at Gloucester, is confined to the cloisters, where it appeared on a comparatively small scale, as far as mere width is concerned, as was natural in a preliminary essay. It extended to Bath Abbey church, to the small square chapel round the apse of Peterborough, the Beauchamp Chapel, the Divinity Schools and the cathedral at Oxford, until it culminated with the three famous chapels of King's College, Cambridge; St. George's, Windsor; and Henry VII.'s at Westminster." Quite so; but how was it done? Did Gloucester supply a master mason to each locality, or did the chapter or other authority intending to build send to Gloucester their own master mason to learn the secret of their new method? "The architecture of Scotland," he adds, "has a style peculiarly its own. Severely archaic in its forms, and small in size as are the buildings, the openings and mouldings yet display a degree of richness we should look for in vain either in England or elsewhere. The

vaults, especially in the earlier examples, are singularly bold, but heavy, and their whole architecture is characterised by ponderous richness." "I have now shown," writes Mr. Gould, "as clearly and as concisely as I can, that the idea of a universal body of men working with one impulse, and after one set fashion, at the instigation of a cosmopolitan body acting under a central direction which has been very generally believed in, is a myth." We have, however, no proof of anything of the sort in England, for we do not yet know sufficiently how the guilds or lodges worked, if for instructing their members. But the chapter in this volume headed "Early British Freemasonry (Scotland)" has, according to my views, let us know something of the authority certain lodges exercised over others. Mr. Gould informs us that "the statutes promulgated by William Schaw, master of work to King James VI. of Scotland, and dated the 29th of December, 1598, were compiled in order that they might be sent to all the lodges in Scotland, having received the unanimous sanction of the masters convened at Edinburgh." "They were in force in Aberdeen, Banff, and Kincardine, just as in all other parts of Scotland." Is not this a sufficient evidence of a head lodge or school, helping to prove where a consensus could be held when necessary? Now, where was the similar place or places in England? We must refer our readers who may be following this subject, to our comments on the next chapter.

Viollet-le-Duc says that no certain amount of the personality of architects exists before the thirteenth century, and thinks that there must have been schools, and pupils taught by apprenticeship ("Dict. Rais.," s. v. "Architecte").

Mr. Gould has compiled as many instances of workers on edifices in Great Britain as could be recovered from the restricted sources previously pointed out. He quotes several clerics recorded as skilful architects or skilled in building, and is assisted in his views by Lingard, who, in his "History of England," i. 266, writes,—"In the monasteries the monks practised the different mechanical arts. By a law published in the reign of Edgar, but probably transcribed from a more ancient regulation, every priest was commanded to learn some handicraft in order to increase knowledge." "We gather the names of seven *cementarii*, who evidently were more than mere workmen, or even master masons, in our sense of that term; and we have also the names of thirteen clerics, who are supposed, with more or less appearance of truth, to have been,—and some, at least, who certainly were,—architects." But who designed the mouldings and ornament? even giving the clerics the credit of the arrangements of plan and so on, as each monastic Order had its own. "The *cementarii* were of all ranks and classes."

Mr. Gould reserves to the last "the consideration of the list of ecclesiastical architects, real or supposed,"—such as Gundulf, Flammar, Paulinus, Arnulf, a lay brother of Croyland; Stowe and Henry at Evesham, Elias de Derham, Nicholas Cloos, Alan de Walsingham, William Bolton, and William of Wykeham, of whom he judges "that the balance of probability is a good deal in favour of Wykeham," but if so, what becomes of the arcanum of the masons, as there is no assertion he was a mason; but, adds Mr. Gould, "at any rate, which is a point of importance, he had under him three eminent artificers"; and so very probably has Sir Edmund Beckett at St. Alban's Abbey. "We obtain seven *cementarii*, and thirteen clerics; the former were of all ranks and classes,—and were not, by any means, all the more workers raised but little above the class of journeyman, that professional jealousy would sometimes have believed," but "Mr. Papworth records (in 1861-62) an opinion that it is to the master mason, as a general rule, that we may turn for the actual designs of all the well-known erections of the Middle Ages." This is still my opinion, but Mr. Gould appears unable to go so far. With mingled feelings of amusement and gratification I perceive that the two latest historians of Freemasonry, Findel and Gould, have quoted frequently from these two papers.

"I have sought to prove that the operative masons had a much larger share in the construction of these buildings than is usually supposed, inasmuch as they were, to a very large extent, the actual designers of the edifices on which they worked, and not the mere servants of the ecclesiastics." And "I have sought to trace the actual designers of these

* This name is printed "Briginthe" by Mr. Gould and his authority; the plan with the English square east end is erected; the round arch of Italy is used externally, at the time that the pointed arch, as at Salisbury Cathedral and other buildings in England, was being introduced.

marvels of operative masonry, by means of the structures themselves, which amply attest the ingenuity, if not in all cases the individuality, of the skilled workman by whom they were designed." "On the whole, I should be inclined to conclude, generally, that out of Italy and during the Middle Ages the class whom we call architects did not,—save, perhaps, with very rare exceptions,—exist; and that all the buildings we so much admire were the combined work of certain priests and monks educated specially for the work, in conjunction with their master mason, usually attached to the building, as at York, and more often by the master mason alone; but that, when the latter was the case, the master mason was an independent individual; the arrangement last mentioned being more common abroad than in the British Islands." "My impression is," writes Mr. Gould, "that, speaking generally, the Masonic body had little or nothing to do with military works, save in a very humble capacity; and that while they doubtless built the town-halls,—for we cannot conceive two distinct bodies of the same trade working systematically apart,—yet that some, doubtless, adhered much more to one class of work than the other." There is also another class of workmen inquired into, namely, the "bridge builders," but having disposed of them in my paper read in December, 1861, it will not be necessary to revive my observations, Mr. Gould having quoted them sufficiently, and not having to add anything of importance, except a chronological account of those down to old Blackfriars Bridge, designed 1700, by the descendant of the mason Mylne, who "came out of the north countrie to Dundee and Perth."

Throughout this volume, comprising the mason's trade, as was naturally to be expected, that of the carpenters is ignored. There were, undoubtedly, "Free Carpenters" as well as "Free Masons," and the carpenters were imbued with the same principles of design as were the masons. How came the carpenters to change their art as the several periods of Medieval architecture were changed, at the same time as with the masons? Had the carpenters similar local schools and peculiarities as already discussed in respect of the masons? We have no proof of this: hence it leads more and more to a consensus of trades. But a curious coincidence is narrated in the following chapter given in the volume, and the connexion is somewhat elucidated by the action taken by the Scottish corporations. The "Incorporation of Wrights and Masons" was constituted by an Act of the Magistrates and other authorities of Edinburgh in 1475 (ratified by the Archbishop of St. Andrew's in 1517, by Royal Charter in 1527 and 1635, and by the Common Council in 1633), and though originally confined to the members of those two trades,—who have for many centuries generally worked harmoniously together,—in time received into their number the glaziers, plumbers, and others, by decision of the Court of Session, 1703; it was known usually as the "United Incorporation of Mary's Chapel." And the "Seal of Cause" of 1600, at Glasgow, "was required to separate the wrights (carpenters) from the masons as an Incorporation, the coopers having been disjoined in 1659. The reasons offered by the wrights for such division are carefully recited, and were granted by the magistrates and town council on May 3, 1600. The wrights had a deacon and elder and are called *freemen*; they pointed out that the masons could not judge of their work, and *vice versa*," and they were separated. The first notice of the minutes of the "Glasgow Incorporation of Masons" is dated September 22, 1620.

Mr. Gould then proceeds to record some details connected with the English Lodges:—"But at whatever period the masonic bodies first took form, the ceremonies and customs by which they were distinguished are at least of much earlier origin than our oldest constitutions." He then recites the various references to the customs of the workshop or "lodge," the establishment or the master providing tunics (gowns or liveries), skins for (white) aprons, (white) gloves, and cloaks; "strikes, boycotting, and ratoning were, even in those remote times, not wholly unknown"; taking of apprentices, and so on, extracting largely from the two papers before mentioned, read by me in 1860 and 1881. "As regards the grips and signs attributed to the early builders,—that artisans of an especial trade should have peculiar modes of recognising each other when travelling in search of work, is nothing but what might have been

expected,—although, I believe, they did not arise, or at least traces of them have not been found, until comparatively recent times. On masons' marks, he devotes a separate chapter towards the end of the volume.

"The building fraternities or trades of the Middle Ages must have been in many respects like those of the present day, or rather like those of the 'Companions,' which seem to be their legitimate descendants, i.e., as a trade society or union, and must have been essentially different from the *guilds*, although a masons' guild certainly existed, and still exists in London." From this clause, we gather, he considers the two co-existed.

"We must remember that *books*, in our sense of the word, scarcely existed, and that the great bulk of the teaching was *oral*, whilst books of practical geometry did not exist at all." A statement is often seen that William Rede, Bishop of Chichester (1369-1385), who is said to have been the first mathematician of his age, displayed his art in the building of his Castle at Amberley (in Sussex). "I shall not dispute the worthy bishop's mathematical skill, nor, after the display of his military proficiency, that he was the architect and engineer of his own castle." We may remind Mr. Gould that Adelard, of Bath, is stated to have brought the first Arab book on geometry into England, in the reign of Henry I. (1100-1135); also of the letter from Theodoric, given in Cassiodorus about Euclid and geometry. The knowledge of geometry was probably well retained. Albert Dürer, in 1525, published his "Institutionum Geometricarum," and we have that curious work by Roriczer of Regensburg, on the "Ordination of Pinnacles." Halliwell, "Rara Mathematica," pp. 27, 57, would be well worth referring to on the subject. Was the science so well understood, even orally, in the middle of the thirteenth century that it led to the change of art in architecture taken by the "Geometrical Pointed Architecture," the term now given to that period of art between the Early English and the Decorated of Rickman, to which the dates 1270-1330 are given by Freeman; about 1250-1300 by Poole; while Sharpe assigned the years 1245-1315 for its range? "The great cathedrals abroad, with their far loftier elevation, the width and boldness of their vaulting, and counterpoises, which are so highly artificial, required, in all probability, more scientific skill than could well be expected from any class of men not absolutely in the profession. Indeed, this may well have been the Masonic secret, if secret there were, of the Medieval masons,—the masons who acquired great scientific skill,—and that skill could then only be obtained by oral teaching, actual practice, and rule-of-thumb."

Mr. Gould then presents some facts, interestingly put, connected with *foreign builders* and workmen, into which it is unnecessary here to enter, save to state that I do not perceive the connexion between the terms "Lambordos" and "Lombards"; but I agree with him that it would be an immense gratification to find in England a Medieval sketch-book similar to that of Willars de Honecort, discovered in the library at Paris, especially as so few drawings are to be found of English work; and that Meister Johann, who worked 1301-30, was not the first mason employed at Cologne Cathedral, that structure having been commenced fifty years earlier. Very little information, comparatively, is given about the German masons.

The criticisms on some modern architects, as those of an amateur, are amusing, and required a further acquaintance with the lives of those mentioned. Thus, Inigo Jones is represented as an artist and a designer of masques! Wren may be best qualified as an F.R.S., though he had certainly travelled and studied in France! Perrault was a physician; Vanbrugh was, at least, as much a play-writer as an architect! Lord Burlington and Dean Aldrich were competent to erect beautiful buildings by their own unaided talents! But Jones, the father of English revived architecture, though an "artist,"—as it is hoped all architects are,—gave up masques for architecture, and travelled for study twice to Italy. Wren, a great geometer, only went once to the Continent, and then only as far as Paris. Vanbrugh gave up play-writing for architecture; and Lord Burlington had generally an architect or two living in his house.

In Italy, writes Mr. Gould, Palladio is the only pure Italian architect whose "name is in

everybody's mouth"! What, then, becomes of Vignola, Serlio, and Scamozzi, those other revered masters of modern art? "So it is with France and Germany," and,—think of this ye English architects, and ask, What is fame?

"In England, beyond Inigo Jones and Wren, Chambers and Barry are the sole popular names. Vanbrugh is remembered more for his comedies than for the magnificent palaces of Blenheim and Castle Howard; while if a man can enumerate any of the works of Hawksmoor and Gibbs, of Soane, of Smirke, and of Wyatt, he passes for more than ordinarily instructed in the history of English art." Chambers I should have doubted as being a popular name. His only great work is Somerset House, and if the majority of the Londoners were asked who built that edifice, they would be more likely to reply, "The Duke of Somerset, in the reign of Edward VI.," than Sir William Chambers.

I must break off, however, for a time.

WYATT PAPWORTH.

SOMETHING ABOUT SANDGATE AND ITS CONVALESCENT HOME.

ALTHOUGH a comparatively small town, consisting of one main street and a number of short offsets running beachward and inland, yet Sandgate and its immediate vicinity offer many attractions to visitors and health-seekers. As a place of business and trade the town is handicapped by the near proximity of Folkestone, which is less than half an hour's walk from the former. Sandgate, though quiet, is nowise a dull place, particularly in the summer season, and Shorncliffe Camp, which is situated on the hills a short distance inland and above the town, adds, by its wants, to the business of a number of the shopkeepers, and, by the field-days and sports of the military, to the attraction of both residents and visitors. If the lords of the soil, who are *lords de facto*, the Pellhams and the Radnors, were a little more disposed to open a portion, at least, of their lands to building speculation, Sandgate would soon expand in size and also in prosperity. The town could scarcely be more favourably situated, lying, as it does, at the foot of high cliffs or hills, crested by the large plateau of the Shorncliffe Camp. On its westerly end the road-way skirts the sea, and between the railway-station and the entrance to the town a very fair esplanade, or broad pathway about a mile in length, runs along the shore, on which seats are placed at suitable distances. Indeed, it may be said that the Sandgate and the Hythe Esplanade join, and thus as it were form a promenade of two miles in extent. For the information of invalids or health-seekers, we may add that Sandgate is well sheltered, situated as it is on the easterly curve of a fine bay formed by the land ending in Dungeness, in the westerly direction, and on the east by the Folkestone Cliffs. On the brow or incline of the hills running along the inland side of the town proper, and along the approaches thereto, facing the esplanade, at intervals, there are short terraces of houses and detached houses here and there at different heights. As the hills or heights are wooded in places the inland side of Sandgate presents a most pleasing sight in the summer time, and from the elevated position of most of these houses the visitors who may frequent them have a fine view over the town and on to the sea. Steam and sailing vessels are constantly passing in the distance, and on a fine day the cliffs of Boulogne are visible.

The Sandgate beach is wholly a shingle or pebbly one, and during strong seas and winds, and particularly in winter time, the beach-shifts or the ridges of pebbles are being continually carried out and in by the action of the tide. The shingle beach is considered more healthy than a sandy one, though at times it is rather rough to walk upon, save along the margin of the tide, where the beach is more even, if more damp for the feet. There is almost an entire absence of shells along Sandgate beach, so in this respect the children of visitors will be disappointed in their hope and quest.

The town possesses a Local Board, which appears in the past, at least, to have performed some good work in respect to water supply and the outfall drainage. In regard to the former, we found the supply of water pure and drinkable, the source being springs, which we understand are not sunk in a chalky soil. The water

supply of the Shorncliffe camp comes from Folkestone, and has to be pumped up to the needed level. This supply, however, is derived from a chalky soil, and, of course, it is not so palatable as the pure spring water of Sandgate. In case the present springs at Sandgate should in time prove insufficient, the Local Board has in reserve some others to fall back upon. As the Local Board at present does not seem to have too much to do, its attention might be directed to the paving, surface draining, and sanitary state of the short streets or passages that run off the main thoroughfare beachward, and also of some of the small houses in these passages.

We visited a block of brick buildings intended for the housing of the working-classes erected a few years since by a gentleman lately deceased, and whose loss is deeply lamented; these proved a real benefaction to Sandgate. These dwellings are arranged in one, two, three and four rooms, to suit the different wants of the occupants. The rooms are rather small and the drainage is open to considerable improvement. It is reported that the benefactor who built them was very dissatisfied on their completion, and expressed a wish that he would like to pull them down and have them re-built. We assume that it was with the internal arrangements and provisions that he was dissatisfied, but the benefactor is now in his grave, and the building remains. The rooms appear to let well, and the present Committee of Management are said to look sharply after the rents. The external brick-work of this model block of industrial dwellings is disintegrating fast, and a useless amount of ornamentation in coloured brick pannels, and of work by sticking on towers or pinnacles at the angles, appears to have been gone to, which has little or no effect at the present time. Industrial dwellings, without being altogether bare and barnack like, should be built economically, and the chief attention should be devoted to the arrangement of space and sanitary provision internally.

The old houses of Sandgate, and, indeed, some of more modern date, have characteristic weatherboarding front and back, and on the sides that are not joined to other houses. Some of the older class of these weather-boarded houses are, in fact, half-timbered dwellings. At present, as well as in past times, the denizens of Sandgate are fond of bay or oriel windows. Shopkeepers at the present time are putting in round or bay shop-windows, in some cases corresponding in taste with the drawing-room windows above them. In a few of the very old weather-boarded inns and private houses, a quantity of ship timber appears to have been used in the joisting, roofing, and other work which alterations and repairs are revealing from time to time.

The fishing interests of Sandgate are very small; indeed, the few boatmen there hiring their boats out for visitors or pleasure parties in the summer, and doing a little fishing out a short distance from shore, in winter or otherwise at night time, if there be a necessity for their exertions. Folkestone, however, sends its fleet of fishing-boats out daily, and they can be witnessed at work often in Sandgate waters. The boatmen in Sandgate badly need some better place of safety for their boats than that of lying upon high ridges of shingle, over which they have to be dragged in and out of the water.

Sandgate at present can boast of an excellent Convalescent Home, which we carefully went over during our visit. The house is an unpretentious-looking one in its frontage facing the main street, but its sea front with its verandah and terrace, and the addition made some few years since to the building in its westerly end and facing the sea, give it a very good appearance from that aspect. The house, before it was purchased for a home, went through many hands, and was subject to sundry alterations and additions. Some alterations were rendered necessary to fit it for its present uses. Looking at it and through it as a whole, it might be safely said that no architect would, in his wildest fancy, have planned it as it stands, yet, notwithstanding, the building is commodious within and well ventilated, a desirable matter in a Convalescent Home. The Institution at Sandgate, which is the outcome of the London Samaritan Society and Homerton Mission, was first established at Dover between three and four years since, but the building there proving too small for the growing calls of the institution,

and no other suitable building presenting itself, the house at Sandgate was taken as a freehold at the low price of 2,500*l.*, the owners accepting 500*l.* less afterwards in consideration of the purpose for which the building was intended.

The Convalescent Home at Sandgate could not be better located for the health of the patients, their sitting and reading room looking out to sea and the tide daily coming up within a few feet of the sea-front of the Home. It may be worth mention that the last resident or occupier of the house before it was converted to its present uses some months since, was the well-known Mr. Sampson, the writer of the Money article in the *Times*, and in this building also Mrs. Sampson died, not long after her husband.

The Sandgate Convalescent Home presents one of the nearest approaches to a suitable home to meet the wants of the respectable members of the working-classes, or of clerks and other persons whose incomes or wages may be limited, or suspended for the time being through a long spell of illness. Three weeks or a month's rest, if required, is afforded in the Home to all patients, men and women, and no distinction is made as to religion or country, patients from all parts of the three kingdoms being eligible. Certain large manufacturing firms in London contribute a lump sum in the year to this Home, and have the privilege of sending a number of their employees to the Home at a very small charge. Subscribers of a guinea annually have the privilege of recommending one patient yearly, and every donor of ten guineas, paid in one sum, has the privilege of recommending a yearly patient. An ordinary applicant or patient will be accommodated with three weeks' residence in the Sandgate Home at the small cost of 2*l.* 1*s.*—this sum also including the railway fare to and fro. From repeated visits and inquiry we found that the Home is well conducted, and the food and fare are very good. We found no dissatisfaction expressed on the part of any of the patients, the majority of them going home after their sea-side rest thoroughly convalescent.

As Convalescent Homes are most useful institutions when well conducted, and as fresh ones are being started yearly, we thought a few brief words about one we personally visited would not be amiss.

On the question of the proper planning and arrangement of Convalescent Homes a good deal might be usefully written, as well as that upon hospitals and hospital administration. Sanitary, warming, ventilation, and other problems are involved, to which due attention must be paid, so that the Convalescent Home may be truly what it purports to be,—a home of health as well as rest.

STRENGTH OF MATERIALS.*

THERE are few branches of human knowledge in which a more rapid and steady advance has been made during the present century than in the scientific appreciation of the strength of materials. To the architect, to the engineer, to all engaged in the industrial arts, a competent knowledge of this strength forms the very basis of successful design. One of the earliest papers in the first volume of the *Transactions of the Institution of Civil Engineers* is "An Elementary Illustration of the Principles of Tension, and of the Resistance of Bodies to being torn asunder in the direction of their Length, by Thomas Tredgold, M.Inst.C.E." A little later we find "Experiments on the Force required to Fracture and Crush Stones, made under the direction of Messrs. Bramah & Son, for B. Wyatt, Esq., Architect." From that time to the present the subject has attracted the attention of able and industrious men; the chief stimulus to research having probably been given, as we have elsewhere mentioned, by the need for experiments, of a character at that time unprecedented, as preliminary to the construction of the Menai Bridge by Mr. Robert Stephenson.

In the "Life of Sir W. Fairbairn," which we reviewed on its appearance in 1877, will be found indications of our comparative ignorance of the strength of materials as applied to the construction of bridges of large span, so recently as 1845. Mr. Stephenson's idea

for the Menai tube was, that it should assume either a circular or an egg-shaped form; and it was as the outcome of a long series of experiments that the design of which a sketch will be found on p. 201 of the "Life of Sir W. Fairbairn" was arrived at. The mathematical investigations made in order to draw up formulae as the result of experiment were conducted by Mr. Eaton Hodgkinson. From this beginning, down to 1870, Fairbairn built and designed nearly 1,000 bridges, some of them of large spans varying from 40 ft. to 300 ft.

The fourth edition of Sir W. Fairbairn's "Application of Cast and Wrought Iron to Building Purposes" was printed in 1870. Another contribution of great value to this investigation is found in the "Experimental Inquiry into the Tensile Strength of, and other Properties of, Wrought-Iron and Steel," by David Kirkaldy (the inventor of a special apparatus for testing strength), of which a second edition was published in Glasgow in 1864.

The question of the strength of materials has a two-fold nature. On the one hand is the inquiry into the definite resistance which iron, steel, wood, stone, or any other substance opposes to tension, to compression, to torsion, to impact, or to any other form of disturbing force; and, on the other hand, there is the investigation of the structural forms into which such material should be converted, for the purpose of obtaining the exact strength for any defined purpose, including that margin over the net strength, which is known as the factor of safety. The solution of these structural problems by graphical construction is one of the most elegant, as it is one of the latest, outcomes of scientific study. Among books of this nature we reviewed, some two years ago, the detailed and elaborate work "On the Graphical Determination of Forces on Engineering Structures," by James B. Chalmers, C.E.

We might cite other works on the subject, of more or less value, but such a bibliographical chapter would, perhaps, be more suitable as an addition to the second edition of Mr. Box's valuable work than as a contribution to our own pages. Notwithstanding all that has been written, there is room for this treatise, and room that has been excellently filled up by the writer. The names which a glance at the history of construction for the last forty or fifty years naturally calls to mind will be found in their due order (with the exception, we think, of Tredgold) in the pages of "The Strength of Materials."

Mr. Box tells us that his objects have been (1) that the rules and data which he gives shall be correct, and therefore trustworthy; and (2) that their application to practice shall be clearly understood; for which purpose every rule has been illustrated by examples worked out in detail. In respect to a work written on this plan, and comprising 520 closely-printed pages, it is beyond the scope of the reviewer to attempt to stand godfather for every statement. But we can say without hesitation that the arrangement is clear, the plan good, and the execution, so far as we have been able to test it, in no way inferior to what the subject demands.

Mr. Box first speaks of tensile strain, referring to the effect of melting cast-iron; to welded and to screwed joints, and to the effect of annealing. He then passes on to the subject of riveted joints; and reviewing boiler work and girder work of this mode of attachment, passes on to the strength of tubes and pipes, and then to that of chains and wire ropes. He then discusses the shearing strain and the crushing strain.

The appreciation of the values of these different resistances leads to the enunciation of the theory of pillars, and their relation to transverse strains. Chapter IX. treats of the wrinkling strain, and of the "laws of wrinkling"; and Chapter X. gives general rules as to the transverse strains. There is then a chapter on "Similar Beams," followed by one on the connexion of transverse and other strains.

The reader is then led to inquire into the load on roofs, the proper strength for rafters, tie-rods, struts, and other roofing details, and the construction of curved roofs. We then have chapters on the torsional strain; on extension and compression; on the deflection of beams; on torsional elasticity; and on the modulus of elasticity. Four chapters, in impact, on the collapse of tubes, on "the factor of safety," and on "fatigue of materials"; and an appendix full of valuable information, complete the volume. It is a book of the utility and the

* A Practical Treatise on the Strength of Materials, including their Elasticity and Resistance to Impact. By Thomas Box. London: Spon, 1883.

careful accuracy of which we can speak in high terms. At the same time, rather as a mark of the rapid march of science than as throwing any slur on the research of Mr. Box, we are struck with the fact that the elaborate and excellent chapter on the collapse of tubes, founded mainly on the experiments of Mr. Fairbairn, and leading up to the "factor of safety," is already almost relegated to ancient history by the successful application of corrugation to the strengthening of tubes. We are not at this moment aware of the date of the application under which the best known form of the application of this method has been carried out, viz., in the Fox and Hopkinson steam-boiler, as made by the Leeds Forge Company, at Leeds. But we can state from personal experience that a brass tube which it is perfectly easy to bend out of form between the finger and thumb, becomes, by the introduction of corrugation, able to resist a very considerable compressing force. We are not concerned, at the moment, to discuss the advantages of this particular form of boiler. But the invention is one of those things which are so simple,—when once found out,—as to lead to the question, "Why was this not done before?" That while the strengthening of iron plates by corrugation is so old that corrugated and galvanised iron plates were employed by the Admiralty in Pembroke Dockyard in 1847, the application of the same admirable expedient to the strengthening of tubes, and especially of boilers, should not even be mentioned in a work so late, and so excellent, as that of Mr. Box, is a fact that shows that the activity of the engineer still keeps, as has so long been the case, in advance of his information, as to what has been actually effected over the whole field of practical science.

BRAMSHILL.*

BRAMSHILL PARK is pleasantly situated in the north-east corner of Hampshire, and is reached in half an hour's walk from the Winchester Station on the London and South-Western Railway. The surrounding scenery is such that its exact counterpart is not to be met with in any other district in the kingdom, and it is proverbial for its wide stretches of heather and gorse-covered common land, and its noble growth of Scotch fir, self-sown, and luxuriant beyond belief. Kingsley,—no mean authority where the charms of natural scenery are concerned,—alleged that Bramshill Park is the "only place in England where a painter can see what Scotch firs are." But the chief attraction of the place is the house. It occupies the site of an earlier structure built before 1306, in which year the Bishop of Winchester granted its owner and his wife permission to have the Divine offices celebrated in the domestic chapel when and as often as the family should be at their manor of Bramshill. In the cellars are still to be seen some groined arches of about this date, and in building the new mansion the foundations of the old walls were utilised. The present house was erected 1605-12. The author "is said to have been John Thorpe," but this is tradition only. He is not really known to have been at work after the year 1600. But if he did not actually build the house, he may have left behind him the design for others to carry out. This is a point which is worth a little further investigation. The house is truly described as being in Thorpe's manner, though not entirely so. It is most valuable as an architectural monument, apart from its other merits, in that it marks exactly the fusion of the ancient and the modern systems,—the expiring Mediævalism and the incipient art of Italy combining to make what was an essentially native style,—our admirable English Renaissance. This is well seen in the ground-plan, where the classical love of regularity in the fenestration is indulged in at the expense of the internal arrangements, an original wall of the principal staircase dividing a bay window into two vertical sections, and leaving half a window in the dining-room, having been admitted by the architect, rather than disturb the symmetrical character of the façade. The hall is of the older type, and has its screens; the entrance is not, however, in the traditional place, but in the middle of one side; and we miss the great feature of earlier domestic buildings,—the great hall bay window. That most

delightful of all apartments, the gallery of Elizabethan plan, is here in ample dimensions, 120 ft. long and 20 ft. wide, if the scale may be trusted. The staircase had been despoiled and a poor Georgian affair substituted for it; but it is believed that the staircase at Eversley Manor House was originally at Bramshill, and it has now been restored to its old position. The house is built of brick with dressings of Headington stone, and its general aspect is grave and serious,—too much so, indeed, we should be inclined to say, to have been the work of Thorpe. There is an entire absence of all fuss and dodginess; the parapets are pierced and of the usual design employed in houses of its date, and the entrance has flanking pilasters of the Jacobean type, and a projecting circular oriel above the archway. Freestone is but sparsely used, especially in the jambs of the windows and doors, which are treated in some instances almost as if the intention were to give the effect of an Italian Renaissance "Architrave." There is, however, over the whole a dignity and grace which hitherto our modern architects have failed to catch, or have caught only in few cases, and as if by a happy accident rather than as a result of art. The modern tendency is to overdo everything, and there could be no better corrective of such a spirit than a careful study of the sources of the effect of this excellent example of quiet sober Old English work.

It is a comfort to be able to write that the old house is well cared for, and that by the judicious treatment it has received and is receiving its life may be prolonged for centuries. It has had its vicissitudes, but it has also had its escapes; for it was untouched by the civil contentions of the century of its birth, and emerged unscathed from the troubles which laid its near neighbour, Basing House, in ruins.

We desire to thank the owner for this beautiful record of an interesting and beautiful house; the illustrations to his book are photographs printed by the Woodbury process and therefore permanent, and the architect and archaeologist will be grateful for the details of doors, window mullions, parapets, &c., with which the work is adorned, and which help the professional reader to a just estimate of the true character of the building.

The contemporary painter's bill for the decoration of the mansion is printed at length, and is interesting as showing that the quiet greys and subdued tones which endear these old houses to us were not qualities which suited the taste of their day; for the mullions and other stonework were painted white, and the casements red, and the whole effect must have bordered closely upon the gaudy. In this, however, the Mediæval manner was continued; for we know that early buildings were whitewashed or painted, and even in some cases gilded. An almost childlike love of bright positive colour distinguished our forefathers, and we alone of all the world are persistently sombre and grave in our surroundings.

A line in the aforesaid bill has perplexed Sir William Cope a good deal. It runs:—"For working [elsewhere rendered "painting"] of the wainscot in the tower room after the Chene hanging, 16l." This he reads "in the tower room with the Chene hangings." We would, however, suggest as a contribution to the inquiry, that "after" should here be read "in the manner of" and that the "Chene hanging" was a model to be followed by the painter; 16l. (equal to 112l. of our money) would have been a monstrous charge for merely painting the wainscot below the tapestry in a "tower room," which would be of necessity a small room; but it is a more reasonable charge if the painter's work consisted of "some pretty slight drollery, or the German hunting, in waterwork (i.e. distemper)," in the wainscot panels, a form of decoration which was, as we know from Sir John Falstaff, superseding "those old discoloured tapestries." Chene may have stood for "cheyney," or have indicated the locale of the original; at any rate, the above clue may be worth following up, and, by its aid and a further examination of the family archives, the "mystery of the Chene hanging" may yet be unravelled.

It is the opinion of so good a judge as Mr. Ferguson that the previous house resembled Osburgh in its general plan and arrangements. We had the good fortune to see Osburgh last autumn and to admire what is left of the old structure. The "hall" has vanished. What

would we not give,—what would its present owner not give,—if some of his predecessors had done for Osburgh what Sir William Cope has now done for Bramshill? Let the hint be taken by all whom it concerns. They will do themselves honour and posterity a service by compiling for their several houses and their contents such a complete and intelligent record as that we are now reviewing.

In conclusion, Bramshill has a ghost, of course; but, better still, it is said to be the scene of the "Old Oak Chest" tragedy, and the chest itself was removed,—no one knows whither,—by the widow of Sir Denzil Cope, who died in 1812.

Our author inclines to the belief that the story is a fiction, or, at any rate, that Bramshill is not the scene of its occurrence. Wherefore? He owns that it may have happened to one Elizabeth, daughter of the sixth Baronet, buried at Eversley in 1730, and that her cousin Sir Richard, who probably knew all about it, was "a man of very peculiar disposition," and may have purposely maintained a moody reticence on the sad subject. Then, why pronounce positively against the tradition? Sir William Cope will forgive us if, while taking our leave of his agreeable book, which only lacks an index, and perhaps an index map, for which the 6 in. Ordnance Survey is conveniently available, we prefer to abide by the common belief of the locality, and as an additional piece of romantic interest to associate his splendid inheritance with one of the saddest episodes in the history of honourable but unfortunate love.

THE BURNING OF THE RATHHAUS TOWERS AT AIX-LA-CHAPELLE.

It is a common saying that "they do these things better in France." Now, however inferior we may be supposed to be by some people to the French, we may certainly pride ourselves in being immensely in advance of the Germans in our methods of extinguishing fires when they break out in our towns. Notwithstanding what we have to say of some individuals who appear to have acted with good sense and courage, we have little hesitation in asserting that such a scene of muddle and confusion as that witnessed at Aix-la-Chapelle could scarcely have taken place in any English village, to say nothing of a large and important city.

If we may believe a writer in the *Germania*, no decided effort was made to extinguish the fire which broke out in one of the narrow streets surrounding the town-hall, until several houses and the town-hall were noticed to be on fire. The writer says that one good common-sense woman extinguished the fire, which had broken out in one of the houses, by emptying the contents of a tin jug upon it two or three times, showing how easy it would have been to extinguish the conflagration if it had only been taken in time; but, wonderful to relate, although smoke was seen rising from the "Granusturm," or eastern steeple of the town-hall, nothing whatever was done to "extinguish the fire for over twenty minutes!" The good old woman with her tin jug would have settled the matter in a few seconds, but the whole force of German officialism, with its cumbrous police arrangements, was evidently struck all of a heap by a fire breaking out in a town-hall: so for twenty minutes no efforts whatever were made to save this magnificent old structure, while the German police, firemen, and Government officials were looking on. The Granusturm burst out into flame, the streams of molten copper and lead pouring down in all directions, until, at last, with an immense crash, the great bulbous spire fell in, setting fire to the roof of the Kaisersaal, which occupies the space between the two great towers. Now, will it be believed that a large force of military and police were present, but that, instead of making any attempt to save the noble old Rathaus, or even to extinguish the flames, they occupied themselves in taking the furniture out of the houses which were not in flames, though it is evident from the writer in the *Germania* that the crowd had absolutely called attention to the fact that the Granusturm was in danger of destruction? With such blundering it is by no means wonderful that the other lofty steeple at the west end of the Rathaus, which stands over the repository for the town records, was soon on fire. The force of the flames was now so intense that this vast spire twisted round and fell headlong into the blazing mass. Twenty

* Bramshill: its History and Architecture. By Sir William H. Cope, bart. London: H. J. Infield.

other buildings, chiefly private houses, were soon on fire, and the greatest danger was anticipated for the wonderful old cathedral, the ironwork upon the roof of which was red hot. The fire, however, which up to this time appears to have received little check at the hands of man, did at length meet with an obstacle raised by hands which have for five centuries gone to their rest, and this was the splendidly-constructed vaulted roof of the Kaisersaal, which resisted the force of this burning furnace, the streams of molten lead and copper, the fall of the timber spires, and all the other dangers. It is simply wonderful the safety which a vaulted roof is to a building. The cathedrals of Chartres and Rouen, and the choir of Canterbury, would have been reduced to ruin by fire but for their roofs of stone. York Cathedral has been twice reduced to ruin through its roof vaulting being composed of timber. Judging from Hollar's view of Old St. Paul's, the vaulting over the nave of that church appears to have been constructed of wood, and this may account for its destruction in the Great Fire of London.

When the old Houses of Parliament were burned down, everything was destroyed, except the cloisters and crypt of St. Stephen's Chapel, and these were the only portions of the building which were vaulted in stone.

That the Kaisersaal at Aix-la-Chapelle owes its safety to this cause alone need scarcely be a matter of doubt; for every single thing that could be burned was burned until the fire met with this obstruction. And does this not caution us that no public building is safe from the danger of fire without a stone or brick or concrete vault?

When one thinks how comparatively cheap vaulting is, how unaccountable is the fact that in England we hardly ever make use of it, even in our churches!

But for this stone-vaulted roof not only the Rathaus at Aix-la-Chapelle, but the cathedral, —nay, the whole town,—might be now a heap of ashes. We should strongly recommend the good people of Aix-la-Chapelle to vault even their private houses with brick or stone, because if the intelligent officials whose duty it is to put out fires stand by and look at a public building burning for twenty minutes or half an hour without its striking them that a little water might be of use, it is highly probable that a good deal of burning may take place in the fine old city, and they cannot always trust to having the good old lady with her jug at hand. Our readers will scarcely believe that this fire at Aix-la-Chapelle broke out at two o'clock in the afternoon, so that it was immediately discovered, nor will they wonder less when we tell them that the very writer in the *Germania*, who has given such a graphic account of the matter, absolutely warned the authorities of the city only eight days back of the great danger of such a catastrophe and of the inefficiency of the arrangements to avoid or subdue it. We trust, however, that the very severe lesson which the authorities of the town have received may not only make them more vigilant and careful and more prepared to cope with such an outbreak in future, but that it may also read a lesson to people nearer home. Fires are certain to take place in our towns, and the danger from them does not decrease. On the contrary, the use of mineral oils and other inflammable substances, the luxurious habit of over-furnishing our houses, the rage for light gassy substances, lace curtains, toilet covers, &c., add not a little to our danger, nor does the flimsy mode of construction adopted by our speculative builders in any way lessen our risks. We have seen an old half-timber house at Wurzburg on fire, which, after three days' burning, was only injured as to its roof and upper story, whereas a short time back we saw a "neat and compact desirable brick residence" at Notting-hill burned literally to the ground in half an hour!

We do not think that the regulations with regard to fires are half severe enough, either here or on the Continent. We have frequently seen houses to let in which the hearths are all cracked and broken. Now, every house which has the hearth-stone broken is in danger of catching fire. We frequently find stores set in such a manner as to leave a deep hole on either side. These holes, which it would not probably have cost the builder 2d. to fill up when the stove was "set," are a serious cause of danger; the soot from the chimney falls into them, and they become clogged, they catch fire and burn for days until at last some spark finds its way

to a concealed beam, and in a few hours the house is burned down.

We caution our readers and the public in general whenever they *small burning in a house* never to rest until they have found out whence the small proceeds, and, if there is any danger, at once to remove all risk at any trouble or inconvenience.

We have in this notice of the fire at Aix-la-Chapelle taken our view of the case from a writer in the *Germania*, and, of course, do not vouch for all the facts which he states; but as he was evidently a spectator of the scene, as he writes with a thorough knowledge of the subject, and, moreover, as he had previously cautioned the authorities to expect such a catastrophe, the result of which has fully justified his forebodings, we cannot help thinking that there must have been a great absence of proper precautions against the outbreak of fire, and a most unwarrantable delay in making the most ordinary attempts to extinguish it. Knowing, as we do, how well-trained the members of the German fire brigades generally are, we do not doubt that when they were called out they did their duty; but either their machinery must be cumbersome and out of gear, or something must have been wrong somewhere to cause such an unaccountable delay. We rather fancy that the unwieldy system of German officialism and "red tape" may in some way account for it. We have all heard the story of the king who was burned to death because "the courtiers could not settle amongst themselves whose duty and office it was to put out the flames." Possibly something of the same kind may have taken place at Aix-la-Chapelle.

LIGHT AND AIR.

The committee of the Institute of British Architects appear to be still prosecuting their labours. Mr. E. S. Roscoe, barrister, who has been recently added to the committee, has addressed the following memorandum to the special committee on light and air:—

"The following observations appear to strengthen the opinion on this subject which was stated in my previous memorandum. It was fully shown in the paper prepared by Mr. J. L. Goddard that the Prescription Act was passed through Parliament without the question of the right to light being discussed in either House. I have looked with some care both at the first report of the Royal Commission of 1828, on which the Prescription Act is based, as well as at most of the evidence laid before the Commission. I do not find that the question of the right to light is specially discussed either by the Commissioners or by the witnesses. It does not seem to be treated as a question apart from any of the other subjects to which prescription by common law applied. Coupling this, therefore, with the fact that the question was not discussed in Parliament, it seems to me to follow that the Act was passed, so far as regards the right to light, without there being any reason for it, and without any consideration of its probable consequences. It seems, in fact, to have been like some more strictly political measures,—quite a leap in the dark; and there appears no reason why the mere fact of such a measure being in the Statute Book should be any argument against its repeal, having regard to the circumstances under which it became law. I venture also to think that the state of the law in regard to prospect is not without some valuable bearing on the subject. As is well known, no action will lie for the interruption of the prospect of a house, however much the value of that house may be lessened by such an interruption. More than once has this question been tried, and in refusing the aid of the Court of Chancery in 1752, Lord Hardwicke said: 'It is true that the value of the plaintiff's land may be reduced by rendering the prospect less pleasant, but that is no reason for hindering a man from building on his own ground' (Fishmongers' Co. v. East India Dock Co., 1 Dickens, 163). Again, in another and similar case, the same judge said, if he granted the plaintiff's prayer 'there could be no great towns, and I must grant an injunction to all the new buildings in this town' (Attorney General v. Doughty, 2 Vesey Sen., 453). But the same reasons which prevent an injunction being granted in the case of an interruption of a prospect are equally strong in the case of an interruption of light. In each case building operations would be, or are, interfered with,

and if it is unadvisable to interfere with a man when he lessens the value of neighbouring property by interrupting a prospect, I fail to see why he should be interfered with when he interrupts a light. It is true that as the law now stands an enjoyment of the light for twenty years gives additional value to the property which has had such enjoyment, but this is no reason against a discontinuance of the law, but merely one in favour of respecting vested rights. The exact similarity between prospect and light may be seen if we bear in mind that A may be the owner of a residence with a prospect, not of a distant kind, but with one which may be of enormous value to his house, and that B may come and deprive him of it altogether, and depreciate the value of his property to a very great extent. On the other hand, A may have a building, one room of which has an indefeasible right to the light, and if B comes and erects a valuable building opposite the windows of this room so as to darken it substantially, he may be prevented from erecting his building, or have to pay a pecuniary fine if he wishes to continue his operations.

Temple."

E. S. ROSCOE.

INTERNATIONAL EXHIBITION AT NICE.

The sanitary condition of the Riviera is a matter of such vital importance to the thousands of British subjects who annually visit that enchanting locality in search of health, that the sanitary and medical section of the exhibition which is to be opened at Nice in December next assumes unusual importance. The Mayor and Municipality of Nice have taken wise measures for the organising of this Exhibition; and they ask especially for the co-operation of all whose occupations make them familiar with sanitary needs, and whose efforts are constantly directed to supply them; such as engineers, architects, manufacturers of sanitary apparatus, pharmacists, and the makers of meteorological and other instruments. A circular recommending the Exhibition to support, and signed by twenty-four of our best known physicians, professors of hygiene, sanitary engineers, meteorologists, and medical jurists, has been issued, having been drawn up and approved at a meeting held at the House of the Society of Arts on June 26, 1883. Messrs. J. M. Johnson & Sons, of 1, Castle-street, Holborn, have been appointed officials for space must be made, and from them all information can be obtained. The programme of the sanitary section of the Exhibition is a full one.

THE INSTITUTION OF CIVIL ENGINEERS.

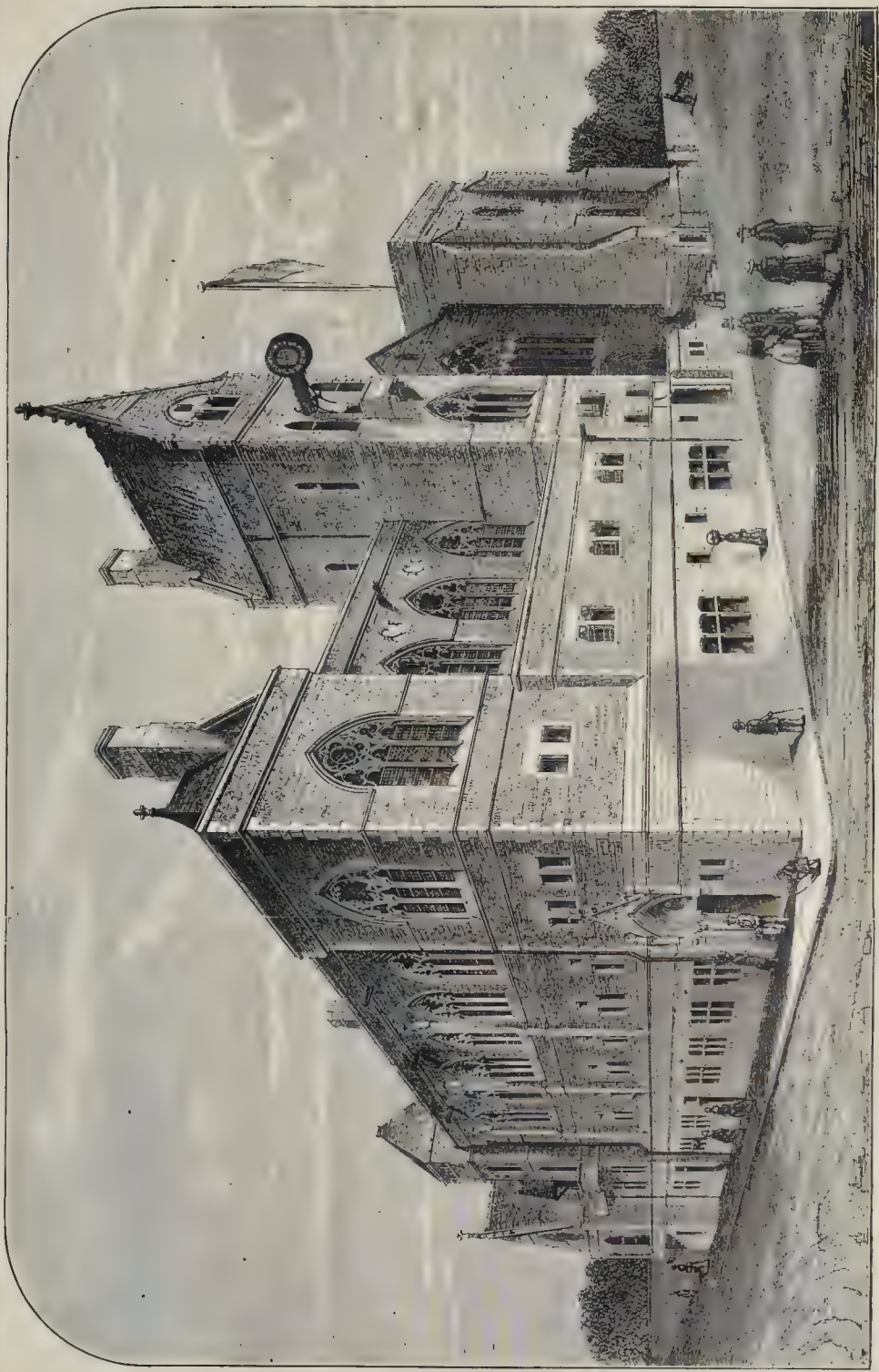
PREMIUMS AWARDED.

The Council of the Institution of Civil Engineers have awarded the following premiums:—

For Papers read at the Ordinary Meetings.

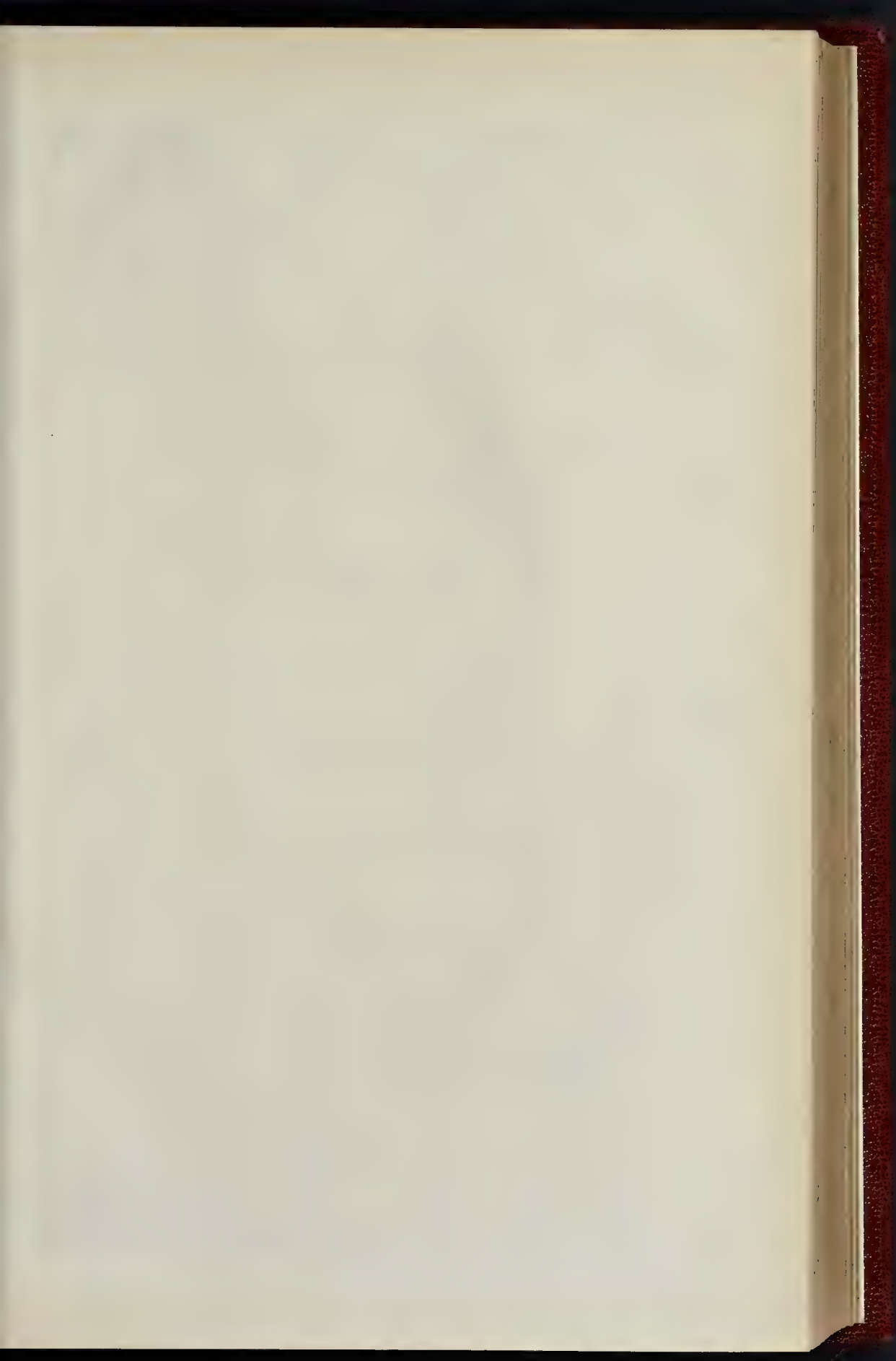
1. A Telford Medal and a Telford Premium to Ralph Hart Tweddell, M.Inst.C.E., for his paper on "Machine Tools and other Labour-saving Appliances, worked by Hydraulic Pressure."
2. A Telford Medal and a Telford Premium to William Anderson, M.Inst.C.E., for his paper on "The Antwerp Waterworks."
3. A Telford Medal and a Telford Premium to Major Allan Joseph Champneys Cunningham, R.E., Assoc. Inst. C.E., for his paper on "Recent Hydraulic Experiments."
4. A Telford Medal and a Telford Premium to Alexander Leslie, M.Inst.C.E., for his paper on "The Edinburgh Waterworks."
5. A Telford Premium to John George Gamble, M.A., M.Inst.C.E., for his paper on "The Waterworks of Port Elizabeth, South Africa."
6. A Telford Premium to Patrick O'Meara, M.Inst.C.E., for his paper on "The Introduction of Irrigation into New Countries, as illustrated in North-Eastern Colorado."
7. A Telford Premium to William Morris, M.Inst.C.E. (of Deyford), for his paper on "Covered Service-Reservoirs."
8. A Telford Premium to John Fernie, M.Inst.C.E., for paper on "Mild Steel for the Fire-boxes of Locomotive Engines in the U.S.A."
9. A Telford Premium to John Daglish, M.Inst.C.E. for his paper on "The Sinking of Two Shells at Maraden, for the Widdow Coal Company."
10. The Manby Premium to Thomas Bell Lightfoot, M.Inst.C.E., and John Thompson, for their paper on "The Design and Construction of Repairing Slipways for Ships."

The Noel Park Estate, Wood-green.—"The Artisans', Labourers', and General Dwellings Estate," recently illustrated in our pages, has just been named, after the company's chairman, the "Noel Park Estate, Wood-green." We are asked to mention this as giving a more precise idea of its position.

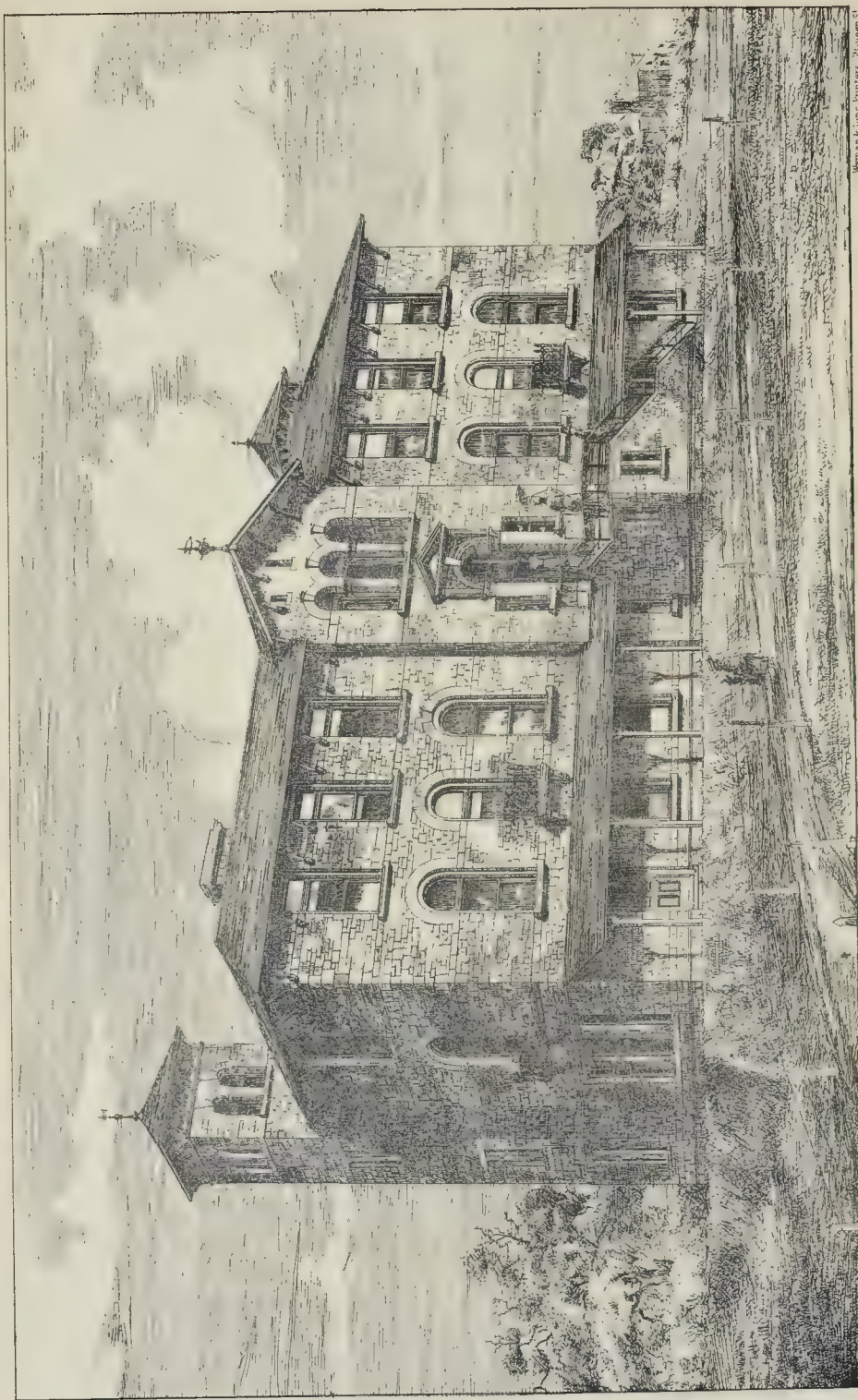


NEW TOWN HALL FOR DOVER.—THE LATE WILLIAM BURGESS, A.R.A., ARCHT. R.





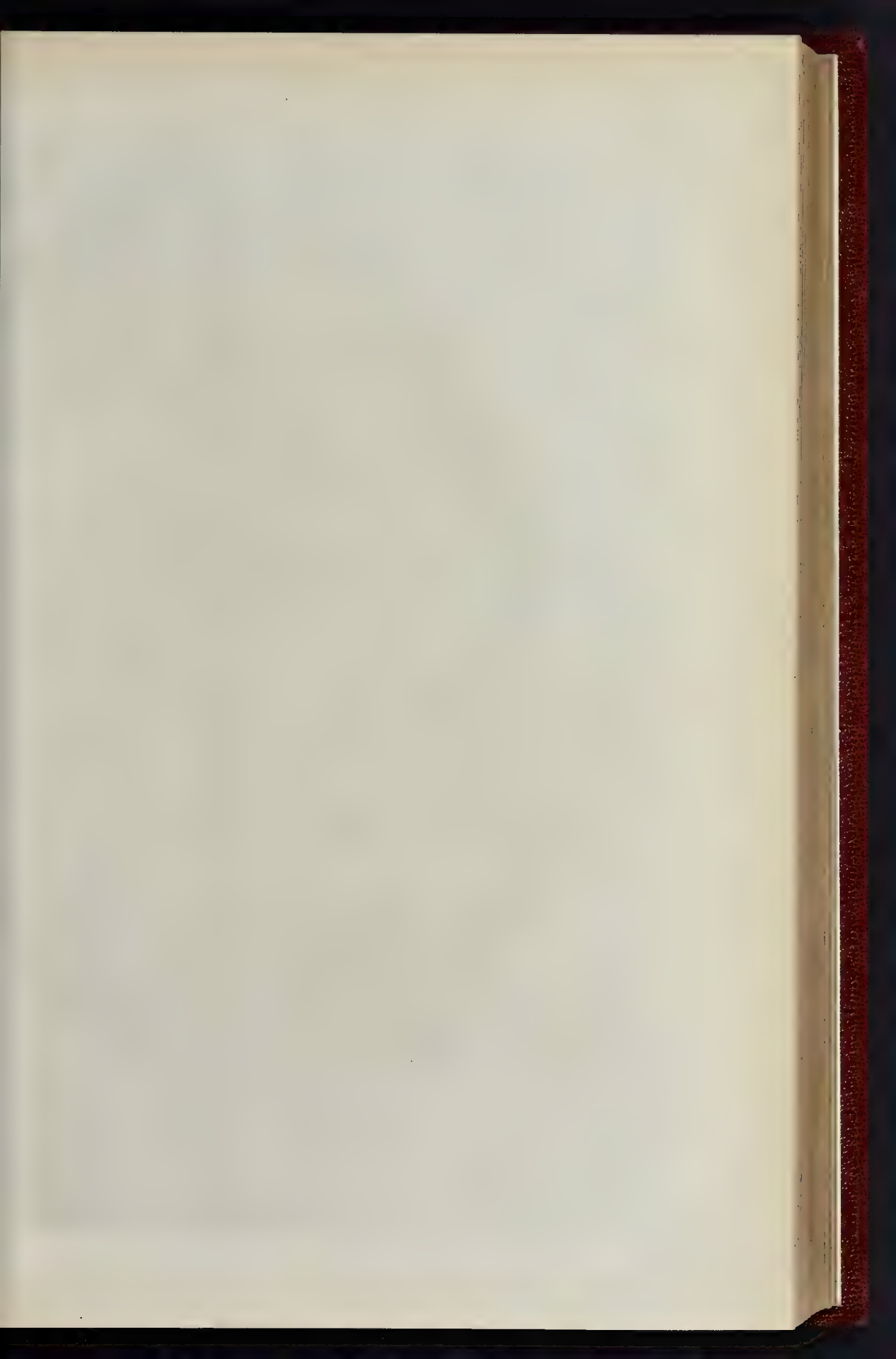
THE BUILDING, JULY 14 1883.



THE BUILDING, JULY 14 1883.

SANATORIUM AT REEDHAM.—PROFESSOR T. ROGER SMITH, ARCHITECT.

W. J. SMITH, ARCHITECT.



THE BUILDER, JULY 14, 1883

S: MARY'S:
CATHOLIC CHURCH:

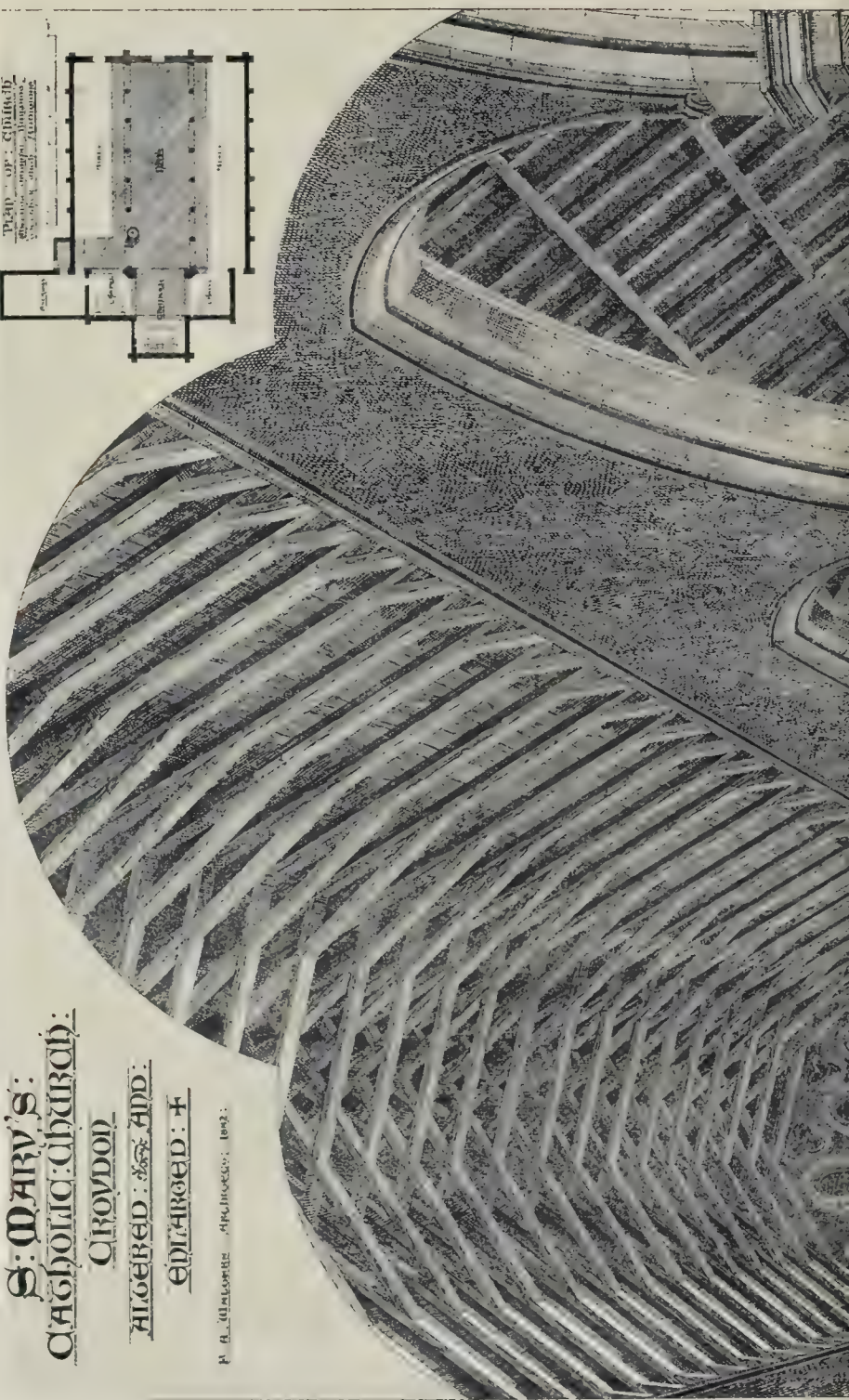
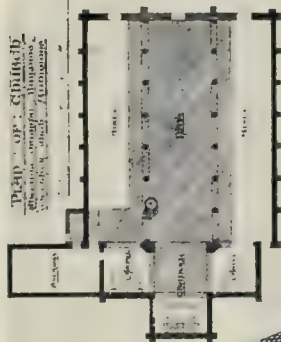
CROYDON

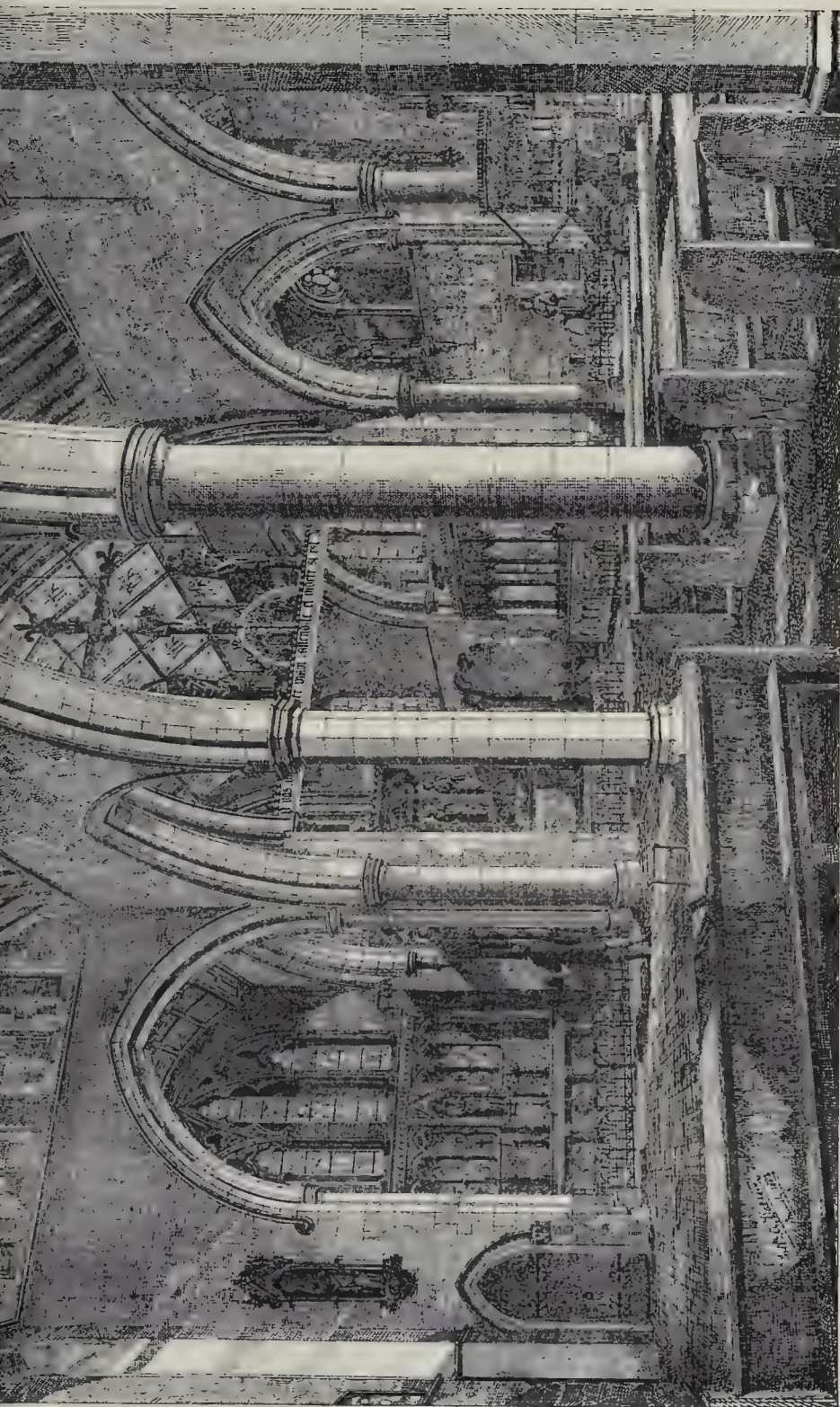
ALTERED: ~~AND~~ ADD:

ENLARGED: ~~+~~

A. H. LITTLETON ARCHT. 1882.

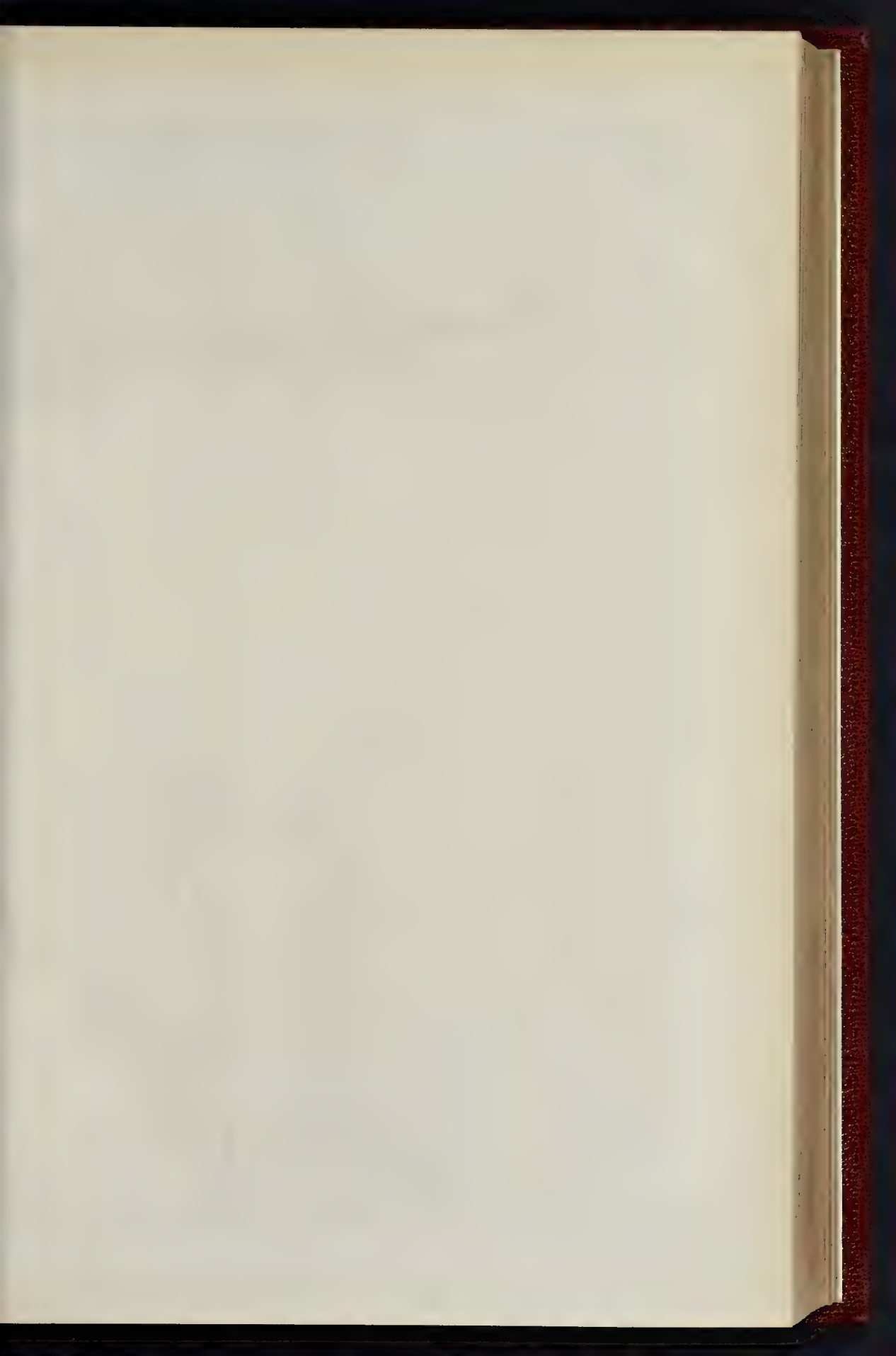
PLAN OF CHURCH
Showing original alterations
and enlargements



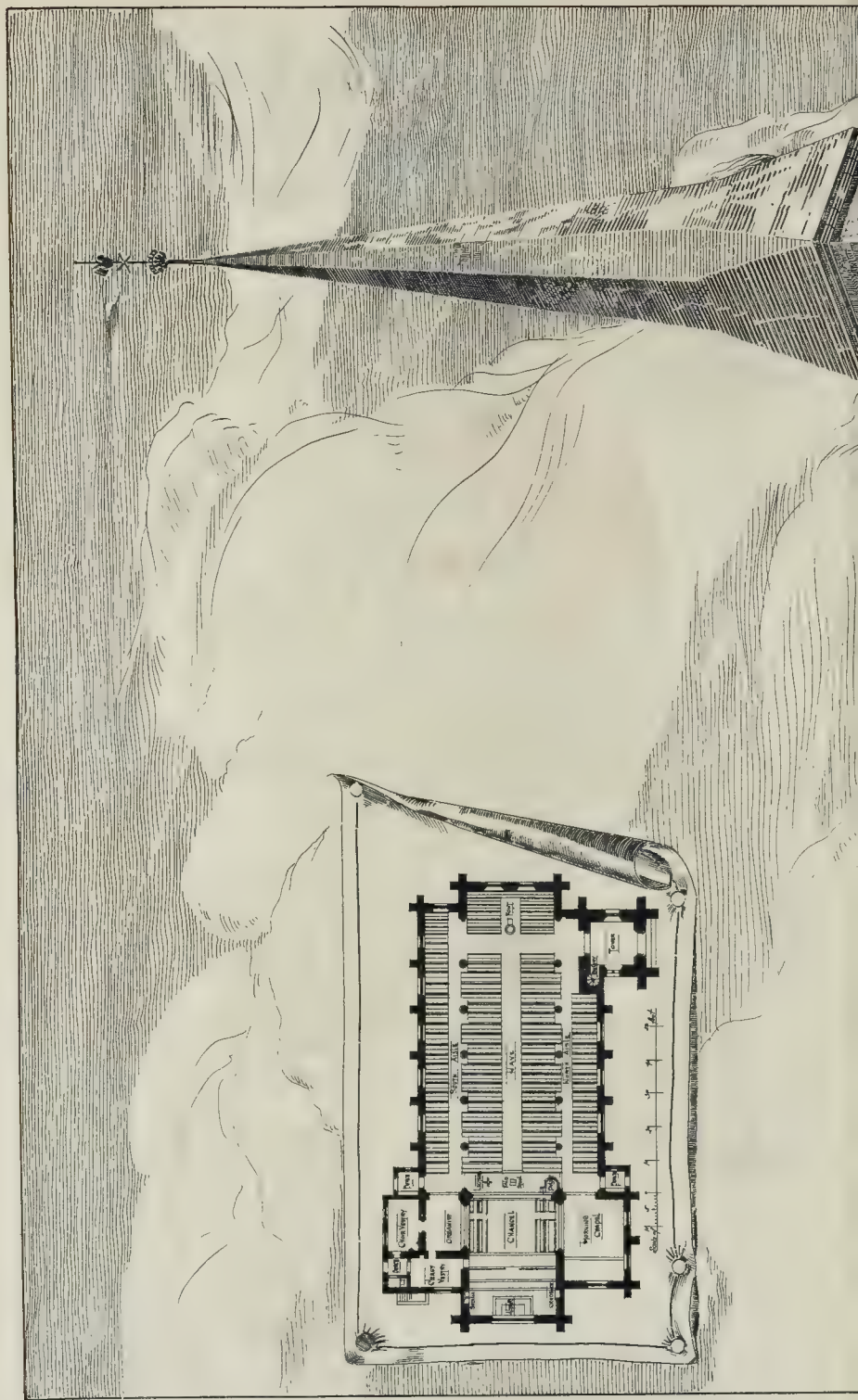


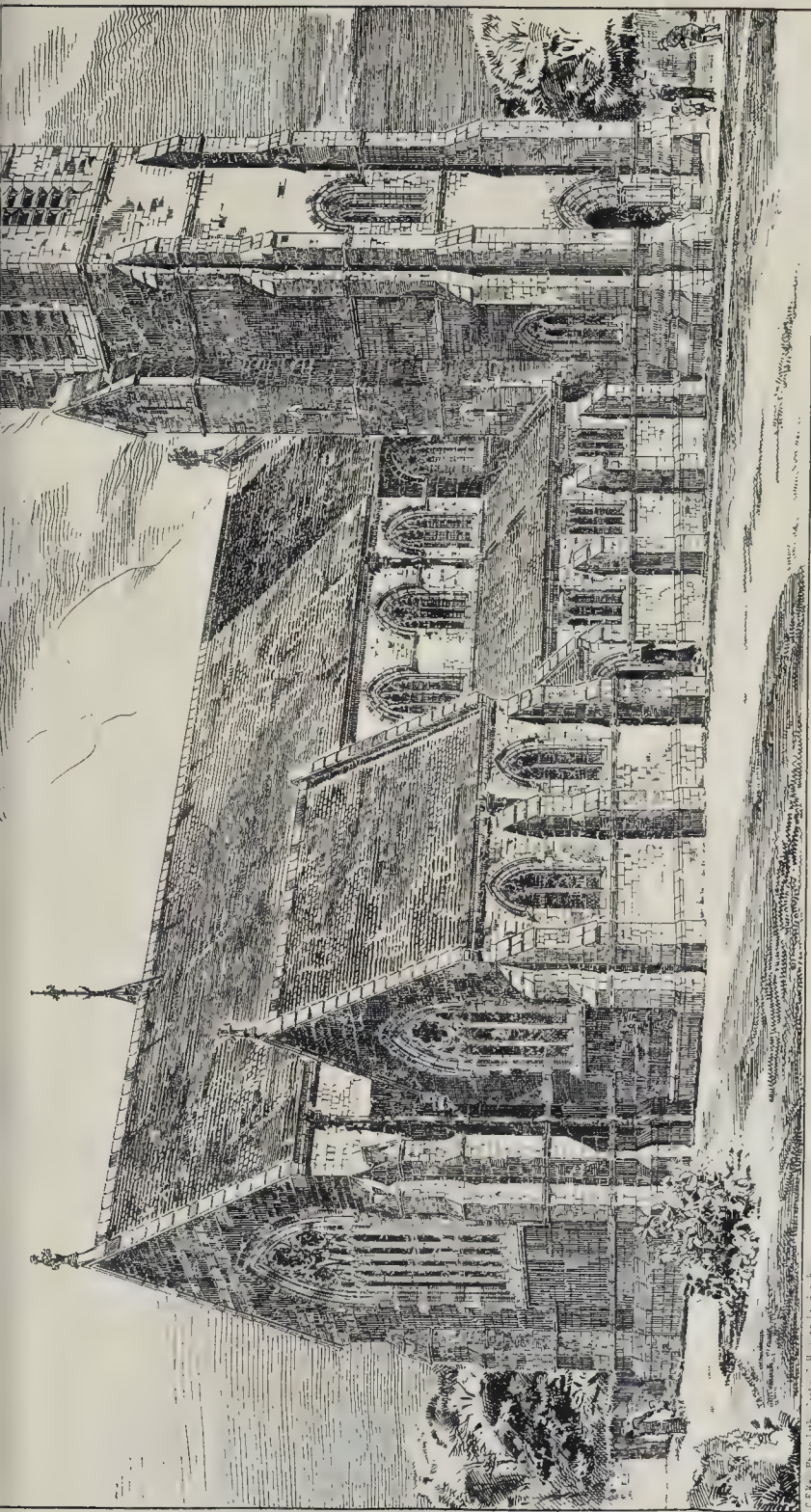
W. J. L. 1851

W. J. L. 1851



THE BUILDER, JULY 14, 1883.



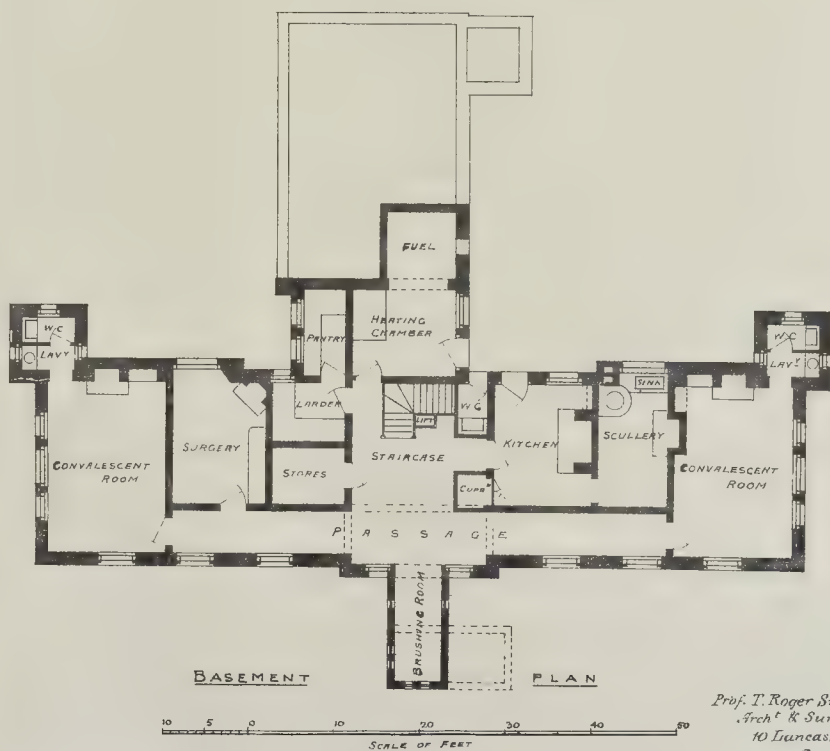
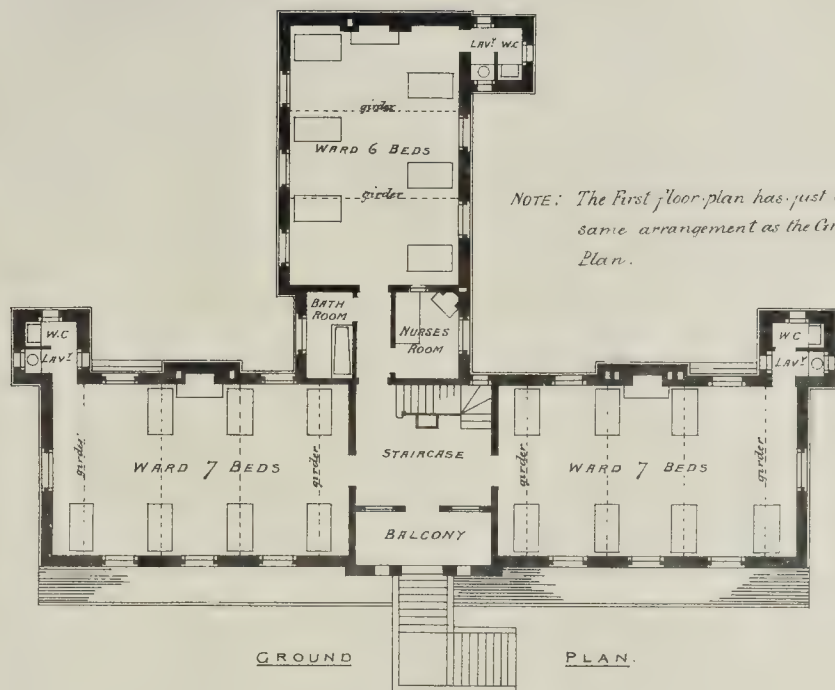


C.F. Newell, Photo. Lith. City & County of Kent.

Wynne & Sons Printers, 10, Queen St.

PROPOSED CHURCH, WESTGATE-ON-SEA, THANET.—MR. C. N. BEAZLEY, ARCHITECT.

SANATORIUM AT REEDHAM



Prof. T. Roger Smith.
Arch. & Surv. E.
10 Lancaster Place
Strand, W.C.

DOVER TOWN HALL.

THE Maison Dieu at Dover, an oblong hall built at the end of the thirteenth or beginning of the fourteenth century, for the reception of distinguished visitors and pilgrims, was until lately used as the Town-hall. It was also a vestibule to the Council Chamber and Court-house, the modern Gothic apartments being in execrable style. In 1880 the Mayor and Corporation, finding the accommodation afforded by this hall inadequate, called in Mr. Burges to advise them about the erection of a new set of municipal buildings. He proposed the construction of a much larger hall to run parallel with the existing structure, with Mayor's Parlour and other public offices, on the site of a large prison which then existed adjoining the Maison Dieu. At the time of Mr. Burges's decease he had prepared plans for this new Town-hall, which have been carried out according to his original intention, under the direction of Mr. R. P. Pullan. The new hall is 90 ft. 9 in. in length by 57 ft. internally, and is situated at the junction of two streets running at right angles, High-street and Ladywell. There is a low ground-floor, occupied by offices, a spacious kitchen, and caretaker's rooms.

The hall and other principal apartments are on the first floor, approached by short flights of steps in the two angles of the shorter front of the building facing High-street. These staircases are carried up higher to give admission to galleries which occupy three sides of the hall. One doorway is in High-street, and the other in Ladywell. The hall itself is divided longitudinally, and two rows of iron columns support the galleries and the roof. The central division is 36 ft. wide, those at the sides are 10 ft. 6 in. At the end between the staircases there is a third gallery, supported by three stone arches. This hall, which will hold 1,200 people seated, is well provided with means of exit and entrance, as there are no fewer than twelve doorways, most of them opening outwards. The ceiling over the galleries is groined in wood; that over the central division is flat, with panels at a level with the summit of the groining. There is an arched recess at the entrance opposite the staircase, occupied by a rostrum, and above it a stone gallery for speakers. Beyond the hall, on the first floor, there are a mayor's parlour, and judges' and witnesses' rooms.

Externally the building is treated in a very picturesque manner. The style is Geometrical Decorated. Adjoining the Maison Dieu, in High-street, there is a lofty clock-tower, with a gabled roof, 93 ft. high. This front is 63 ft. in width, and, between the staircases, has three three-light windows with geometrical tracery, lighting the hall over the gallery at this end. The total length of the edifice on Ladywell side is 102 ft. Seven similar windows to those on the front mark the extent of the hall. Beneath them there is a like number of two-light square-headed windows, lighting the hall beneath the side galleries. A low square tower stands at the end of the hall, dividing it from the offices, and a gable, beneath which there is a bold bay window finishing the building on this side.

The walls, up to the height of the string course, are constructed of Kentish rag; above that, of flint work. The dressings to the windows and doors are of stone. A sculptured figure of St. Cecilia occupies the tympanum over the door in Ladywell, and over the door of the speakers' gallery is the device borne on the Seal of Dover, viz., St. Martin dividing his cloak with a beggar. This, and the other sculptures, were executed by Mr. Nicholls, of Lambeth.

The edifice is decorated with colour throughout in the style adopted in Mr. Burges's own house in Melbury-road; that is to say, the walls of the hall are of cream-colour, with red lines and quatrefoils, and other figures in the tympana and spandrels.

The ceiling is painted with foliated patterns in red and grey on the natural wood. The mayor's parlour is decorated in a similar manner, with the addition of figures of the Virtues in arched compartments. The decorations were executed by Messrs. Campbell & Smith. The warming apparatus and lighting were carried out by Mr. Phipson. Mr. Stiff, of Dover, was the contractor for the whole of the works, which cost a little under 17,000l. Mr. Lonsdale has in hand the first of a series of stained-glass windows, representing Wardens of the Cinque Ports from the earliest times.

PROPOSED CHURCH, WESTGATE-ON-SEA.

THE above church has been designed to meet the requirements of this growing watering-place. If the building is carried out, it will seat 650 persons. The materials are to be Kentish rag, with Bath stone dressings, and the walls inside are to be lined with Hassock. The architect is Mr. C. N. Beazley.

ST. MARY'S (R. C.) CHURCH, CROYDON.

THIS church was re-opened last October, after being almost entirely rebuilt and very considerably enlarged by the addition of two wide aisles, terminating in side chapels; large addition to chancel, and new sacristy, with schoolroom below. The aisles are lofty, and have gabled roofs of unvarnished pitch-pine. The nave roof is very slightly higher, and is the original roof of the church somewhat curtailed by the substitution of the stone arcade in place of the wooden posts formerly existing. The whole of the interior ashlar work is executed in Beer stone; the internal tracery to the windows of the side chapels being supported by columns of grey Belgian granite, much resembling Purbeck marble. Externally, the building is of stock brick, with dressings of Box-ground Bath stone, the roofs being covered with green slates. The style of the church is English Thirteenth-century, but the pulpit, rood-beam, and other woodwork are of Perpendicular character. The architect was Mr. Fredk. A. Walters, of 4, Great Queen-street, Westminster; and the work was satisfactorily carried out by Mr. Samuel C. Parmenter, of Braintree, Essex. Accommodation is now provided for about 800 persons, and the cost, including the altar in the Lady-chapel and other fittings, has been about 4,400l.

A substructure to the whole church, of a height of 13 ft., was necessitated by the site having been formerly a gravel-pit, and thus the work has been more costly than it would otherwise have been.

THE SANATORIUM AT THE REEDHAM ASYLUM FOR FATHERLESS CHILDREN.

THIS building has been designed and erected chiefly with the intention of affording a means of isolating any cases of contagious or infectious disease which may break out among the inmates of this asylum; though other cases of sickness may be treated in its wards, if they arise.

The site is in the grounds of the asylum, but apart and at some distance from, the other buildings, and was selected by the medical officer of the asylum, Dr. Diver, in consultation with Dr. Carpenter, of Croydon, and the architect. The two medical men also drew up a memorandum of the requirements, which have been carried out in the design of the building. Sick-wards were to be provided, each of moderate size, so as to afford the means of isolating three different sets of cases on the girls' side, and as many on the boys' side, should various diseases unfortunately present themselves at one time. Accordingly, a three-story building has been built, giving three wards on the first floor and three on the second floor, with one bath-room and nurse's room common to each group. The ground-floor is appropriated to administrative rooms, day-rooms, &c. The materials used are Kentish rag, with brick backing for the walls, and Tisbury stone for the dressings.

The general contractors were Messrs. Higgs & Hill. The heating apparatus is by Messrs. Haden, of Trowbridge.

The architect was Professor Roger Smith, and the architect's son, Mr. E. E. Smith, acted as clerk of works for the Governors.

The Channel Tunnel.—At the meeting of the Channel Tunnel Committee on the 10th inst., the Channel Tunnel scheme was rejected by six to four. Lord Lansdowne, who presided, having read his report for the first time to the committee, which was strongly in favour of the scheme, six other reports were read by members of the committee. Lord Lansdowne's report was thereafter read a second time, and on a vote being taken was rejected by six to four. Lords Lansdowne and Aberdare, and Messrs. Arthur Peel and Baxter voting for, and Lords Shute, Devon, and Campden and Sir Hussey Vivian, Colonel Harcourt, and Sir Massey Lopes against the scheme.

THE PRINCIPLES OF HOUSE DRAINAGE.

PARKES MUSEUM.

MR. ROGERS FIELD, C.E., who delivered the evening lecture at the Parkes Museum on the 5th inst., gave a description of the new system of drainage carried out at the Museum, with a demonstration of sanitary appliances in action. Before doing this, however, he explained the main principles which should govern house drainage, and gave a few illustrations of the application of those principles. He remarked that Professor Tyndall, in the speech he delivered at the opening of the Museum, said that "the scientific mind, and, indeed, the general healthy human mind, dislikes confusion; it loves unity and order, and unity and order in science are impossible until we have illuminated the field of facts with the light of principles." Now those observations were peculiarly applicable to the present subject. One great peculiarity of house-drainage was the very important part played by details. In fact, whether a house was healthy or whether it was extremely unhealthy often depended upon how some apparently insignificant detail of the drainage had been carried out. It was therefore essential that we should be able to judge what details were right and what details were wrong. Now, the details in connexion with house-drainage were so numerous, especially when we took into account the various kinds of sanitary appliances, which had greatly multiplied of recent years, that it was almost impossible to avoid getting confused about them unless we had clearly impressed on our minds the principles which should govern the details. The sanitary principles applicable to house-drainage were exceedingly simple, but this, which would at first sight appear to be an unmixed advantage, was not altogether so. The very simplicity of the principles caused them to be neglected, as people were inclined to think that they were so self-evident that it was quite unnecessary to consider them. That was, however, a great mistake, as the principles were of vital importance, and could not be too strongly impressed on people's minds. They might be briefly stated as follows:—

1. All refuse matter must be completely and rapidly removed from the house.
2. There must never be any passage of air from the drains or waste-pipes into the house.
3. There must be no connexion between the drains and the domestic water supply.

The lecturer proceeded to enlarge upon these principles separately, giving illustrations of each of them. The first principle, that "all refuse matter must be completely and rapidly removed from the house" was the most important and, at the same time, the most neglected of the three principles. It went absolutely to the root of sanitation. If it were really carried out in its integrity there would be no leaky drains, no polluted subsoil, no production of foul gases in the drains from decomposing filth. The chief agents in the removal of refuse matter from houses were drains, and these had been divided into two classes, viz., self-cleansing drains and drains of deposit. It might at first sight appear strange to talk of a "self-cleansing" drain. Many people looked on drains as things which were in their very nature dirty and must always be so, and thought that as long as drains did not stop up they were necessarily all right. That was quite a mistake. Of course there was often a slight film of dirt adhering to the sides of the drains, but if matters were properly arranged there ought not to be any deposit; in fact, the existence of deposit was a sure indication of some defect. If the drains were really sufficiently well laid there would be no deposit at all unless the fall was insufficient. Where the fall was insufficient, and where such insufficiency could not be avoided, there ought to be provided the means of properly flushing the drains, not once a week or once a month merely, but regularly every day, and the means of flushing adopted should be automatic in action. There were several automatic appliances for flushing now before the public, and their use had been found to be extremely beneficial and effective. As to the way in which drains should be laid, the only way to see whether drains were well laid was to test them. A usual practice in the best work now was to lay the drain in a straight line, and to look along the inside of it in order to see that the joints were properly made. Such joints were at one time very commonly made of clay, which was still used in many cases, very im-

properly. The joints should at least be made in cement, and no one who understood his business would use clay. A very good watertight joint was easily and rapidly made by the use of stoneware pipes, fitted with Stanford's patent joint. These pipes were used for the drainage of the Museum, in conjunction with a short length of iron pipe. Ocular inspection of the interior of the drain, though it should always be made, was, however, not sufficient. A drain, to be safely and properly laid, must be perfectly watertight, and no mere inspection could prove it to be so, however satisfactory might be its appearance. It did not do to trust to appearances in such matters. Whatever care might be taken in laying the drain, its condition as to watertightness could not be relied upon unless it were tested. The necessity for some efficient test had of late years led to the adoption of some important rules of practice. One of them, already referred to, was that the drains should be laid as far as possible in straight lines, with means of access for inspection or cleansing (or both) at intervals, especially at points where the drain trended to right or left. This might seem a simple matter, but the adoption of the practice had several very great advantages. For example, if the drain were laid straight like a gun-barrel, a person could look through it from end to end, and have ocular demonstration whether it was truly laid. But it was also important to ascertain that the drain was watertight, and that could not be decided unless the drain were tested. Now the only reliable way of testing a drain in this respect was to plug it up at the lower end and pass some water into it. If the water stood in the drain after allowing a proper interval of time to elapse, the drain was sound; but if the water did not stand in it, it was unsound, *i.e.* leaky, and the defect should be found out and remedied, even though it might involve the taking up and relaying of the whole drain, for nothing could be more important than that a drain should be perfectly watertight, especially if it passed under a house. No other test than this was to be depended upon. Coming to the question of traps, the lecturer said that a trap was a very important detail in connection with house drainage. A trap might be defined as an appliance consisting either of a piece of bent pipe or of a chamber with a division or "dip" in it, intended to interpose a layer or "seal" of water as a barrier against the free passage of sewer-air into a house. Now the form of the trap, which might be considered by some as an unimportant detail, was really a matter of vital importance. A trap might be made (and too many of them were so made and used) so as to retain foul matter; such a trap was not what a trap should be, for it was a trap of deposit. The old-fashioned square brick-chambered trap, with a stone dip, was emphatically a trap of deposit. It could not help retaining solid particles, which were deposited on the bottom of the trap, and consequently every time water was poured through the trap the deposit of foul matter was stirred up and gave off an offensive smell,—the very evil against which it was intended to guard. Other traps which were condemned by the lecturer as being traps of deposit were the D-trap and the bell-trap. A trap, to be efficient, should be self-clearing, *i.e.* it should be of such a form as to render the accumulation of solid matter in it an impossibility. The only trap that fulfilled this condition in the highest degree was the round-pipe trap of *O* or some kindred shape. With regard to the question of water-closets, the lecturer said that as with traps, so with closets, there were good and bad ones, and it was not always the more expensive ones that were the best. People could not judge of the merits of a water-closet by testing it so as to see whether it conformed to the principles he had laid down. No worse closet could be found than the pan-closet, which, in spite of the fact that it was now generally condemned by sanitarians, was still largely used. Its objectionable point was the iron container into which the basin fitted, and into which the pan discharged its contents when the handle was pulled. The "container" was very well named, for it was a container,—of filth. Its construction was such that while, every time the closet was used, its (the container's) interior was splashed with filth, it was not possible to efficiently flush it. To make matters worse, it very often had under it a

D-trap, the container and the trap together thus forming a double means for the retention of matter which should be at once passed away. With regard to all such defective and improper sanitary appliances, it was of no use to say, "Out of sight, out of mind"; they and their contents might be out of sight, but their evil consequences must make themselves felt in other ways. One of the simplest and best forms of water-closet that could be used was a hopper basin, fitted with an *O* trap of round section, and provided with a proper flush of water. The hopper and trap should be of such form as to allow the standing water of the trap to come well up into the bottom of the basin, and the latter should be squat rather than elongated in form as in the hoppers which were elongated in form the water in descending would pass downwards in a spiral direction, and so lose a great deal of its flushing-power. What was wanted was a hopper of such form as would permit of every part of its interior being thoroughly washed by the flush. There were several good forms of hopper and other closet to be seen in action in the Museum, and their comparative efficiency could be readily tested by putting a reasonable quantity of paper into them, and noticing the rapidity with which they were able to carry it away. Passing to the second principle which he had laid down, the lecturer proceeded to show how the air of the drains could be absolutely excluded from the interior of a house by means of what was known as disconnection of the house-drain from the sewer. The house-drain, at its fall into the public sewer, being properly trapped, a ventilating-shaft (which would be all the better if it could be made large enough to serve as a manhole for inspection) should be made between the house and the sewer. This would generally serve as an inlet for fresh air, which, after passing through the house-drain, should find an outlet by passing up a soil-pipe, which should be carried up full bore to a few feet above the top of the house, but not, of course, to any window or chimney-opening, although, if the drains were properly constructed, there would be no small perceptible at the top of the pipe. A current of air would, by the arrangement described, be continually passing through the house-drain and up the soil-pipe, or momentarily, perhaps, down the soil-pipe and so on out at the other end whenever a closet was flushed. Where one closet was placed above another, the sudden rush down the soil-pipe of the water from the upper closet past the end of the branch-pipe from the lower closet was apt to cause a partial vacuum in the lower branch-pipe, and so to partially unseat the trap of the lower closet, but that could be effectually guarded against by providing a short length of ventilating pipe for ventilating the branch-pipe between its junction with the down-pipe and the closet. All sink, lavatory, and bath wastes should be trapped, even where they discharged over a gully, for the interiors of the wastes were apt to become coated with offensive matter, and if they were not trapped they served as inlets for fresh air, which was apt to become contaminated in passing through them. With regard to the third principle, the lecturer strongly insisted on the necessity of having no direct communication between the cistern from which drinking-water was drawn and the water-closet. Not that two cisterns were necessary. All that need be done was to interpose between the main cistern and the closet one of the small waste-preventing flushing cisterns, fed from the main cistern by a ball-cock. The best of these small flushing cisterns were those which discharged themselves by syphon action, and the best of these, again, were those which had no valve to get out of order. In conclusion the lecturer described the way in which he had applied the principles laid down to the drainage of the Museum buildings.

A number of questions having been asked and answered, Dr. Alfred Carpenter, who presided, moved a vote of thanks to Mr. Rogers Field for his interesting lecture, which was carried by acclamation, and, on the motion of Dr. Poore, seconded by Mr. R. B. Grantham, the thanks of the audience, which was unusually large, afterwards, under the guidance of the lecturer, inspected the drainage arrangements of the Museum.

THE LATE MR. C. H. STOCK.

A TELEGRAM from New Zealand announces the death of Cecil Haden Stock, A.R.I.B.A., of consumption, in his twenty-fifth year; and the sad news will, perhaps, have an interest for some of your readers, for architecture was a passion with him, and he made friends wherever he went.

A son of the Rector of Windermere, Canon Stock, and educated at Felsland School, in the summer of 1877 he became a pupil in his uncle's firm, Messrs. Snooks & Stock, and joined the Architectural Association, where he soon gained the first prize in the elementary class of design, and became its secretary. It was also under the Association's auspices that he went in 1880 to Venice, and returned thence with good store of sketches and pleasant reminiscences.

His office work after this was considerable, but he found time to become a student at the Royal Academy Architectural School, and studied diligently for the R.I.B.A. Examinations; and, in addition to this, he turned his attention to shoring and underpinning, and entirely on his own initiative wrote that successful treatise which Batsford published last summer, and which you were good enough to speak so highly of.

It was also last summer that he had the satisfaction of obtaining, in examination, the R.I.B.A. Associateship and the District Surveyor's Certificate, and was appointed surveyor to a building society in Westminster. He had also found time to submit a design for a church in competition. Strong and athletic as he seemed, however, this continuous strain of hard work must have been too much for him, for just after these successes, and almost without warning, he was stricken down by the disease which has killed him in less than a year.

It has removed one who promised to make a mark in his profession, and whose place in his own circle cannot be filled. H. W. S.

THE POINTING OF RUBBLE WALLS.*

MANY of the architects of the Victorian Gothic style have adopted the plan of pointing the joints of rubble walls; this appears to me a great mistake and a foolish waste of money. Such walls were never intended to be pointed, and never were pointed in the time of the Mediaeval Gothic architects of the Henries and the Edwards; they were occasionally left visible, but rarely, and then only because there was not money enough at the moment to have them plastered and painted. Pointing the interior of a church was always part of the original design, and the architect gave the design for the painting of the interior, just as he did the design for the mouldings, or other ornamental details. On the exterior these rubble walls were also plastered, but the surface was covered with rough-cast to keep out the wet. Many kinds of stone absorb so much moisture if they are exposed to the wet that the walls are nearly always damp, and this makes the interior of the church damp also. Pointing the joints between the rough stones of a rubble wall does not keep out the wet; it does no good either on the outside or inside. In the interior it almost prevents the wall being plastered over and a smooth surface made for painting upon, and the next generation will curse the ignorant people who have thus prevented them from having their churches painted. Perhaps you will be good enough to have this read at a Meeting of the Institute and printed in the Proceedings.

My experience may lead those architects who adopt this vile practice to discontinue it. I am aware that my good friend the late Sir Gilbert Scott is said to have set the example of doing this, but I am sure that he never intended to do so, for did it in the way ignorant imitators do. It was always his practice in restoring cathedrals or any fine old church, to leave visible some parts of the old construction, in order to show what the real features of the building were before he began to restore it. In each of the nineteen cathedrals that were under his care as superintending architect at the time of his death, those who can understand such things can always find some portions of the original work left visible, but not conspicuous. His imitations were generally so well done that if he had not taken this precaution the next

* A letter addressed to the Secretary of the Royal Institute of British Architects.

generation would not have been able to distinguish the new work from the old; but he always considered it the duty of the architect employed to restore a fine old church, to make it a real restoration as far as possible, and not a new design with an old name. For this reason he always left visible a part of the old work, but not too conspicuous, lest it should have a bad appearance, for the general effect of the interior of the building is never to be lost sight of. JOHN HENRY PARKER, C.B.

FINE ART EXHIBITION AND TECHNICAL SCHOOLS AT HALIFAX.

ON Saturday last His Grace the Duke of Somerset, K.G., performed the double ceremony of opening the new Technical School and Mechanics' Institute and the Fine Art and Industrial Exhibition in connexion therewith, in the presence of a large gathering of people. The Huddersfield Mechanics' Institute dates back more than forty years, and during that period it has performed an exceedingly valuable work with regard to primary, secondary, and technical education; but it was some years ago felt that if Huddersfield and the neighbouring districts were to successfully compete with foreign nations in the production of articles of fancy manufacture it was necessary that still further opportunities should be afforded of acquiring that particular kind of technical instruction which should fit the workmen to carry on successfully the various trades in which they were engaged. It was at first decided to extend the old institution, but later councils of a joint committee of gentlemen from the Mechanics' Institute and the Chamber of Commerce determined on erecting a new building, at a cost of 20,000l. Plans were furnished by Mr. Edward Hughes, architect, and accepted, and a commodious building, fitted up with chemistry and dyeing rooms, weaving-shed, art-rooms, library, and all the necessary rooms, has been erected. About 15,800l. has been already promised or subscribed. Some months ago an exhibition was thought of as a means of drawing attention to the technical school, and committees were appointed for the purpose of carrying out the necessary details. The result is said to exceed the expectations of the most sanguine, and there is gathered in the various rooms of the new institute and the annexe and sheds adjoining a collection of articles little, if any, inferior to that which was to be seen at Bradford last year.

EXTENSIVE WORKS AT THE GENERAL POST OFFICE.

THE large new block of post-office buildings, on the west side of St. Martin's-le-Grand, which was erected only a few years ago, is at present undergoing an extensive enlargement by the addition of another story, and, in order to carry out the works, it has been found necessary temporarily to remove the balustrade which surmounts the elevation, and also the central pediment, resting on massive fluted columns, which encloses the royal arms. A portion of the work extending southwards, from the north end of the elevation to the pediment, is now almost completed, and in continuation of the enlargement preparations are now being made for the temporary removal of the pediment. The construction of the additional floor will carry the building to a further height of about 15 ft., and when the works in progress are finished it will contain five floors and the basement, the general face of the elevation being 75 ft. above the street level, while the central portion with the pediment, as restored, will be 90 ft. in height. The enlargement is for the purpose of providing additional refreshment and other accommodation for the officials employed in the telegraphic department of the post-office service.

Further additions are likewise being made to those portions of the post-office buildings on the opposite side. In anticipation of the Parcels Post coming into operation, certain preparatory works have been in progress during the last few months, and are now almost completed. The area to be appropriated to the Parcels Post department is under the open space opposite Newgate-street, at the south corner of St. Martin's-le-Grand, extending eastward to Foster-lane, and the Parcels Post offices will be in a basement under this open space. The

offices, from the Newgate-street frontage to Foster-lane, will be 160 ft. in length, and 36 ft. in width at Newgate-street, narrowing to about 25 ft. at Foster-lane. The offices have been formed by excavating the entire area from the ground level to a depth of about 25 ft. From the floor level to the ceiling the offices are 20 ft. in height, the ceiling or roof being formed by the ground area above enclosing the offices by a roadway flooring of concrete, resting on iron girders and arches. The offices will be lighted by opaque glass carried round the sides of this roadway. The entrance will be by a flight of steps near the Newgate-street approach, where a building containing a lift has been constructed for lowering and raising parcels to and from the office below.

Messrs. Mowlem & Co. are the contractors for both of the works above named.

REBUILDING THE "COCK" TAVERN.

THE rebuilding of this historical hostelry is intended to take the form of an extensive restaurant, with a handsome elevation to Fleet-street. The site has passed into the hands of those well-known restaurateurs, Messrs. Spiers & Pond, who have not only purchased the building lease of the old "Cock" proper from the parties to whom it was sold at the Auction Mart a few weeks ago, thereby entering into an undertaking to pay a ground-rent of 500l. a year for this portion of the site, and expend 5,000l. in rebuilding, but they have likewise taken from the Corporation, on an eighty years' building lease, the vacant land between the "Cock" and Mr. Attenborough's new building, now in course of construction, which contains an area of 2,100 superficial feet, and for which they are to pay a ground-rent of 800l. per annum, entering at the same time into an undertaking to expend a large sum in building upon the site. The intention of Messrs. Spiers & Pond is to perpetuate the old "Cock" by the erection of a restaurant on the entire site bearing the name of the ancient hostelry. Mr. Verity, architect, has been entrusted with the preparation of the plans.

CRICKET MATCH,

BETWEEN THE STUDENTS OF THE ROYAL ACADEMY OF ARTS, AND ST. JOHN'S WOOD ART SCHOOLS.

THIS match was played at the Eton and Middlesex ground, on Friday, June 29th, the Royal Academy Students winning by an innings and forty-six runs. For the Royal Academy, Blomfield, Swinstead, Kerr, and Simpson batted well, and the bowling of Keen was very effective. For St. John's Wood, Lovell played very steadily. During the afternoon the ground presented a very gay appearance, numerous artists of the latter sex gracing it with their presence. After the match the rival elevens were most hospitably entertained by Mr. A. A. Calderon, at the St. John's Wood Art Schools.

ROYAL ACADEMY STUDENTS.

First Innings.

R. T. Blomfield, b Gunn	35	Ansell, b Lorraine	0
E. Smith, c Barry, b		F. Simpson, not out	25
Gunn	1	W. Keen, b Lorraine	0
H. Bates, b Dickson	3	Parker, b Maud	7
G. H. Swinstead, b		C. Res, b Lorraine	1
Lorraine	39	Wides, 3; byes, 4	7
E. Woodthorpe, run out	7		
Kerr, b Lorraine	21		
		Total	146

ST. JOHN'S WOOD ART SCHOOLS.

First Innings.

Lovell, b Swinstead, b Keen	8	b Keen	11
Harris, b Keen	0	c Swinstead, b Ansell	1
Lorraine, c Smith, b Keen	0	b Keen	2
Tollmach, b Keen	3	b Keen	2
Gunn, b Keen	4	b Keen	4
Maud, c and b Keen	4	b Swinstead	2
Barry, b Keen	4	b Ansell	8
Dickson, b Swinstead	0	not out	0
Brown, not out	2	b Ansell	10
Egerton, b Swinstead	2	b Keen	0
Biddington, b Keen	1	b Ansell	4
Byes, 17; leg-byes, 3;		Byes, 6; wides, 3	9
wides, 1	20		
		Total	53

Total

New Clock at Bisleigh Church, near Stroud.

—A turret clock, the gift of Mr. J. Dorrington, has just been fixed in the tower of this church. Its manufacture was entrusted to Mr. J. W. Benson, of Ludgate-hill. The clock shows the time on two dials, 4 ft., and 4 ft. 6 in. diameter; it strikes the hours on a bell of 16 cwt., and chimes the Westminster quarters upon four others. The whole of the wheels are of hard brass, the escapement being a Graham's dead beat; the pendulum beats one second and a half, with a bob weighing 13 cwt.

THE CITY OF LONDON COLLEGE.

ON Saturday last H.R.H. the Prince of Wales inaugurated the new building of the City of London College, situated in White-street, Moorfields, near Moorgate-street Railway Station. The institution, which was founded in 1848, migrated in 1860 from Crosby Hall, Bishopsgate-street to Sussex Hall, Leadenhall-street, and in both places its educational work was done by means of evening classes, always at great disadvantage for want of adequate space. The new building in White-street, erected at a cost of 16,000l., affords suitable accommodation for 4,000 students. It includes a spacious hall, a library, a reading-room, art and cast rooms, a laboratory, a coffee-room, and all the essentials of a college intended for the use of young students engaged in commercial pursuits in the City, the terms being such as to bring the advantages it offers fairly within their reach. The new building forms the corner of White-street and North-street, Moorfields, and has been erected with every regard to the comfort and convenience of the 4,000 and more students who annually attend the scores of classes which are held weekly throughout the greater part of the year. The accommodation provided includes class-rooms, laboratory, art and cast rooms, reading-room, council-room, library, and a handsome and spacious hall, in which weekly lectures and entertainments are held. The building has been erected by Mr. J. T. Chappell, from the plans and under the superintendence of Mr. Edward A. Crockett, architect.

WESTMINSTER JEWS' FREE SCHOOLS.

MOTIVES of economy have influenced the conception of this building (which was opened on the 4th inst.) from first to last. All ornamentation has been studiously eliminated, and the expenditure has been entirely devoted to affording accommodation suitable for the requirements of the institution. The architectural features cannot be described as belonging to any particular epoch, but the effect is pleasing and the architecture clearly demonstrates the object for which the building has been erected.

The front elevation to Hanway-place and John-street is built of stock-bricks with terracotta and red Farnham brick dressings; an ornamental band runs above the arched which forms the playground hereafter to be referred to, on which is an inscription, "The Westminster Jews' Free Schools, founded 1811, rebuilt 1882." The boys' entrance is in Hanway-place and the girls' entrance is in John-street.

The general disposition of the plan has been actuated by the peculiar configuration of the site and its surroundings. Hanway-place and John-street being rather narrow thoroughfares, advantage was taken of a disadvantage to place the school-rooms at such a height that the buildings on the opposite side would not interfere with the light and air; moreover, the circumscribed space at command rendered it necessary to appropriate as much of the land as possible for playground purposes; accordingly the whole of the ground-floor has been arranged so as to throw the same into playgrounds.

Two large covered playgrounds, one for girls and the other for boys, have been placed under the main building, each covering an area of about 1,200 ft., open upon all sides, and yet protected from the inclemency of weather. These are fenced in from the streets where they adjoin the same by strong ornamental railings, the level of the playground floor being kept considerably below the level of the pavement so that the children may not be interfered with by persons from without. The other portion of the ground-floor has been equally divided as open playgrounds between the boys and the girls; these playgrounds will be fitted with gymnasiums the gift of Mr. Edward Wagg.

The boys enter the building under the covered playground in Hanway-place, where is conveniently situated their cloak-room, which is heated by hot water, so that in the winter weather the clothes may be dried whilst deposited there. It is fitted with umbrellas-stands, seat so that damp boots may be removed, and with all necessary hooks and rails for hanging clothes on. Adjoining this room is a luncheon-room, with fireplace, and solid wood flooring; next to this luncheon-room is the lavatory, fitted with Shanks's tip-up basins and galvanised iron framing. Water-closets and urinals of good description have been provided, and are

attached to each playground. The apparatuses have been supplied by Messrs. Bowes, Scott, & Read, and are so devised that they automatically flush themselves at stated periods, and will thus be kept in a clean and wholesome condition.

The whole of the playgrounds have been paved with asphalt, and drinking-fountains for the supply of filtered water have been provided for the use of each sex.

The girls' side is precisely similar to that of the boys, and contains similar accommodation.

On the first floor is situated the girls' school-rooms, which are arranged so as to afford a maximum of light, air, and ventilation. The front range is 80 ft. long by 22 ft. wide, and by a height of 16 ft., and is divided into three class-rooms fitted with platforms and dual desks designed upon the most sanitary principles, which have been supplied by the North of England School Furnishing Company.

The centre schoolroom will afford accommodation for 60 children, and the two side ones for 50 each. Attached to this front range are two class-rooms, 16 ft. by 23 ft., and 20 ft. by 16 ft., one of them having in addition a gallery, which will be used for infants' classes. The head mistress's retiring-room adjoins, and is so situated as to command supervision of the playground.

The interior walls have the brickwork painted, the woodwork stained and varnished, and the ceilings plastered.

The front range is so planned that it forms one apartment at pleasure, to be used upon the occasion of a general examination, or for any public requirement, the partitioning forming the rooms sliding back. These apartments are fitted with school cupboards and every convenience.

All these rooms are primarily heated by Boyd's stoves, which have hot or cold air-chambers formed round them, so as to admit pure air from the exterior, and are calculated to warm the cubical contents which the several rooms contain. In addition, each room has been fitted with a Weeks's hydro-caloric coil, these admitting in an upward current pure warm or cold air, so that each apartment will have its full complement of pure filtered air continually discharged into the same. The impure air will be drawn out through ventilating flues specially contrived in the thickness of the walls; ascensional power has been obtained first by the use of Boyd's plates, which are of iron, and form one side of the chimney flue; secondly, by Bunsen gas-burners, which, being continually burning therein, will be always drawing off the vitiated atmosphere, and it is hoped and believed that this simple method of ventilation will prove itself thoroughly efficacious. In addition to this ventilation, there is the usual arrangement of windows upon all sides, so that after the schools are emptied, by opening the same a thorough current of air will be admitted, and thus all impurities can be at once swept away.

Great care has been exercised that each room shall be distinct in itself, instead of being, as is often the case, passages leading from one room to another; a corridor, therefore, is situated in the rear of all these rooms, heated by warm water, so as to prevent the children catching cold by coming from one atmosphere into another, and insuring the privacy of each of the educational departments.

Between the heights of the floors has been obtained,—on the one side, the caretaker's apartments, consisting of kitchen, living-room, bedroom, larder, and all other necessary conveniences; and, on the other, the committee-room, with additional cloak-rooms for the children,—all heated and ventilated as before described.

The second floor is appropriated to the boys' school, and contains precisely the same accommodation as that afforded to the girls, including masters' rooms, water-closets, lavatory, and other accommodation.

A noticeable feature in the building is the construction of the staircases: the steps are formed of Lascelles's concrete, which are covered with Hawksley's wooden treads; they are in very short flights, and have been so arranged that, in the event of panic or otherwise, it is almost impossible for accident to arise, whilst, should the treads or landings wear out in course of time, they can easily be replaced at a trifling cost and without disturbing the general arrangements of the building. The walls here have been faced, through the kind liberality of the treasurer, Mr. Julian Joseph, with dados of glazed bricks; this will ensure cleanliness and

will prevent the disagreeable appearance which staircases attached to buildings of this character so generally present. It need scarcely be added that both staircases and corridors are absolutely fireproof.

Great care has been exercised with regard to the plumbing and drainage arrangements; all the pipes, whether plumbing, gas, or otherwise, are exposed, and are easy of access; so, likewise, are the cisterns, and, where used for potable purposes, all water passes through filters which have been supplied by the London and General Water Purifying Company.

The drainage is cut off from any connexion with the main sewer; all waste pipes and rain-water pipes have also been carefully disconnected and are easily accessible. The whole of the drain-pipes are carried in trenches exterior to the building, and are so arranged as to admit of being easily cleaned out or repaired without disturbing any portion of the structure; the architect's great experience upon these subjects having been fully utilised in order to secure as perfect an arrangement as possible.

The building will, practically, accommodate 500 children; the cost, with fittings, &c., will be about 6,500*l.*, or 13*l.* per head, which contrasts very favourably indeed with the cost of buildings of this description.

The land was obtained by, and the buildings erected from the designs of, Mr. H. H. Collins, architect, 61, Old Broad-street, and they have been well executed by Messrs. Saby & Sons, of 96, Ironmonger-row, St. Luke's.

FOREIGN NOTES.

The new Concert-house at Leipzig.—The new concert-house, or, as it is officially termed, the New Gewandhaus, at Leipzig, which is being built by Baurath Schmieden, of Berlin, according to the project furnished by that architect in conjunction with the late Professor Gropius, is already so far advanced towards completion that the work of finishing and decorating the interior is about to be taken in hand. During the past month a collection of sketches for the interior and exterior decoration has been exhibited at the Museum at Leipzig, and has excited great interest among architectural circles in Germany. In addition to the sketches, there is a beautifully-executed coloured model of the Grand Concert Hall, which effectually exhibits the style of the apartment in which the renowned Gewandhaus performances are to be continued in the future. The greatest possible attention has been paid to the question of ventilation, and everything has been done in order to secure the best acoustic effects. For example, all the walls, the floor, and the ceiling of the concert-hall are constructed double. They are made of fireproof material, faced with wood. The figures for the decoration of the facade are to be carried out under the direction of Professor Schilling, of Dresden.

The New Palace of Justice in Rome.—The competition for the new Palace of Justice in the Italian capital is limited to architects who are Italian subjects. The designs are to be sent in by June 30th, 1884. There are three prizes, of the respective values of 15,000 *lire*, 9,000 *lire*, and 6,000 *lire*, or 600*l.*, 360*l.*, and 240*l.* each. The jury will consist of a Commission under the presidency of the Minister of Justice, one third of the members being architects and engineers in the employ of the State. The award is to be by a two-thirds majority of the Commission. The Government does not bind itself to carry out any of the successful projects, and, moreover, reserves to itself the selection of the chief architect. According to the programme, the chief apartments in the New Palace are to be as follow:—The Court of Cassation with apartments for counsel; the Court of Appeal; the Court of Assizes; the Civil Tribunal; the Criminal Tribunal, with apartments for the king's counsel; the Tribunal of Commerce; the Chamber of Advocates; the Court of Discipline; and the Registrature, besides various subordinate offices. The programme prescribes in detail the number and dimensions of the various apartments. The site is in the Prati di Castello, and the cost of building the entire palace is not to exceed the sum of eight million *lire*, or 320,000*l.* sterling. This sum, however, does not include the decorations, with statues, reliefs, paintings, &c. The drawings are mostly to be on the scale of one to a hundred; but the most important details are said to be on the scale of one in ten, and the architects are

to include sketches representing the proposed method of ventilation and warming, as well as estimates of the total cost.

Electric Wire Rope Railway.—Amongst the curiosities which will be exhibited at the approaching International Electrical Exhibition at Vienna will be a short wire-rope railway in which the motive power is electricity. This novelty will not be a mere toy model for the amusement of visitors, but will be employed to convey coals from the railway on the banks of the Danube to the Rotunda, in which the exhibition is to be held in the Prater. The line will also be peculiar from the fact that it will run above the roofs of the sheds surrounding the Rotunda, and terminate in a court, or open space, where a boiler-house has been erected.

The Palazzo Barberini in Rome.—It is reported that the splendid Palazzo Barberini, situated in the Via delle Quattro Fontane at Rome, has been recently purchased by Prince Torlonia, who, however, cannot take possession of the Palace until after the death of the hitherto owner, Prince Barberini. The edifice, which was begun by the architect Maderna, and finished by Bernini, is one of the most extensive in the Italian capital, and in the year 1870 was selected as the temporary residence of the Italian Royal Family.

FIRE INSURANCE IN BERLIN.

From the official report recently published by the municipal authorities of Berlin, it appears that on the 1st October last there were 18,543 houses or tenements insured against fire within the boundaries of the city. The total amount for which they were insured was 2,072,151,500 marks, or 103,607,575*l.* sterling. The report contains statistics respecting the operations of the Fire Brigade and the losses occasioned by fire during the past twenty-two years. In the business year, from October, 1860, to October, 1861, the number of fires, or alarms of fire, which had called out the Brigade was 127. In the business year, 1881-82, the number had risen to 571. The number of fires from which any actual loss arose was, at the former date, 100, and at the latter date, 506. The alarms of fire and the destructive fires had, therefore, both increased about 400 per cent. in the twenty-two years' interval. Within the period in question, however, the number of houses has not increased 100 per cent. It follows, therefore, that the number of destructive fires has increased in the interval at far greater rapidity than the houses, being, in fact, nearly three times as numerous now as compared with 1860. This large increase, which has been made, not suddenly, but with a regular and steady rise throughout the period in question, is attributed partly to the less solid style of building, but chiefly to the substitution in recent years of gas and petroleum for candles and the older oil-lamps in the illumination of shops, factories, and dwelling-houses.

PRACTICAL EDUCATION.

THOSE students in the Crystal Palace Company's School of Practical Engineering, who are working for the marine branch of the profession have just returned from their sea trip, which has been made the occasion of an inspection of some important engineering works. These periodical excursions are intended to afford them real practice in the driving of marine engines at sea, and are a marked feature in the system of the school. Usually the run has been made from the Thames to Liverpool and back, but this year, with the intention of going over the works of the new Tay Bridge, the voyage has been made to and from Dundee, a distance of 1,000 miles. On Wednesday, June 27th, at 9 a.m., the students, under the direction of Mr. J. W. Wilson, C.E., the principal, and one superintendent, embarked at the New Dundee Wharf, Wapping, on the *s.s. Cambria* (950), and the Dundee, Perth, and London Steamboat Company offered every facility for the work of the voyage. Before starting, the speed of the *Cambria* was tested at the measured mile and proved to be 14.25 knots. The dead reckoning was then taken, and was to time at all points both our and home. For purposes of work the students were divided into four watches of four hours each, during which time those on duty had to be in the engine-room taking their part in the driving, under the ship's engineer, Mr. Scott,

in their usual working clothes. The water was smooth, and Dundee was reached at 5:40 p.m. on Thursday evening. On Friday morning, the students rose at six, and on a hour later proceeded up the river Tay in the Perth steamboat. By the kind invitation of Messrs. Shield they there inspected the Wallace Linen-Weaving Works, where 1,000 hands are employed, and saw much that interested them. Saturday was employed in looking over the old Tay Bridge, and the works of the new structure which is being raised by Mr. W. H. Barlow, C.E., who was kindly anxious that the party should see all they could. Mr. Byng, an old pupil of the Crystal Palace School, is one of the superintendents of the new bridge. After inspecting the Dundee, a very fast boat now being finished for the Dundee, Perth, and London Company, the students embarked again on the *Cambridge* at nine on Saturday evening for the return cruise, and arrived at the wharf in the Thames at 7:30 a.m. on Monday. The cruise was a most enjoyable one, and is thought the most successful ever made by the students of the school.

THE NEW RAILWAY STATION AND BRIDGE ACROSS THE THAMES AT BLACKFRIARS.

RAPID progress is being made with the new City station and the bridge across the Thames at Blackfriars which are in course of construction for the London, Chatham, and Dover Railway Company. It is only about six months since Messrs. Lucas & Aird, the contractors, entered upon the undertaking, and already a considerable amount of preliminary work has been accomplished. Upwards of 300 artisans and labourers are at present employed at the works, and no fewer than nine steam engines at the shore and river points where operations are going forward, facilitate the progress of the undertaking. On the Middlesex side at Thames-street and Queen Victoria-street, where the new station is to be built, and the northern abutment of the bridge are to be erected, the necessary excavations have been almost completed, and the foundation walls are being got in. The work of driving the necessary piles in the river, preliminary to the construction of the four sets of piers to carry the bridge, has likewise been effected, and as regards the two central piers the iron coffer-dams are so far advanced that the water is to a certain extent kept out. Divers are employed in examining the bed of the river at these points with the view of the necessary excavations for the erection of the stone piers being proceeded with, and it is expected that within two or three months the piers at these points will have been built. The preparations for the shore abutments of the bridge on the Surrey side of the river at Blackfriars are also in an advanced state.

THE ENGINEERING AND METAL TRADES' EXHIBITION.

This exhibition, opened in the Agricultural Hall on the 5th inst., is of wider and more general interest than its predecessor, the Naval and Submarine Engineering Exhibition, which was held in the same building in April of last year, and was noticed by us at the time. The present exhibition is, too, a larger one than that of last year, and some idea of its extent and importance may be faintly gathered from the statement that the aggregate value of the exhibits here brought together,—to be on view only until the 21st inst.,—is estimated at 400,000l. There is, it goes without saying, plenty for the general visitor to see and to marvel at, and much to instruct the technical observer, but both classes of visitors would be benefited if exhibitors would refrain from covering up their stands an hour before the exhibition closes, and if the managers of the exhibition would, failing the electric light, turn on a little more gas. Of machinery in motion there is a good display, and various new forms of boiler are used to provide the motive power.

Among the most striking of the exhibits are those shown by the eminent,—may we not say pre-eminent?—firm of Sir Joseph Whitworth & Co., who have a large Stand (No. 204) near the centre of the hall, for the display of some Titanic productions in the Whitworth fluid-pressed steel. The steel of which these objects

are made is submitted to great pressure whilst in a fluid state, and the ingots thus obtained are afterwards forged to the required shape by hydraulic pressure. One of the articles thus produced is a hollow propeller-shaft for a screw steamship. This shaft is 55 ft. in length, 184 in. external diameter, 10 in. interior diameter; collar at one end 34 in. diameter, and weighs 15½ tons. It is claimed for this shaft that it is at once 28 per cent. lighter and 30 per cent. stronger than it would be if made of solid wrought iron. Another gigantic specimen of forging in the same metal is a double-throw crank shaft for a paddle steamer. This shaft has a length of 26 ft.; a diameter of 18 in.; throw of cranks, 24 in.; and weighs 12 tons 12 cwt. A beautiful specimen of workmanship is the large cylinder-lining, with internal flange, for a marine steam-engine. It has been made from a hoop of fluid-pressed steel, and enlarged to size by forging. Its diameter outside is 81 in.; length, 59 in.; diameter inside 77 in.; thickness, 1½ in.; and weight, 65 cwt. There are many other objects at this stand which serve to illustrate some of the greatest achievements of modern metallurgy and mechanical engineering, but we must pass on, not omitting to refer to the huge boilers which stand not far off, one of them being temporarily fitted up internally as a miniature boudoir, and illuminated by incandescent electric lamps in connexion with a storage battery. The catalogue, which is well printed and appears to be carefully compiled, gives a classified list of the different kinds of exhibits, and, as this list occupies some seventeen pages, some idea may be gathered of the comprehensiveness of the collection. In all there are about 450 exhibitors, many of them firms of world-wide repute. The exhibits are classified under twelve sections, viz.:—I. Mining and Metallurgy; II. and III. Casting, Forging, and Rolling; IV. Hydraulics, Pneumatics, &c.; V. Working Tools and Appliances; VI. Rail and Tramway Work; VII. Bridge, Roof, and Girder-work, Docks, &c.; VIII. Electric and Telegraph Work; IX. Sanitary Engineering; X. Machinery for the Treatment of Raw Produce; XI. Marine Engineering; XII. Military Engineering. Many of the exhibits in some of these sections are, of course, necessarily shown in the shape of models and drawings, of which there is an interesting loan collection on view in the gallery, some well-known civil engineers being contributors. An interesting part of the display in the gallery is that composed of working-men's exhibits, chiefly in the form of models of inventions or specimens of workmanship; there are thirty-three contributors to this part of the exhibition. Any attempt to refer in detail to the multiplicity of objects exhibited would be futile; we may, however, refer to a few exhibits likely to specially interest our readers. In the Arcade leading from Islington-green, at Stand 2, Madame Vvo Delong, of Paris, has an interesting display of metal fretwork for stained-glass window-frames, door-panels, &c. At Stand 19, in the main hall, Mr. Edward Clements (Jeakes & Co.) shows a very complete collection of laundry machinery in motion. Messrs. Thomas Robinson & Son (Limited), of Rochdale, exhibit some very good wood-working machinery in motion. Messrs. Samuel Owens & Co., of Whitefriars (Stand 36), have a good display, including pumps, Lacour's direct-acting steam pile-driver, well-sinking tools, hydraulic rams, and the "Cassibury" fire-extinguisher. At Stand 57 Messrs. Greenwood & Batley, of Leeds, show Tracey & Shedlock's hand-power rock-drill in action. It should prove useful to the contractor and the mason. Mr. E. S. Hindley (Stand 58) exhibits steam engines and boilers, and a circular saw-bench with band-sawing apparatus and special arrangements for boring, tenoning, and spoke hunting. At Stand 60, Messrs. W. & T. Avery, of Birmingham, are exhibitors of a 10-ton self-contained wagon weighbridge, fitted with Chamey's patent self-recording steelyard, by means of which a strip of card is impressed with a record of the exact weight of the load. In view of the approaching operation of the Parcel Post, Messrs. Avery, who are contractors to the General Post Office, show some handy scales which they have made for use in post-offices and in business establishments. Messrs. F. W. Reynolds & Co., Southwark, are exhibitors, at Stand 62, of some of their well-known specialities in wood-working machinery. At Stand 131 Messrs. Robert Boyle & Sons dis-

play their ventilators and air-warming apparatus. At Stand 133 the Bower-Barff Rustless Iron Company are exhibitors of specimens of ironwork treated by their process. At Stand 139, Messrs. W. F. Dennis & Co., representing Messrs. Felten & Guillaume, of Mulheim, near Cologne, are exhibitors of iron and steel wire of all kinds for fencing and telegraph purposes. A cast-steel wire for telephonic purposes is submitted by them as worthy of notice, on account of its high breaking strain. At Stand 197, the Aluminium Crown Metal Company show an assortment of goods, such as hinges, door-handles, &c., made of their alloy, known as Webster's Aluminium Metal, which, it is claimed, combines with great tensile strength and resistance to compression a non-liability to tarnish. At Stand 203 Messrs. Salmon, Barnes & Co., of Ulverston, show their curvilinear iron shutters, and the "Roan-head" patent rock-drill. The Pennycook Glazing and Engineering Company (Stand 212) show the application of their patent method of glazing without putty. Messrs. R. F. Dale & Co., of Southwark (Stand 234) are exhibitors of gun-metal castings, steam valves, fire hydrants, &c. At Stand 241, Mr. T. W. Helliwell, of Brighouse, Leeds, shows his system of glass roofing without the use of putty, and his method of firing zinc and iron roofing without bolt or rivet holes. Messrs. Archibald Smith & Stevens (Stand 257) show their hydraulic balance passenger lifts and other lifts and hoists. At Stand 335 Mr. John Bell, of Southwark, exhibits that exceedingly useful and valuable material, asbestos, in a variety of applications. At Stand 344 Messrs. F. Braby & Co., Limited, are exhibitors of filters and tanks. At Stand 372 Messrs. Hayward Bros. & Eckstein exhibit their semi-prism ships' deck and street pavement lights. In the centre of the hall space is reserved for "Models of the Channel Tunnel," but up to the time of our visit these were not in place.

The Exhibition closes on the 21st inst.

A PUBLIC WINTER GARDEN AND A THEATRE AT EASTBOURNE.

AMONGST the many public buildings which are in succession rising up in this favourite and rapidly-increasing seaside resort, a public winter garden, and also a theatre, will shortly be added to the number. The winter garden is to be immediately erected on a spacious site, having its frontage to Terminus-road, the leading business thoroughfare in the town. The site belongs to Messrs. Hart, and at present forms one of the largest and finest private gardens in Eastbourne. Some time ago the local authorities were anxious to secure it as the site of the new town-hall, and they made an offer to Miss Hart for its purchase, but she declined to dispose of it for that purpose, and the authorities have been compelled to fall back upon a site by no means so central. It has now been leased by the owner to Mr. Willard, an enterprising local tradesman, who is about to erect public winter gardens on the site. The gardens, which have been designed by Mr. C. Hollebon, will be constructed of glass, wood, and iron, forming a kind of local Crystal Palace. They will have a frontage to Terminus-road of 150 ft. in length, and internally will contain a walk or promenade nearly half a mile in length, under a glass roof. There will be a large show-house in front, approached from Terminus-road, with conservatories falling back at each side. The building throughout will be heated by water-pipes two miles in length.

The town will also have the advantage of possessing a theatre in the course of a month. The building, which has been in course of erection for some time past, is now rapidly approaching completion, and is intended to be opened the first week in August, when the popular comedian, Mr. J. L. Toole, will appear. Mr. Fell is the contractor for the building.

The Duke of Argyll on House Sanitation.—The London Sanitary Protection Association are to hold a meeting in the Kensington Vestry Town-hall on Tuesday, the 17th inst., at 8:30 p.m., and the newly-elected president (the Duke of Argyll) will take the chair for the first time, and will deliver an address upon this subject. Tickets can be obtained, gratis, on application to the secretary of the Association, at its office, 1, Adam-street, Adelphi.

PROVINCIAL NEWS.

York.—The new premises in Davygate are now completed, and consist of shops and offices. They have been built for Mr. Alderman Melrose by Mr. Biscoombe, of York, from the designs of Messrs. Perkin & Bulmer, architects, of Leeds.

Whitby.—The new building in Baxtergate is now occupied by the National Provincial Bank of England, Limited. There is also a new shop adjoining, with offices on the upper floors and apartments for bank residence. The builder was Mr. John White, of Whitby. The carving was executed from drawings of the architects, Messrs. Perkin & Bulmer, by Messrs. Mawer & Paytel, of Leeds. Business premises in Silver-street, for Mr. Charles Fisher, plumber, from the plans of Messrs. Perkin & Bulmer, are now completed and occupied.—A residence, with stabling, for Mr. William Wright, is now being built in Uppang-road, from the designs of Messrs. Perkin & Bulmer. Four houses and two cottages in Stakesby Vale, for the same gentleman, have recently been erected.

Newcastle-on-Tyne.—A new drill-hall for the Third Volunteer Battalion Northumberland Fusiliers has been erected. The site, which was obtained from the Corporation, is situated in Bath-road, in the rear of St. Thomas's Church. The building was erected according to plans prepared by Mr. Newcombe, architect, Newcastle, and is one of simple dimensions, and comprises all the accommodation which a volunteer regiment requires. The front is composed of red brick faced with white stone. On the ground-floor is the armoury, adjutant's office, permanent staff office, store-rooms for clothing, lift, and large room for non-commissioned officers and privates. The first floor contains officers' mess-room, lavatories, &c., officers' mess-kitchen and store-rooms. Shut off by a door midway in the passage are the Sergeant-Major's quarters, comprising on that floor two rooms. On the second floor the sleeping apartments of the Sergeant-Major and family are situated, and besides that there is a large store-room. Beside these buildings is the spacious drill-hall, enclosed with brick walls and an iron roof, and covering an area of 200 ft. by 85 ft. The hall is completely lighted up with gas. It is to be called St. George's Hall.

Crewe.—The trade of Holyhead is likely to receive a considerable impetus owing to the completion of the extensive market and abattoirs at Crewe by the London and North-Western Railway Company for the English, Irish, and foreign cattle trade. These were opened a few days since. In anticipation of considerable trade from Ireland, Canada, and Scotland, the company have provided extensive siding accommodation at Crewe, while at Holyhead the harbour will be enlarged, and very probably the works at Salt Island, to which we have on several occasions referred, will be carried out. The Platters Rocks in the Holyhead new harbour have just been re-surveyed, and it is stated that the engineer's report is much more favourable than on previous occasions, and that this obstruction can be effectually blown up. No doubt the increased trade which will centre in Holyhead in consequence of the new arrangements will tend greatly to the benefit of the town, and, as we have already pointed out, Holyhead, owing to its commanding position and the march of events, is evidently destined to become a place of great importance in North Wales, and a district of large population and much commercial prosperity.

SCOTCH NEWS.

Suggested Museum of Hygiene for Edinburgh.—It is again proposed to establish a Museum of Hygiene for Edinburgh. It is suggested that the Edinburgh Health Society and the Combe Trustees should co-operate in the matter. A proposal for the establishment of such a museum was made about three years ago by Mr. H. Aubrey Hushand, who proposed to associate the name of George Combe with the Institution. Although Mr. Hushand received offers of assistance from many quarters, the project was allowed to fall through, owing to the difficulty of finding suitable premises for the exhibition of the appliances which were offered.

The New Extension of the "Dundee Advertiser" Office, which has lately been completed, has a

frontage to Bank-street of 61 ft., and consists of a sunk flat and five flats above the street level. The total height of the front to Bank-street is 60 ft. from the street, and from the basement-floor to the ridge of the roof is 77 ft. The front has been designed to harmonise with the older part of the building, and at the same time to group with the adjoining properties, so as to form a symmetrical elevation to the north side of Bank-street, along which the completed frontage of the office now measures 215 ft. The whole is of polished ashlar, of a beautiful blue colour, from the Leoch and Fallows Quarries. The foundations of the front consist of solid ashlar blocks in piers, set on inverted arches, and all built in cement. Great care had to be taken in under-pinning the gable at the west end of the old part of the office, it being founded at the street-level, while the new building is founded 12 ft. below the street; but, by strong shoring and wedges, this was successfully accomplished. One interesting point in connexion with the internal economy of the building is that a hydraulic lift, worked from the pressure of water in the town water-mains, and capable of raising half a ton weight at a speed of 40 ft. per minute, has been erected for raising the rolls of paper to the paper-stores. This lift rises from the basement to the highest floor, a height of 64 ft. The building is heated by small-bore malleable iron pipes, by Mr. Charles Ritchie, of Edinburgh. Ventilation-tubes, about 5 ft. high, are placed in the corners of the rooms, and in each tube there is a coil of pipe which heats the cold air coming into the tube from the outside before it enters the room, thus preventing cold down-draughts. Outlet ventilators, with mica flaps, are placed in the walls near the ceilings. Messrs. C. & L. Over are the architects, and the contractors for the various branches were the following:—Mason's work, Mr. Gentile; joiner's work, Mr. J. W. Lyon; slater's work, Mr. Martin; plumber's work, Mr. Farquharson; plaster and concrete work, Mr. Ritchie; iron roof and floors, Messrs. Lee, Croll, & Co.; fireproof doors, Mr. D. Keay; iron beams, Messrs. Measures Bros., London, and McLellan, Glasgow; hydraulic lift, Messrs. Whyte & Cooper; glaziers work, Messrs. Lindsay & Scott; wirework, Mr. Dickie; painter's work, Mr. Norwell; heating, Mr. C. Ritchie, Edinburgh; iron stairs, Lion Foundry Company, Kirkintilloch; stone-carving, Mr. Neilson, Edinburgh; street-gratings, Messrs. McCulloch, Glasgow. Mr. David Gemmel acted as clerk of works.

THE EXTRA SCALE OF PAYMENT FOR OVERTIME.

Sir,—A considerable amount of uncertainty, dissatisfaction, and consequent agitation, hinges on this question of overtime payment. The whole difficulty of the matter lies in the fact that the associated builders and employers have not held to or abided by the old body of rules as formulated by themselves. These rules expressly state that where the standard rate of wages is 9d. per hour, overtime is to be paid for at the following rate:—The first extra hour at 10d.; from the end of the first extra hour until eight p.m. at the rate of 11d. per hour. Time worked after eight till ten at 1s. 1d. per hour; after ten double until six a.m. Overtime on Saturday to commence at twelve o'clock noon at the rate of 1s. 1d. per hour until five p.m.; after five p.m. double time until half-past six on the Monday morning; and systematic overtime to be discontinued in the interests of unemployed men.

Some employers, for cogent reasons connected with certain office routine of special pricing, evade the letter of these rules, but not the substance, by allowing an equivalent sum in time at 9d. the hour. Some of the employers' customers would object to paying what they conceive to be a "fancy" scale of wages, while offering, in the majority of instances, no particular objection against paying for any given number of hours on the usual scale,—a delightful and refreshing instance of obtuse differentiation between our old friends Tweedledee and Tweedledum.

The United Trades Council have recently had this matter brought before their notice, and have informally determined to stand by the old rules so long as those rules are not superseded by any joint action of the masters on the one hand, and the men on the other.

FRANK MOORE.

SCHOOL BOARD CONTRACTS.

Sir,—With your permission I should like to notice and make a few remarks upon one passage in the letter of your correspondent of last week, p. 31, leaving it to others to answer for what may be only apparent inconsistencies or extravagance in the architectural administration.

"There is provision for a lump sum; this sum the builder puts in his contract; the architect deducts it from the builder and pays the sub-contractor by cheque direct from the Board." This is the most sensible and the most gratifying new I have read for many a day. I will at once try to get a School Board sub-contract. For a sub-contractor to be sure of prompt payment will very much lessen his anxiety and enable him to reduce the amount of his contract by the 2½, 5, or 10 per cent. which the builder exacts for the privilege of paying over the money already received on his behalf.

In most cases the architect will explain, when asking say, the "domestic engineer," for drawings and estimates, that though payments will be made through the builder upon his certificate, no deduction or allowance will be expected; consequently the estimate (in competition submitted) will have been prepared leaving but small margin for profit. But I think every one who has been favoured with a sub-contract of this description knows that, without impugning the honesty of the builder, unless a percentage is allowed they will hang fire, and so put the sub-contractor to sometimes trouble and inconvenience before making a settlement, although they have long since received their money. Doubtless the School Board have had some experience, and probably annoyance too, of this kind, before they were induced to establish so wise a precedent. ROBT. CRANE.

FIREPROOF FLOORS.

Sir,—As a subscriber I should be glad if any reader could give a description of the best method of forming fireproof floors between residential chambers, having due regard to the prevention of sound and to the conditions of the Metropolitan Building Act. Hitherto I have formed the same with rolled iron joists, about 2 ft. to 3 ft. apart, filled in with concrete, the underside being plastered for ceiling, the 4½ in. by 2 in. joists being laid the reverse way on the iron joists, and covered with battens. This method does not prevent sound, however, as well as one would wish, and I fear cannot be considered fireproof. C. W. H.

PROTECTION FROM FIRE.

Sir,—Can you inform me whether the water tower on the American system has been introduced in this country for the protection of tall buildings? I believe it is an excellent, and, at the same time, a simple arrangement. M.

FLUES.

Sir,—In reference to the question of the size of smoke-flues, I would beg to add my testimony to the value of small flues, as against large ones, in dwelling-houses. I designed a house in the country for a gentleman, and he has been very anxious to have me personally apprehensive, by many and strict injunctions against any smoky chimneys in his new house. I promised nothing but to do my best, knowing only too well how uncertain a factor is the progression of smoke. After some consideration I decided to use 9-in. by 9-in. flues, starting them immediately off flag fireproof-covers. The result was that from the first time when the house was entered upon for habitation purposes not a breath of smoke was reported. The flues drew well, and have never been complained of.

I should not, probably, have had the temerity to risk so much on a point which was crucial, had I not remembered to have read that all the flues of the Westminster Palace Hotel are 9 in. by 9 in., excepting the kitchen flues, which are only 15 in. by 9 in. This fact was stated in your paper many years ago in a report of a paper read at the Institute by the architects of that building, where it may doubtless still be found. If I remember rightly, a special dispensation had been obtained for the purpose. I protest against such dispensations, but much more against the necessity for them.

It is said that there is a law (not a Building Act by-law) that all flues are to be 15 in. by 9 in., but I am not ashamed to own that I do not know it for certain, and that I have evaded it with success in the manner above described. Sir, it is not a shame that such a law should stand on the books of a free country?—a law at once tyrannous and mischievous? I am told that a person exists whose duty it is to inspect the construction of flues; that this official has been known to obtain convictions, the fines from which point his own pocket; that after obtaining such convictions he goes away and leaves builders of all classes to do as they like. Manifestly this is either too much interference or too little,—too much for benefit, and too little for the prevention of evil. The mode of payment adopted is just the very worst that could be devised, as it prevents the official from staying to elicit his victories, but drives him to seek "fresh fields and pastures new," whilst the former delinquents are safe from any further visitation for some time.

I risked this gentleman's anger as well, and made all my flues, kitchen flues and all, 9 in. by 9 in., and, strengthened in my conviction by your previous valuable correspondence, I cannot but think that those dimensions are sufficient. But I am not comfortable about using them if there be a law such as I have described, and such an official.

A YORKSHIRE ARCHITECT.

* * * There is now no such law in the metropolitan districts.

OLD MEETING TRUST, BIRMINGHAM, CHURCH, &c., COMPETITION.

Str.—The design for the above which you illustrate in last week's *Builder*, by Messrs. Henman & Beddoes, was admitted to be the best sent in, and meets the "instructions" sent out by the trustees, and the requirements of the case in nearly every particular.

The designs placed first and second (the first especially) fail to comply even with the "instructions," much less with the requirements, and I, as well as the others (including the trustees), am surprised at the attempt at criticism by a professional referee, and at the result of the competition.

The trustees obtained (after inviting two eminent London architects who were unable to come) the services of a well-known provincial architect, in fact, one of the Council of the R.I.B.A., to inspect and report on the merits of the designs submitted in competition, but from what I have heard, the report sent in to the trustees is not from notes made by the gentleman appointed as assessor, and through the medium of your valuable journal I should like to know, for the benefit of the trustees, whether—

1st.—Did the gentleman appointed by the trustees inspect the designs personally, or not?
2nd.—If he did not personally inspect them, was the person who acted on his behalf a competent person?
To uphold his own reputation, and the dignity and honour of the profession, the assessor should reply in answer to these questions. A silence will be taken as admitting having entrusted onerous and responsible duties to a person who has given a biased decision.

ONE OF THE LAST FOUR.
* * We should not admit this communication, but that we continue to receive others to the same effect.

BUILDING PATENT RECORD.*

APPLICATIONS FOR LETTERS PATENT.

- 3,225. E. Raitt, London. Water-waste preventers. June 29, 1883.
3,247. J. Carrick, Glasgow. Cooking-ranges and ovens. June 30, 1883.
3,262. J. W. Thornorn and F. Milan, Huddersfield. Method of opening and closing valves of hot-water apparatus. July 2, 1883.
3,296. E. M. Lee, London. Window-fastenings. (Com. by W. C. Lee, Paris.) July 3, 1883.
3,309. A. Tylor, London. Apparatus for preventing waste of water in water-closets, &c. July 4, 1883.
3,311. D. G. Cameron, London. Flushing-apparatus. July 4, 1883.
3,315. W. Wade, Crewe. Fire-grates, &c., July 4, 1883.
3,344. A. J. Boulton, London. Ventilating casements. (Com. by MM. Bouquet and Bulle, Besançon, France.) July 5, 1883.

NOTICE TO PROCEED

has been given by the following applicants on the dates named:—

- July 3, 1883.
1,643. F. J. Biggs, London. Latches and locks. April 2, 1883.
1,728. F. Service, London. Tool for pointing the joints of brickwork, &c. April 5, 1883.
3,191. P. Effort, London. Brickmaking-machines. June 27, 1883.

- July 6, 1883.
1,153. A. Varale, Sheffield. Attaching door-knobs to their spindles. March 3, 1883.

ABRIDGMENTS OF SPECIFICATIONS,

Published during the Week ending July 7, 1883.

- 5,274. A. M. Clark, London. Means for attaching hat-pegs, curtain-holders, gas-brackets, &c., to walls and ceilings. (Com. by MM. Gollot frères, Paris.) Nov. 4, 1882. Price 2d.

A cylindrical hole is bored in the wall, and the articles are secured by a plug made in section, through the centre of which passes an inclined screwed rod. (Pro. Pro.)

- 5,312. J. Bartlett, London. Gas-stove, for heating water for baths, &c. Nov. 7, 1882. Price 6d.

Inside the casing are a series of helically-twisted tubes, connected at top and bottom to shallow vessels, in which the water is heated.

- 5,347. R. Crane, London. Smokeless stoves and grates. Nov. 9, 1882. Price 2d.

The grate is in form of a vase, with a hopper on each side to replenish the coal at the bottom. (Pro. Pro.)

- 5,378. R. Plush, London. Means for securing or fastening the sliding-sashes of windows. Nov. 11, 1882. Price 2d.

The locking contrivance is placed in a recess in the window-frame, and secured by lock and key. (Pro. Pro.)

- 5,383. J. J. Tylor, London. Apparatus and arrangements for the water-supply of water-closets, baths, and urinals, and preventing waste of water. Nov. 11, 1882. Price 6d.

The closets, &c., are flushed periodically by an automatic action. The water is allowed to flow slowly into the cistern, and starts a syphon, in the long leg of which is a bend or trap. As this is filled the water in the top of the syphon is compressed, and the further flow of the water

prevented until the cistern is filled above the cap, when the water passes down a stand-pipe to the bend, which is thus filled, starting a small syphon formed therein. The bend is thus emptied, and the compressed air released, when the cistern is entirely emptied. Basins of closets are emptied by a syphon, with a contracted bend.

- 5,435. C. R. Stevens, Lewisham. Apparatus for heating and ventilating. Nov. 14, 1882. Price 6d.

This is an improvement on Patent No. 1,714, of 1881, in providing the water-heater with a closed tank, connected with the main, from which it is supplied with the water, and in numerous other details, which are shown in thirty-two figures in the drawings.

- 5,445. J. Wotter, London. Ornamental tiles, or blocks of earthenware. (Com. by J. B. Boulenger, Auneuil, France.) Nov. 10, 1882. Price 4d.

These are made of two different materials pressed together, and ornamented as required, and then burned.

- 5,447. G. Atkins and E. Atkins, Birmingham. Sliding gasaliers and chandeliers. Nov. 15, 1882. Price 6d.

The supporting chains are coiled round brake blocks. (Pro. Pro.)

- 5,472. S. Haworth, Scarborough. Manufacture of pavements or surface-coverings, floor-cloths, wall-coverings, &c. Nov. 17, 1882. Price 4d.

This is an improvement on Patent No. 1,988, of 1874, in preparing the coloured compounds, and mixing them up to imitate marble. The mixture is then cut into sheets, rolled, and impressed upon canvas, &c.

- 5,642. H. J. Allison, London. Forks or tongs, chiefly for domestic purposes. (Com. by R. W. Turner, Boston, U.S.A.) Nov. 28, 1882. Price 6d.

These consist of a handle, in which is a rod controlled by a spring, and two jaws are pivoted to the end of the rod. When this rod is pressed into the handle the jaws are opened, and vice versa.

LIGHT AND AIR CASE.

THE PATENT SILVERING COMPANY v. R. H. PADBURY, W. C. WAYNE, AND H. BURMAN.

THIS CASE was heard before Mr. Justice Stephen, it being contended by the plaintiffs that the erection of a skylight on a yard abutting on their premises had injured the light for their trade. The freeholder of the two properties had in granting a lease to the plaintiffs covenanted to make no erection which should interfere with the light of the premises.

The plaintiffs called several witnesses engaged in the trade to support the injury, and also Mr. J. D. Mathews, surveyor.

For the defendants the witnesses were Messrs. Banister Fletcher, A. Peebles, W. W. Gryther, and J. Gibson.

Mr. Justice Stephen went to view the premises and the skylight, and on returning gave his verdict for the defendants.

ADMISSIONS TO THE ROYAL ACADEMY OF ARTS.

Upper School.—F. W. Besant, G. E. T. Lawrence, T. Maclaren, G. F. Oakeshott, T. Ward.

Probationers.—Louis Anblar, C. S. Appleton, W. H. Bidlake, Frank Brown, E. A. Coxhead, H. W. Crickmay, W. J. W. Ferguson, T. P. Flagg, H. K. Goodenham, F. C. Hart, John Lord, F. S. Ogilvie, E. C. Pickford, T. B. Rutherford, H. D. Walton, E. W. Williams, G. G. Woodward.

Lower School.—C. H. Aitken, W. Brown, S. R. Clemence, E. L. Condon, A. Crow, G. G. Dawber, R. M. Fell, Frank Fox, C. Littlewood, E. Herbert, C. S. Hornbrook, W. C. Jones, F. W. Lane, Henry Ling, C. E. Malloves, J. C. S. Mumery, A. B. Pitt, S. H. Sager, W. E. Symington, W. A. Thompson, J. M. Townsend, W. R. Tucker, H. J. Westell, C. F. E. Yonge.

CHURCH-BUILDING NEWS.

Birtley.—As a first step towards the restoration and improvement of Birtley parish church, North Tyneside, a memorial tower, with spire, from the designs of Mr. A. B. Plummer, of Newcastle, having been presented by a generous donor, is about to be added. The edifice has suffered much in times past, especially in the last century, when plain sashed windows were inserted both in the nave and chancel. The walls of the latter are much decayed, and also the woodwork of the windows and pews. The flooring of the pews is not of boards, but of stone flags, now moss-grown, and, therefore, very cold in winter. The chancel arch is early Norman, built nearly 800 years since, with original abaci and chamfered jambs, as at Eghingham Church; and a great part of the old "Priests Door" is also remaining in the south chancel wall. To effect the much-needed repairs and restoration about 400l., not including the cost of the memorial tower and bell spire, will be required.

Netherthorpe (Sheffield).—The Archbishop of York has just consecrated the new church in Hoyle-street, dedicated to St. Anne, the fourth new church promoted by the Sheffield Church

Extension Society, which Society, together with the York Diocesan Church Extension Society, has furnished the funds for the building. A mission has for some time been carried on in the populous district of Netherthorpe, in connexion with the parish church, and the contract for the erection, which amounted to 5,000l., was placed in the hands of Mr. James Fidler, of Eckington, who has carried out the work from the designs of Mr. J. D. Webster, architect. The church consists of nave and north and south aisles (with porches at the western end), chancel, vestry, and organ-chamber. The walls are of red brick with stone dressings, and the interior is quite plain, with the exception of the chancel, where plaster is introduced, finished with very simple decoration. Under the large east window is a reredos, with spaces for the Commandments, &c., and having in the centre a painting by Mr. Powell, of Leeds, depicting the Lord's Supper. Accommodation is provided for 650 persons.

DISSENTING CHURCH-BUILDING NEWS.

Holloway, Derbyshire.—Memorial stones of a new Primitive Methodist Chapel were laid at Holloway on Wednesday, the 4th inst. The building is picturesquely situated on the side of the hill with foliage abounding all around, and the architect, Mr. Jno. Willis, of Derby, has designed it after the Old English manner, with timbered gables. It is in close proximity of Leahurst, the residence of Miss Nightingale, and will form a conspicuous feature in one of the most beautiful of Derbyshire valleys. The chapel will seat 250 persons. Mr. B. Askew, of Matlock Bridge, is the contractor.

Old Lenton, Notts.—A new Primitive Methodist Chapel was opened on the 5th inst. It seats 350 adults, and has schoolroom and class-rooms for 200 children. The style is described as "Eleventh Century English," and is carefully treated throughout. Very complete provision is made for opening the class-rooms into schoolroom, and also for the usual modern requirements. The cost of the building is 1,500l. The architect is Mr. Councilor Willis, of Derby, and the contractors are Messrs. Savage & Attewell, of Nottingham.

Llandysil, S. Wales.—A new Unitarian Chapel is being erected here after designs by Mr. John Willis, of Derby. It stands on an excellent site. The front will have a mullioned window with twelfth-century tracery, and a tower rises over the porch. The glazing will all be in cathedral rolled glass, and the internal fittings will be of pitch pine. The contractor is Mr. Watkin Davies, of Llandysil.

Books.

Precious Stones. By A. H. Church, M.A., Oxon.

Published for the Committee of Council on Education by Chapman & Hall (Limited).

THIS is a dainty little volume on a subject of universal interest, written by a gentleman who has by his previous works identified his name with the matters of which it treats. He is an enthusiast, and we cannot withhold our sympathy with him in his chagrin at the "dense ignorance" which prevails about precious stones.

This ignorance on the part of the public, however, admits of palliation in face of the sad admission that there are even jewellers who, when asked for a "tourmaline," &c. "jargon," a "zircon," or a "phenakite," do not understand what is wanted! It is possible that the country is in such a state? Seriously, however, this little treatise has interested us exceedingly, and our only complaint is that there is not more of it. The jeweller's and lapidary's art has a glorious history, and has passed through many phases, the leading characteristics of which we should have liked to see touched upon by our author. The chapter on the artistic employment of precious stones is full of useful hints for those who are engaged in this beautiful art, and we cordially endorse the almost angry protest against the senseless modern system of manufacturing the shells of jewelry wholesale, and filling in the cavities with stones chosen at random, or changed to suit unreasoning caprice.

The art of the goldsmith and jeweller will never take its proper rank until we pay less regard to the barbaric quality of mass, and

* Compiled by Hart & Co., Patent Agents, 186, Fleet-street.

earn to estimate its value by the thought expended upon design.

The writer shows that the most beautiful jewelry need not be costly, and that colour combinations of exquisite loveliness and variety may be accomplished by the discriminating use of stones which have anything but a high market value.

There is no doubt but that the present nomenclature of colours, as the author observes, is neither ample nor accurate, and the time has arrived when a standard series of hues appropriately named should be constructed; the difficulty of illustrating this unique quality of the precious stones is shown in the only coloured plate in the work, which is almost useless as a representation of the brilliant hues of the stones themselves. The work is copiously illustrated, and the illustrations really elucidate the text. A page of "Bibliographical Notes" gives useful references to works on other branches of the subject, and a most valuable catalogue of the Townshend Collection, now at the South Kensington Museum, completes a charming book.

Draining and Embanking. By JOHN SCOTT. Crosby Lockwood & Co.

This is the first volume of a projected series of works intended to treat of scientific land culture in its engineering aspects; and its author is well known as an authority in such matters. The history of land drainages for agricultural purposes, and the reasons which have guided its advocates, are shortly and clearly set out without unnecessary circumlocution, and the best methods to be employed under given conditions of soil, &c., are carefully enumerated. The writer has collected facts and statistics from every available source, and has brought within the compass of a handy volume almost all that it is necessary to know about the draining and embanking of lands. Some of his remarks apply to a wider audience than those who are interested in agricultural engineering, and such sentences as "every spadeful of earth excavated beyond what is actually needful is labour and money wasted," or the shrewd advice to entrust the laying of drain-pipes to a workman paid day's wages, and not engaged on piece-work, may be profitably remembered by all who are concerned with building operations at large. It is a little startling to learn from this work that from one and a half to two millions of acres of land in Great Britain alone have been won from the sea by embanking operations, and it points directly to the fact that much more remains to be won. We cannot look at a map of the coast or the estuaries of our great rivers without being convinced that millions of acres are waiting to be reclaimed, and that while such is the case we should have no idle poor but the idler. No doubt administrative capacity is needed to organise the work. But there is no little doubt that the work ought to be done. This is old teaching of ours. There is no mention made in this book of the use of concrete for checking the inroads of the sea, and securing the low-lying lands from its ravages. We know, however, that this material is so employed successfully and profitably, and, indeed, the sea-beach would seem to be, of all places, the one where it could be best utilised. Surely this is an omission which a future edition should supply. And this is nearly the only omission we notice in a very interesting and instructive little work.

Tramway Acts of the United Kingdom. Second Edition. By HENRY SUTTON, B.A., assisted by ROBT. A. BENNETT, B.A. Stevens & Sons, Chancery-lane. 1883.

As tramways are being laid or extended, not only in the metropolis, but in every considerable town in the kingdom, this digest of the enactments on the subject, and their application in practice, with its accompanying summary of the principles of tramway rating, cannot fail to be of interest and value to all engaged in such enterprises.

The subject is exhaustively and ably treated, and the book is enriched by copious indexes to determined "cases" and, "a sweet virtue, look you," by an ample table of contents.

The aim has been to give the reader all the available information on the subject of tramways in their legal as distinguished from their engineering aspect, and in this edition it has been brought down to March, 1883.

The Joiner and Cabinet-Maker. Houlston & Sons. 1883. Enlarged edition, with illustrations.

This is a book for boys, and a very good one of its kind; it treats in an intelligent fashion of the elementary duties of the joiner's shop, and gives a good many useful rules for the conduct of business and of life, enforced by apposite anecdotes, which have always for moral the policy as well as the propriety of being an industrious apprentice and an honest workman. The illustrations are in outline, and drawn in isometrical perspective, and are not only less expensive in consequence, but more intelligible. Such a work as this will be of benefit to the amateur joiner, and there are thousands of such; it will help him in many of his needs, and explain the rationale of much that without its aid would puzzle him. And if he follow the hints given, there are few demands likely to be made upon his skill which he will not be able to satisfy. As a matter of personal taste, we should have liked to see the ingenious youth referred to some examples of the excellent joinery of the seventeenth century, of which many examples are extant in every county, rather than that the somewhat slipshod modern system herein advocated. However, it is the modern system, and the object of this little book is, we suppose, to describe things as they are done, and not as they might be done. The description of the tools used by the joiner might be extended with advantage. The work is numbered twenty-one in a very useful series, and we can recommend it to all who require a handy little manual on the simpler forms of the joiner's "mystery."

The Land of Morgan. By G. T. CLARK. Reprinted, with additions and alterations, from the Journal of the Archaeological Institute. Whiting & Co. (Lim.), London.

READERS of the Builder who have perused the singularly powerful paper on old English castles contributed by the author of "The Land of Morgan," will not need any recommendation of this his latest series of collected memoirs. Indeed, so pre-eminent is he in this special department of historical archaeology or archaeological history that any encomium becomes almost an impertinence. The amount of research which has gone to make up this small volume of 166 pages is very remarkable, and we have an unfeigned admiration of the literary skill which can succeed in making such an array of names and dates not only readable, but interesting. Macaulay, in his essay on Milton, points out that some of the most musical passages in the "Paradise Lost" are mere catalogues of unsmooth names, which the genius of the poet has made pleasing to our ear. Certainly, Mr. Clark has Welsh names to conjure with, and Welsh names are singularly melodious even in the mouth of an alien, and are mellifluousness itself when lisped by a native of the Principality. This work incidentally throws a flood of light on many hitherto obscure points of English history also, and is a very storehouse of facts and hints for those who are working on similar themes. The "Sons of Morgan" have in this writer a warm friend and advocate; he pays a just tribute to their bravery, their zeal for liberty, and to the other virtues of a people who wanted only a just ruler to become loyal subjects, industrious in peace and faithful in war.

This is a book which requires a keen appetite, and, some might say, an acquired taste for its thorough enjoyment; but those who really are interested in the important subject of it cannot fail both to profit by its wisdom and learning, and to enjoy the beauties of its masculine and masterly style.

VARIORUM.

"MEMORIALS of Christchurch, Twynham, Hants," by the late Mackenzie E. C. Walcott, F.S.A., third edition, revised by E. Edmund Fawcett, F.S.A., is the title of a little book published by W. Tucker & Son, Christchurch, and treats of a congenial subject with all the author's accustomed skill. A plan of the church is given, and a photograph of the group, as seen from the river, is prefixed to the volume, which is intended to instruct the inhabitants and visitors in the history and characteristics of this grand old Priory Church, and well fulfils its intention. "The North East Ports and Bristol Channel," by W. Clark Russell (Andrew

Reid, publisher, Newcastle-on-Tyne), is a collection of bright readable essays reprinted from the *Daily Telegraph*, and illustrated by clearly-drawn coloured plans on a good scale, based apparently, in many cases at least, on the Ordnance Survey. The facts set forth as to the increase of such towns as Middlesbrough, for instance, are almost beyond belief, but that there is the town to witness them. The literary adroitness with which they are set out in the most telling form, and that peculiarly modern art of giving life to what would formerly have been a dry enumeration of uninteresting particulars, conspire to make this book as entertaining as a novel, while it is as instructive as an encyclopædia. Of the "Building Regulations for the Borough of Leicester" (Tomkin & Shardlow, Leicester) we need only say that they have been prudently compiled, and that happy is the town which has its sanitary matters so well watched and provided for.

Where to Emigrate: a Handy Guide to the English Colonies for Intending Emigrants" (Wyman & Sons), is so far as we have been able to test it, complete and trustworthy. It is illustrated by capital maps, and contains an amazing amount of information of all sorts, viz., as to house-rent, clothing, schooling, cost of living, &c., which must be to the advantage of those for whom the book has been written. "The A B C of Modern Photography," by W. K. Burton, C.E., third and enlarged edition (Piper & Carter, 1883), is the best small work of the kind we have met with, and will be welcome to a wide circle of practical workers in this delightful art. "Carpentry," by Robt. Jones, architect, Warrington (Guardian Office, Warrington), is a diagram with references, and explains the principle (and practice) of cutting bevels in carpenters' work in roofing, and will be found of service to the intelligent artificer.

Part I, vol. vii, of the Transactions of the Bristol and Gloucestershire Archaeological Society contains a mass of interesting matter and some good illustrations, and notably some papers on the Gloucestershire churches by J. E. K. Catts, architect, and others; and an account of an old manor-house at Brockworth, which is full of interest to those engaged in the study of our native domestic architecture of the early part of the sixteenth century.

"Lathie Work," by Paul N. Haselick, with illustrations (Crosby Lockwood & Co.), is, as its title sets out, a practical treatise, brought down to the present time, and interesting to those even who are not personally concerned with the beautiful art of which it treats. The present is the second edition, and is much enlarged and improved. Part I, of "Pattern Book for Jewellers and Goldsmiths," published by A. Fischer, London, has reached us, and contains, with, perhaps, one or two exceptions, some really excellent designs and specimens of the goldsmith's art. There is an astonishing number of engravings for the money, all carefully executed, and an example of a very beautiful Roman cup, date circa 1200, is alone worth the cost of the Part. Of the June magazine *Harper* has a very readable article on "A Famous London Suburb," and a touching record of the ill-fated Chatterton and his associates. The engravings are numerous and good. The *Magazine of Art* for June (Cassell & Co.) is excellent, both as to text and illustrations. "A French Cathedral City" is well written and well illustrated, and we owe the editor our thanks for introducing us to the vigorous statue of Peter the Great, which forms one of the illustrations to the very interesting paper "A Sculptor of Heroes." Mr. Pettie's "Water Fly," in the present Academy exhibition, is well translated by the engraver, who has caught the inimitable charm of this painter's work.

"The Sanitary Engineer" (New York), of which we have spoken well ever since it started, continues to pursue a good course, and must influence in a right direction a considerable number of persons. The numbers of last year, bound as a volume, contain a large amount of information which is permanently valuable.

Appointments: Clerks of Works.—Mr. J. Hindmarch, of Coatham, has been appointed Clerk of the Works for the Middlesbrough Municipal Buildings.—Mr. William Holloway, of Lowestoft, has been appointed Clerk of Works for the new Municipal Offices, Nottingham.

Miscellaneous.

Healthy Houses and Sanitary Inspection Societies.—At a meeting held in Newcastle-on-Tyne a few days ago, Professor Fleeming Jenkin lectured on "Healthy Homes." Professor Jenkin, in the course of his lecture, said that in order that a house should be healthy, there should be a free exit for the dirty water of the house, and great care should be taken to have the pipes water-tight and gas-tight. The house should be isolated from the main drain, but that was by no means an easy matter, for traps were not over reliable. They should make quite sure that the public sewers were properly ventilated, but even when that was done the trap might fail, for the water might get free by its own inertia and unseal the trap. In a proper trap that would not occur, but traps were often ill-constructed, and were, therefore, as he had said, not reliable, and in other ways than the one he had mentioned they might fail. Care must be taken that the drinking water was not in danger of being contaminated. The Sanitary Inspection Associations which had been formed in various parts of the country aimed at periodical inspections of the houses of its members by a qualified engineer with a view to remedying such defects as were of a dangerous character. Experience of such associations hitherto had shown a large number of houses requiring attending to, and it was not sufficient that there should be just the one examination. Examinations should be annual, for traps went wrong and pipes deteriorated in the lapse of time. Where established these societies had worked well and in perfect harmony with the local authorities. Mr. Hugh Lee Pattinson moved, "That we proceed to the formation of a Sanitary Association, to be called 'The North-Eastern Sanitary Inspection Association,' appointing the provisional committee a council of such association, with power to add to their number; and recommending the objects of the association for the consideration and cordial acceptance of the inhabitants of the North-eastern district."

An American Tale.—An amusing story,—in a double sense of the word, we fear,—comes from the United States. A hotel-keeper living at Raleigh, in North Carolina, was told, recently broke one of his bar-room windows, and being unable to get the damage repaired in his own town, he wrote off to New York for a pane of glass the required size. The measurement was 32 in. by 22 in., but in his haste Boniface wrote "feet" instead of "inches," and in consequence his order rather astonished the glass-makers of the Empire City. They could not, they soon discovered, manufacture a sheet so large; and, bearing in mind the magnitude and apparent importance of the order, they at once telegraphed to France for what they required. A Paris manufacturer happened to be able to roll a sheet of the necessary superficies, and at the earliest possible moment he did so, and shipped the result to New York. In due time the huge parcel, which, on account of its size, could not be forwarded by rail, reached its destination; and on opening it the hotel-keeper found a mass of glass 1 in. thick and as large as the floor of a banqueting-hall. But, what was still worse, the Paris manufacturer's bill came to more than 3,000 dol.; and the charges for transport and insurance amounted to nearly half as much again. What course Boniface adopted is not stated. Probably he either committed suicide, or made arrangements for exhibiting his purchase to all comers at 50 cents a head. So far the "story." One reflection that occurs to us as we read it is that Raleigh, in North Carolina, must be a town strangely devoid of the national "go-ahead-ness" if it contains no glazier capable of supplying a pane of glass 32 in. by 22 in.

Artisans' Dwellings.—The Industrial Dwellings Company, of which Sir Sydney Waterlow, M.P., is chairman, has acquired from the Metropolitan Board of Works about an acre of land in Soho, having frontages to the new street from Charing Cross to Oxford-street, on which nearly a thousand rooms will be erected. Up to the present time this Company has provided for the accommodation of about 25,000 persons of the working classes in various parts of London. Cannot the Company give their tenants some rooms a little larger than they have done?

The Greek Church, London Wall.

Another of the City places of worship, the Greek Church in London-wall, is now being demolished to make way for blocks of offices, which will be connected with Nos. 50 and 51, Old Broad-street. This church was built about forty years ago in London-wall, which was then in close proximity to the residences of the principal Greek merchants. Following the stream of fashion westward they found their place of worship too far from their residences, and, taking advantage of the large increase in the value of property in London-wall, they sold their leasehold interest in the church to the freeholder for a very large sum, and built for themselves a large and handsome edifice in Bayswater. The site of the old church, together with the sites of Nos. 50 and 51, Old Broad-street, are now being advertised for letting on building leases.

The St. George's (Gloucestershire) School Board have received the following tenders for building new schools at Barton Hill:—

H. A. Forre	£3,590 0 0
J. Gumblett	3,375 0 0
Wilkins & Sons	3,668 0 0
Eastbrook & Sons	3,397 0 0
W. G. Simmons	3,367 0 0
G. Humphrey	3,367 0 0
W. Vesla	3,363 0 0
J. E. Davis	3,333 0 0
H. J. Rossiter	3,321 0 0
Sease & Son	3,312 0 0
Lewis & Edbrook	3,289 0 0
L. A. Green	3,252 0 0
T. James	3,180 0 0
W. E. Walters & Son	3,150 0 0

The tender of Messrs. W. E. Walters & Son was accepted. The plans of the school have been prepared by Mr. E. M. Barnes, of Bristol.

Lismore.—The new R.C. Church of St. Cartagh, Lismore, is nearly completed. The church is picturesquely situated at the highest point of the town. The nave and transepts have been roofed in, and the tower is raised some 20 ft. above the nave roof. It is expected that the portion of the church now in hand,—viz., the nave and transepts, including the tower,—will be available for divine service early in August, and there will then remain only the apse, side chapels, and vestry to be completed. The style of the building is Romanesque, of a type not uncommon in North Italy. The design was furnished by Mr. W. G. Doolin, of Dublin, architect, and the works are being carried out under his superintendence. Upwards of 8,000 ft. has already been expended upon the work.

The Employes of Messrs. Palmer & Co., plumbers, of 1A, Canal-road, King's-cross, held their annual dinner at the "Prince George," Brighton, on Saturday last. Mr. J. Bennett proposed the health of "Mr. Samuel Palmer and the Firm." Mr. Palmer replied, returning thanks, with a short address to the men, and complimented them upon the success of the year. Various speeches were made.

Trade Exhibition.—As will be seen in our advertising columns, the first annual Manufacturers' Medieval, High Art, and Ecclesiastical Furniture and Decorative Exhibits is announced to be held in Humphreys's Hall, Albert Gate, Hyde Park, from the 25th of August to the 8th of September next. As a representative trade exhibition it cannot fail to be interesting to our readers.

TENDERS.

For alterations at The Horse and Groom, Westminster Bridge-road, for Mr. Sewell. Mr. H. I. Newton, architect, 37, Great George-street:—

Axford	£270 0 0
Godden	855 0 0
Langmead & Way	798 0 0
Beal (accepted)	798 0 0

Paster's Work.

Warne	£95 0 0
Davidson	69 15 0
Heath (accepted)	67 0 0

For the erection of three shops in Maple-road, and six cottages in Vineleigh-road, Penge, for Mr. M. Mathew. Mr. B. McKenzie, architect, New Thornton Heath:—

Jas. Smith & Sons, South Norwood	£4,080 0 0
Geo. Masters & Sons, Anerley	3,685 0 0
Jas. Hobbs, Penge (accepted)	2,900 0 0

For the construction of roadway, footpaths, and laying in pipe-sewers, &c. on the Honor Oak Park Estate, for Mr. E. P. Trenchard. Mr. Herbert D. Appleton, The Wool Exchange, architect:—

G. Zeltow, Kilburn (accepted)	£1,464 0 0
-------------------------------	------------

For the erection of St. Paul's Vicarage, Forest Hill, for the Rev. Frank Jones. Messrs. H. D. Appleton & E. W. Mountford, joint architects:—

Howard & Dorrall	£1,846 0 0
Humphreys	1,700 0 0
Turn & Appleton	1,465 0 0
W. Robinson, Lower Tooting	1,370 0 0

* Accepted.

For erection of Congregational Chapel at Farnworth, near Bolton. Mr. F. Bartram Payton, architect, Laisteridge-road, Bradford. Quantities by the architect:—

Joseph Munks, Huddall (accepted)	£2,470 0 0
Neill & Son, Manchester	2,760 8 0
John Taylor, Bolton	2,750 0 0
Norris & Sons, Bolton	2,980 0 0

For erection of Unitarian chapel, Llandysil. Mr. F. B. Payton, architect, Bradford:—

Watkin Davies (accepted) Llandysil.

For erection of ship chandler's shop, warehouse, offices, &c., for Messrs. F. & T. Ross, Hull. Mr. F. B. Payton, architect, Bradford. Quantities by the architect:—

Benjamin Musgrave, Hull	£1,465 0 0
George Jackson & Son, Hull	1,781 0 0
Joseph Morrell, Hull	1,432 0 0
G. W. Holmes, Hull	1,438 0 0
J. W. Garbutt, Hull	1,410 0 0
Freck, Blackburn, Hull	1,384 15 0
Erectors of Thos. Southern, Hull	1,383 0 0
Thos. Goates, Hull	1,366 0 0
Mark Harper, Hull	1,368 8 6
Robt. Habbershaw & Son, Hull	1,355 0 0
H. Grashby, Hull	1,350 0 0
F. Bedby, Hull	1,335 0 0
John Simpson, Hull	1,318 0 0
John Drury Hull (accepted)	1,324 7 0

For alterations to Primitive Methodist chapel, Milford, Derbyshire. Mr. F. B. Payton, architect, Bradford:—

A. W. Spencer, Derby	£237 0 0
H. Kent, Duffield	328 0 0
Wheelon Bros., Belper	280 0 0
A. Hingley, Duffield	275 0 0
Thos. Dyer, Belper (accepted)	275 0 0

For the erection of a Primitive Methodist chapel, Holford, near Cromford. Mr. F. B. Payton, architect, Bradford:—

Joseph Walker & Sons, Wirksworth	£725 0 0
Wheelon Bros., Belper	690 0 0
L. T. Wildgoose, Matlock Bank	679 0 0
Wm. Askew, Matlock Bridge (accepted)	649 0 0

For the erection of the new Rochester and County Club House at Rochester, Kent, for Mr. C. Archol. Mr. G. Friend, Maidstone, architect. Quantities by Messrs. Cartis & Sons:—

Palman & Fotheringham	£3,710 0 0
Wills	3,568 0 0
Denne	3,467 0 0
Foster & Dickes	3,325 0 0
Kirk & Randall	3,270 0 0
Caland	3,240 0 0
Blake	3,200 0 0
Naylor	2,993 0 0

For the erection of the Rochester and County Club, the Castle Gardens, Rochester. Mr. Geo. Friend, Maidstone, architect:—

Palman & Fotheringham, London	£3,710 0 0
Wiles, Dover	3,568 0 0
W. T. Denne, Walmer	3,467 0 0
Foster & Dickes, Rugby	3,325 0 0
Kirk & Randall, Woolwich	3,270 0 0
Caland & Son, Rochester	3,240 0 0
Blake, Sevenoaks	3,200 0 0
Naylor & Son, Rochester	2,993 0 0

For new shop and premises, Marlows, Hemel Hempstead, for Mr. Chas. E. Gray. Mr. W. A. Fisher, Hemel Hempstead, architect:—

Horn, Hemel Hempstead	£1,399 5 6
Sear, Hemel Hempstead	1,355 0 0
Monk, Hemel Hempstead	1,350 0 0
Fincher, Tring	1,298 10 0
Waterman, Watford	1,296 0 0
Martin, Wells, & Co., Aldershot and London (accepted)	1,290 0 0

For semi-detached house and cottage at Bury Mill End, Hemel Hempstead, Herts, for Mr. W. E. Bailey. Mr. W. A. Fisher, architect:—

Morne, Hemel Hempstead	£265 0 0
Sear, Hemel Hempstead	626 10 0
Kitchener, Hemel Hempstead	674 0 0
Monk, Hemel Hempstead	548 0 0

For new minister's house for the Trustees of Bormoor Baptist Chapel, Hemel Hempstead, Herts. Mr. W. A. Fisher, architect:—

Nash, Berkhamstead	£750 0 0
Sear, Hemel Hempstead	662 0 0

For supplying and laying a 3-inch cast-iron water main from Bromborough to Eastham and Childer Thornton, together with the necessary meters, valves, hydrants, and other fittings. Mr. Charles H. Bolce, M. Inst. C.E., 13, Harrington-street, Liverpool, engineer. Quantities supplied:—

Geo. Hall, Liverpool	£1,611 0 0
Laurence Hardman, Rock Ferry	1,427 0 3
Geo. Day, Liverpool	1,450 0 0
Williams & Co., Liverpool	1,374 19 3
Fawkes Bros., Birkenhead	1,265 0 0
R. B. Mackintosh, Liverpool	1,172 9 11
Jackson, Neston	1,165 0 0
E. Taylor, Hoylake	1,132 16 0
William Winnard, Wigan (accepted)	1,070 4 8

For the erection of a house in the Honor Oak-road, for Mr. Courtney Hallett. Mr. Herbert D. Appleton, architect, 157, Wool Exchange:—

W. Robinson, Lower Tooting (accepted)	£1,200 0 0
---------------------------------------	------------

For painting, distemping, and other work at the Poplar and Stepney Sick Asylum, Devon-road, Bromley-by-Bow, for the Managers. Messrs. A. & C. Harston, 15, Leadenhall-street, architects:—

Gibbin, Bayswater (accepted)	£238 0 0
------------------------------	----------

For painting and other work at the Chelsea Infirmary, Vale-street, Chelsea, for the Guardians of St. Luke's, Chelsea. Messrs. A. & C. Harston, 15, Leadenhall-street, architects:—

Derby, Limehouse (accepted)	£157 0 0
-----------------------------	----------

For erection of shop on forecourt, and stables, stores, &c., in rear of premises, Burnt Ash-lane, Lee, for Mr. W. Brown:—

Keunard Bros. (accepted)	£1,250 0 0
--------------------------	------------

Chief Office : 360, EUSTON ROAD, LONDON.

The Builder.

Vol. XLV. No. 2111

SATURDAY, JULY 21, 1883.

ILLUSTRATIONS.

Sir Thomas Tresham's Buildings, 1575-1635 (Double-page Engraving).....	80
Limburg Cathedral, from the South-east.....	82
The Museum of Comparative Sculpture in the Palace of the Trocadéro, Paris (Double-page Engraving).....	84, 85
Design for All Saints' Church, Ipswich.—Mr. Thomas Garratt and Mr. C. H. Lübr, Joint-Architects.....	87

CONTENTS.

The New Indian Room at South Kensington.....	67	Limburg Cathedral, from the South east.....	81	The Sea Wall Extension at Eastbourne: Jackson v. The Local	91
Slender's Drawings at South Kensington.....	68	All Saints Church, Ipswich.....	81	Case under Metropolitan Buildings Act: Floor Area and Cubical	96
Retrospection: Social and Archaeological. By Charles Roach Smith, F.R.S.....	69	A Second Suez Canal.....	81	Contents.....	96
A Few Old Familiar Faces.....	69	Helfrich von Farnet.....	81	Interference with Ancient Lights "The Angle of Forty-five	96
Gas Accounts and the Protection of the Shareholder and of the Economy.....	71	Budget of News from Sydney.....	82	Parker v. The First Avenue Hotel Company.....	96
The Exhibition of French Portraits at the Paris Ecole des Beaux Arts.....	71	The Cleaning of Water-pipes.....	83	Building Act: Recovery of Costs.....	97
The House of the Comte de Chambord at Gortz.....	71	Excavations at Rome.....	83	Builders' Clerks' Benevolent Institution.....	97
Some Sanitary Arrangements of Ancient Dwellings.....	72	Armenian Antiquities.....	83	Stipendiaries against Charters.....	97
Contractor's Plans.....	72	Proposed Metropolitan Street Improvements, and New Commu-	83	New Gymnasium, Camden School.....	97
The Removal of St. John College.....	72	nica-tions North and South of the Thames.....	84	Sub-Contracts.....	97
The Art Manufactures of Japan.....	72	The Industrial Exhibition at Cork.....	84	The Ventilation of the Underground Railway.....	97
The Position of Architects in South America.....	73	D-salters Abroad.....	84	Hospital Sites.....	97
Bristol and Clifton Junior Architects' Society: The Buildings of	73	New Hospital at Rome.....	85	Stained Glass.....	97
the Present Day.....	73	Consent for Sewerage Pipes.....	85	Books: Fairbank's Handbook of House Property (Dorsey, L. &	98
Improving Edinburgh.....	76	The German General Land Survey.....	85	wood & Co.); Smith's Cutting Tools (Casell & Co.); Chambers's	98
The Buildings of Sir Thomas Trevelyan.....	76	Leisure in the Eyes.....	85	Practical and Conversational Dictionary of the English, French,	98
The Museum of Comparative Sculpture in the Trocadéro.....	81	Bank Buildings at Peckham.....	85	and German Languages (Murray	98
		A Medical Manum in the Market.....	85	Varrorum.....	98
		Heng's Circus in the Auction Market: Property in Argyle-	85	Miscellaneous.....	98
		street.....	85		

The New Indian Room at South Kensington.

N o respect do we owe more to the authorities of the South Kensington Museum than for the large and comprehensive illustration of Indian art, which for some years past has been gradually got together. The galleries on the west side of Exhibition-road have long contained a splendid collection of Indian fabrics, and of examples or casts of ancient Buddhist and Hindu architectural detail; and we have now in the main building another long gallery filled with fabrics, and a large architectural court, surrounded with examples and reproductions of more modern architectural work, and occupied

in the centre by cases containing a large collection of metal work.

The beauty and elaboration of the architectural work here displayed is astonishing in more than one sense. It is difficult, living as we do in a country where the decorative treatment of ordinary street architecture is so limited, and is restricted so much by economic considerations, to understand how it can be possible to lavish such an amount of beautiful and elaborate work upon shop-fronts of but small dimensions, except on the supposition that in India economic considerations in art have for centuries been in abeyance, and ornament is lavished from pure love of it, and almost constitutional incapacity to do without it; and that every workman must be an "art-workman." The largest example in the new court, which occupies nearly the whole of one end of the room, consists of the fronts of two small three-storied shop buildings of the seventeenth century, brought bodily over from Ahmedabad, and set up here for the admiration and despair of English architects who may be called on to design shops. With the exception of the ground-story, which is plain and in a "post-and-pan" timber and plaster construction, these fronts are literally almost encrusted with carved and coloured ornament of the most delicate description. The two upper stories display open arched galleries or balconies running across the whole width of the two fronts; the main wall, of plainer work, showing in the rear as the background to the whole.

The lower balcony is bracketed out on brackets of serpentine outline with short cross-heads at the top, on which the lintel rests, which runs right across and carries the balcony railing, and the story-posts for the upper balcony. About the brackets carved and coloured flowers twine in profusion; the cross-heads and every inch of the lintel are covered with carving, and the panels in the balcony railing are entirely filled with equally delicate but rather more conventionalised floral designs. The treatment of the doors and other details in the main walls is well calculated to throw out and emphasise the delicacy of the balcony-work which overhangs and forms a partial screen before them. The doors are treated in a very solid style, and with that ornamental design and arrangement of the iron bolt-heads which seem to have been a tradition in Indian architectural art from a very early period. After one's first astonishment at the richness of the whole design, of course there may be certain elements in it which suggest criticism. The constructional effect is to a certain extent weakened by the over-elaboration of ornament on the portions bearing the main stress; and the colour must have been gaudy when fresh. Blue and yellow have largely predominated in it, and in the present state of partial decay of the colour it looks better, at least to Western eyes, than it probably did when new. With these allowances, it is nevertheless an extraordinary specimen of decorative street architecture.

A balcony of carved cedar wood (eighteenth century), and a reproduction of a carved wooden shop-front from Cawnpore (date not stated), form the two examples next in importance in point of size. The first-named, which is colourless, forms an instructive example of great richness of effect obtained by work which is not really very costly or difficult of execution, consisting mainly of pierced panels of various design. The Cawnpore shop is much richer, and is covered with carving, floral work, and diaper work, with small figures in the interspaces between the balcony panels. Here, as in much other Oriental work, the contrast between the faculties of Eastern artists in decorative work and in figure-work is strongly brought out. One is tempted to make a free application of the couplet in Heber's once popular hymn,—

"Here every prospect pleases,
And only man is vile,"

and to imagine that there must be some moral explanation (as, indeed, Ruskin long ago suggested) of the curious fact that people capable of producing the most exquisite decorative carving should be unable to produce any better treatment of the human figure in art than these weak travesties, and should apparently be content with such a representation of it. The feeling of the dignity of humanity must surely be low among such a people. It would be interesting to know what is the opinion of some of the

thoughtful men among the Europeanised Indians of the present day as to the reasons for this curious inequality in the artistic productions of their country.

A reproduction of a circular wooden balcony from a temple at Ahmedabad is one of the most beautiful designs in the court, and is interesting from the very classical style of some of the foliage ornament. In this respect a still more interesting piece of work is the reproduction of a stone screen, forming part of a Moslem tomb at Gwalior. Here we seem to be looking at Greek work carried out on a basis of Indian detail. Round the panels of the screen runs an enrichment of most cleanly and symmetrically executed small scroll-work, somewhat like Greek honeysuckle ornament, branching from a central scroll or stem, but the leaflets of the ornament are turned back with a little scroll at the extremity in a manner distinctly Arabic in taste. The panels are carved with branches of leaves and flowers, realistic in detail, but arranged symmetrically on either side of a centre, with exactly that kind of mingling of realism with conventional arrangement which is seen in some of the rather more free examples of Greek detail found at Priene, and now in the British Museum. The one completely Oriental feature in the work is the piquant manner in which the solid slabs on which this ornament is carved are hung, as it were, in the centre of the panel space, connected with the margin only by very light open tracery work, forming a perforated light all round them. The light airy effect given to the whole by this peculiar disposition of parts is remarkable, though the appearance, it must be owned, is a little fragile.

A pointed arch over the doorway to the court is filled in with a reproduction of that exquisite piece of Saracenic window tracery consisting of the adaptation of tree forms intertwining,—

"With wanton heed and giddy cunning,"—

in a perfect maze of lines, which has been illustrated and enthusiastically praised by Mr. Fergusson in his "History of Indian Architecture." It is an exquisite piece of work, just a little marred, however, by the too realistic treatment of the stems from which all these branches spring. Another interesting and very characteristic example of Indian architectural detail (pure Hindu in this case), is the porch of carved serpentine, with twelve-sided columns and brackets in the reversed curve or sinuous form peculiar to Indian architecture. This is a completely wooden style cut out in stone; and the texture and marking of the stone, joined with the suggestion of the style of treatment, makes it look very like wood at a little distance. Near this we have some modern work in the shape of an arch and spandrel of glazed blue and white tiles from Mooltan, which seems to show that Indian design has not lost its cunning yet: the inland

floral subjects in the panels are of beautiful design and effect. Of similar work is a tomb at Moollan, of which a modern reproduction stands in the centre of the room. This consists of a rectangular base about twice as long as its width, on which is a coffin-like addition of the section of a pointed arch, the whole entirely covered with blue and white tiles, in the decorative designs of which there is a curious mixture of Classic and Oriental forms. The ceiling and other details are from a wooden pagoda at Cochín, demolished in 1876; the ceiling is deeply sculptured in squares formed by the intersection of the beams, and in one of the pieces of pedimental decoration a study may be found of the sculptural treatment of elephants, especially in the conventionalised form given to their hoofs.

There are a number of carved doors in the collection, of considerable variety of style, but all more or less beautiful or picturesque. In most of these it may be observed that the iron fastenings are treated so as to be decorative either in finish or in their position in the design. This is singularly and very effectively done in a tank doorway from Surat (no date given,—it looks rather modern), in which the bars are divided into round and square segments, each square having a circular flower carved on the face of it, of which the iron bolt-head forms the centre. These bolt-heads are perfectly plain, but by their position they are made to form an important feature in the design. The little spandrels in the angles adjoining these flowers or patterns are treated exactly like the "eyes" in Gothic tracery, while on the architrave of the door is seen a corrupted form of the Classic bead-and-reel ornament. Some of the doors show the effective treatment of rather simple types of design; bar tracery, arranged in fanciful forms, half symmetrical and half random, or apparently so; others, such as the Shishem wood door for Hoshiapur, are rich to a degree; this last-named example has every bar carved with repetition ornament, and a large circular flower in each of the small square panels, each flower perfectly distinct in design. This variety in unity is one of the great beauties of Indian ornamental design, and one from which we might take more lessons than we do. Where an Indian art-workman has a number of repeated spaces to carve, as in the panels of this door, he never seems to think of making them all alike. The same variety is exhibited in an entirely modern door (dated 1881), carved in Deodar wood by Faal-Diri, of Shalpur. This is a beautiful door completely covered with ornament of Arabic type, in very low relief, and perhaps just a trifle wanting in sharpness, but showing great artistic feeling; and in this case the panels are filled with very elaborate fretwork in geometrical designs, all of them differing.

The metal work is a very good collection, but does not in the main illustrate anything out of the way of the usual characteristics of Indian metal work, with which most of us are now tolerably familiar. If the case of engraved brass from Benares is, as it appears to be, modern, it shows a great deal of feeling for brilliant surface treatment of the metal, but not so much perception of the effect of distribution of ornament, nor of beauty and character in form and outline, as in some of the older metal work. It is, however, the architectural element which constitutes the real interest of the New Indian Court, and every architectural designer and art-workman who has not been to India should examine this work, which can hardly fail to prove interesting and suggestive.

STUDENTS' DRAWINGS AT SOUTH KENSINGTON.

The drawings which have obtained prizes in the national schools of design are this year exhibited in the fine range of rooms on the upper floors at South Kensington, above the new Indian Gallery, and which are to form part of the library department eventually. The gradual development of the South Kensington buildings towards a complete whole, we may remark, is gratifying to observe, and while this progress argues the continued and increasing vitality of the institution, it also illustrates the wisdom of planning a building of this kind on a scale far beyond its immediate requirements, and leaving plenty of margin for extension within the lines of a complete plan. At the same time, we cannot but regret that some of the more recent portions, internally at all events, are not carried out with anything like the taste

and effectiveness which has been shown in some previously executed portions of the building. Economy, enforced rather than desired, may have something to do with this; but we must confess that the new staircase, and the new rooms in which these students' drawings are disposed, are very common-place in effect and in architectural and ornamental detail; and this common-place character seems even more marked, in the new room of Indian architectural exhibits (about which some special comment will be found elsewhere) in contrast with the beauty and true taste and picturesque character of the Indian details contained in it. And when we look at the students' drawings, collected from all the parts of the kingdom into the central establishment, we could have wished that their place of reception had been a better exemplification of one art, Architecture, in which the students are encouraged to exercise their talents.

The students' designs are this year arranged with the gold medal ones all placed together, so that one can find them at once and compare them. The medal for the crayon study from life is rightly awarded to Mr. C. J. Birkbeck, whose figure of a man leaning with his back against a post, legs crossed, and head thrown back so as to foreshorten the features, is a very admirable life-study. There are other drawings of the same model in the same position, and these, as well as a few other life-studies to be seen, indicate that some of the schools have taken the trouble to procure rather better models than previously. In regard to one or two other students' exhibitions we have commented on the exceedingly "had form" of the models for life study, the copying of which certainly could not afford the students any assistance in learning the higher qualities of the human figure as a medium of artistic expression. This year there is an improvement in that respect, as far as we can judge from the limited number of life studies exhibited, for there seems to be some reticence in regard to the life this year as compared with former years, and the examples are few in number, but mostly good. The gold medal for drawing from casts goes to Mr. A. C. O. Jahn for a drawing which strikes us as weak and faulty in proportion of parts. The study from the Laocoon, by Mr. Thiede, to which an "extra medal" was awarded, is superior in style and character, though less highly finished. This award confirms us in what we have often felt, that too much stress is laid in the Government Schools of Art on mere high finish, too little on the essential qualities of force and character in the drawing. Nor can we altogether understand the awards of gold medals in other classes. One at least of the silver medal works in still life, that by Mr. W. A. Schröder, is superior in brilliancy and effect to either of the gold medal examples; and the gold medal for still life in water-colours is given to a work which is well executed but shows an exceedingly bad eye for colour in the combination of objects, a blue jar and a green curtain forming the salient objects of the group. The gold medal for flowers, &c., goes to Miss E. L. Varley for a very good painting, in which pomegranates form the principal subject, though here again Miss Lilian Abraham's drawing of currant-bushes, to which a silver medal has been given, strikes us as more forcible and more really artistic in character. The general tendency of the awards, as we have noticed in other years, seems to be to put a premium on dull dead accuracy rather than on vivid and forcible representation, and not unfrequently it seems to us that the really artistic character of the designs rises as we go lower in the grades of "medalling." It might be fairly maintained that Miss Woodall's still-life drawing, to which the bronze medal is awarded, is the best of its type; it is certainly the one which most people would prefer to hang up for pictorial effect. In the studies of "historic styles of ornament," mostly paintings of bits of antique metal work, the prize seems to have been given to one of the poorest and tamest in execution of the various sheets of small drawings. The same again in the sculpture; the only piece of sculpture there that one would like to possess for its own intrinsic point and interest is Miss E. Fawcett's figure of a boy carrying a picture on his shoulder, to which the bronze medal has been awarded; this is not merely a correct model, it is a figure that is graceful and suggestive, while the gold and silver medals are given to Messrs. E. Crompton and R. Rhodes respect-

tively, for angular and prosaic life studies which are of no possible value or interest save as studies of the figure. In the department of ornamental design Mr. W. H. Woodall gets a gold medal for a really good tile design (of Renaissance leanings), and Mr. T. Linnell for some wall-paper designs, the best of which is very good. The gold medal designs for bronze panels, bits of bas-relief ornamented in pilaster-shape, of Renaissance school, are very poor.

Among the numerous designs exhibited we noticed as very good a design for silk-hangings (bronze medal) by Mr. E. R. Rigby; a panel in mosaic (so-called,—it should rather be styled inlay) in the Florentine style, by Miss Alice von Berg (bronze medal); some semi-circular wrought-iron grilles, a little too naturalistic, but clever; and sundry lace designs from Nottingham, of which the best were a "rose-point" collar and cuffs by Mr. C. Bircumshaw, and a lace curtain by Miss Mary Goodyer, both recipients of bronze medals. A somewhat out-of-the-way effort is made by Mr. Harry Bayton, of Coventry, in the shape of a set of designs for the ornamental chasing of the backs of watches; some of them very pretty.

As in former years, it is impossible to look over the collection without a feeling that the "national schools of design" can scarcely be said to teach design, and that originality of conception and feeling seem to be the qualities least appreciated by the examiners. In regard to our special subject, Architecture, we may observe that, as in former years, the drawings and designs are of a very mediocre description, and scarcely such as to call for any comment.

"RETROSPECTIONS: SOCIAL AND ARCHEOLOGICAL."*

UNDER a happily-chosen title the author of the above work is bringing together the reminiscences of a long life, and a record of the antiquarian labours and experiences of half a century. We gather from its pages that the writer was born in the Manor-house at Landguard, in the Isle of Wight, and that his family on both sides were freeholders from the days of Charles I. or earlier. The boy inherited from his father an ear for and a love of music, and in this delightful art he early became a proficient. He shared, moreover, with all his family a strong bent towards the drama; his father was the intimate of authors and actors of renown, and supplied Morton, the writer of the once popular comedy, "Speed the Plough," with the incidents of the play; his brother, Major Smith, was an amateur actor of more than average ability and success; and he himself possesses considerable histrionic power.

Brought up in the country, he was fond of wandering about alone; and while very young became an ardent brother of the angle. Although much interested in country sights and country life, and specially fond of the feathered tribe, he "sawed nothing for horses," but would hide behind the great lime-trees to escape a ride with his father,—a trait which is, we imagine, unique in the history of English boyhood. After passing some time at a ladies' school, he was put under the teaching of Mr. Crouche, of Swatling, and here increased opportunities for indulging in his favourite diversion of fishing in the famous Hampshire trout-streams, reconciled him to the loss of home and friends. His musical skill was soon recognised and rewarded by his election as first treble in the church choir. The incumbent (the Rev. Frederick Beadon) was a remarkable man,—born in 1777, he died in 1879, and thus attained the ripe age of 102 years. And more remarkable still, he continued to perform divine service until his ninety-sixth year. Mr. Crouche's school was removed to St. Cross, near Winchester, and thither our author accordingly went; but his stay was short, for the receipt of an unlooked-for fortune brought Mr. Crouche's scholastic course to an abrupt close. Mr. Withes, of Lymington, completed the boy's education, and was apparently the first to discover his talent for dramatic recitation and expressive reading. It was at this time that our author first tasted the joys of the theatre, and witnessed a performance of Planché's earliest extravaganza, "Amoroso." The taste thus initiated clung to him through life; and it is evident from these memoirs that the drama has seldom had a more passionate, faithful, or discriminating admirer than Charles Rosch Smith, the well-known antiquary.

* "Retrospections, Social and Archæological." By Charles Rosch Smith, F.S.A. Published by subscription.

We hear but little of his part in boyish games; but we find him spending his spare hours with Shakespeare and the English dramatists, and endeavouring to organise a youthful company to perform "Julius Cæsar," or the more impracticable "Cato" of Addison. When it became desirable to close his school life the boy was placed with a solicitor at Newport. How many men, since distinguished as artists, authors, actors, have begun life in solicitors' offices and have rebelled against the drudgery of the law? Young Smith was removed from Newport, and only just escaped a commission in the Royal Marines, which would have been worse than the practice of the law, inasmuch as it would have left him fewer opportunities for theatrical recreations. In due time he was apprenticed to a chemist at Chichester, and appears to have had, on the whole, a fairly good time. There was no fishing; it is true, but chance threw in his way Pinkerton's book on "Coins and Medals," and this chance determined his career. Henceforth his line was marked out for him: he was to be a numismatist and an antiquary. He read and re-read Gibbon's "Decline and Fall," and Roman history and Roman antiquities became with him a passion. For the development of this bent, and for the many acquaintances made and friendships formed in consequence, the reader must consult the record for himself. Unfortunately, dates are but sparingly supplied throughout, and it is not quite clear in what year he visited London for the first time. As he might have guessed, he "went to the theatre every evening," seeing Edmund Kean in *Richard III.* and *Sir Giles Overreach*, and Kemble in comedy, and, to his inexpressible wonder and delight, the elder Mathews. When, on one occasion, the latter was assailed by hisses while singing one of his songs, our author stood boldly up in the pit and clapped. He was rewarded for his courage by a complimentary reference in some impromptu lines which Mathews introduced into the concluding verse of the song when silence was at last obtained and he was allowed to proceed.

Through the interest of a friend he was (date not given) employed in the firm of Wilson, Ashmore, & Co., of Snow-hill, with "bad pay and the work of a horse," hours from six a.m. (which meant rising at five) until eight p.m., with an hour for dinner and half an hour for breakfast. Think of that, ye young gentlemen of H.M. Circumlocution Office! Again he managed to see the best actors of the day, and thought of adopting the stage as a profession. He was, however, balked of his intention, and took the (perhaps) more prudent course of opening a business of his own in Lothbury, at the corner of Founders' court, at the back of the Bank, and in the very heart of the City whose history and antiquities he was hereafter to elucidate.

The narrative is a little difficult to follow, as it is not arranged upon any chronological plan. After reading for seventy-six pages about the doings of the Archaeological Association, and following its members in their various congresses at Canterbury, Worcester, and elsewhere, we come upon an account of the inauguration of the Association itself; and, adopting the example set by the immortal Mr. Shandy, the writer of the book does not oblige us by being born until we have reached its eighty-eighth page. It is difficult to see the reason for this, and easy to imagine that the thread of these "retrospections" would have been followed with more pleasure if the order of them had been consecutive.

There are, of course, painful passages in the book,—difficulties which jealousy or spite laid across the author's path, incidents which show some of the inherent weaknesses of human nature, and its frailty under very slight temptation. The circumstances of the division in the society which occurred soon after its foundation, and has never been closed, are hinted at; and the conflict with the City authorities, arising out of a misconception as to the authorship of some articles in a Review, and ending in Mr. Smith's loss of his business premises, a law-suit, a compromise, and much remaining bitterness on both sides, are set out in some detail; also the author's subsequent difficulties with the architect of the Royal Exchange, his forcible exclusion from the works, and the expedients by which he kept himself informed of the nature of the excavations, which reached to the foundations of Roman London, are revived and re-told. These will pass lightly over. If there be any who wish to

go over the old ground, and open again the sores which time has healed, they will find the whole controversy in the third volume of this journal. For ourselves we turn with more interest to this significant extract from his remarks on a discovery which lets in a curious light upon the manners and customs of the conquerors of Britain:—

"On removing a solid block of masonry (on the site of the old Royal Exchange) a very unlooked-for revelation was made. The site was demonstrated to have been a filled-up gravel-pit, which must have been outside the Roman City before it was enlarged. The pit was 50 ft. by 40 ft., and 19 ft. deep. Its contents were composed almost wholly of animal and vegetable matter, thrown out as useless from shops and houses. In one part were loads of oyster-shells; in another, dross from smiths' forges; bones of oxen, cows, sheep, and goats; broken pottery and glass, sandals, implements in iron, coins, &c., thrown away mostly in the sweepings of the streets. In course of time, the site being required for building, a thick stratum of gravel was spread over the pit." How curiously this brings the past and present together, showing the presence of a "constant quantity" in human nature. Seventeen centuries have not cured a bad habit, and the London of Severus is still in some respects the London of Victoria.

There is but little of Mediævalism in the present volume, the author's heart was with the Anglo-Saxon and the Roman, and his main interest centres in them and their works; he is never so happy as in the discovery of a rare coin, in deciphering obscure inscriptions on tomb or altar, and tracing the history and exploits of the unremembered dead who died long ages ago. One of the most delightful chapters in the book is that on the stupendous defensive work which stretched across the kingdom from the Tyne to the Solway, a distance of seventy-three miles. This our author explored on foot and alone when such an excursion was by no means unattended with personal risk; indeed there are even now few, if any, more desolate regions in the kingdom than the vast waste which one may call the *glacis* of this ancient fortification.

In many of his pursuits the writer of these retrospections was fortunate enough to meet with sympathy, encouragement, and substantial aid; in others he was met with opposition, both obstinate, unreasoning, and malignant. By mere force of character, however, the victory generally remained with him. The child is father to the man, and in the courage with which he confronted organised opposition and the determination with which he breasted obstacles before which weaker natures would have succumbed, we cannot fail to see the youth who defied, single-handed, an angry pit, opposing and finally over-ruling its verdict.

To us one special recommendation of this book is the biographical sketches with which its pages are enlivened, and which call up before our mind's eye so many a forgotten scene and many an old familiar face. The characters are touched in with a few telling strokes, and always in an appreciative and kindly spirit. They range over a number of personages, all more or less known in the world of art and letters and many of them known to ourselves, and the anecdotes are fully worth preserving. As a sample of their quality we must find room for the following:—

The Rev. Mr. Isaacson,—"Ingoldsby" Barham,—was appointed some forty years ago to a neglected and deserted cure at D—. His parishioners, from some cause unexplained, had lost the habit of church-going, and their morals and behaviour were anything but edifying. His piety, earnestness, and eloquence in the pulpit soon wrought a perceptible change, and, where these could not reach the obstinately recalcitrant, his tact succeeded. There was in the parish a wealthy heathen, and this was how Mr. Isaacson "went about" with him. A heavy shower procured the parson an introduction. He had taken shelter in the porch of this rich sinner; the rain poured in torrents; at length a voice said: "Will you walk in?" Mr. Isaacson was soon in a chair by the fireside and deep in the subject of the crops, the weather, and rural matters. "I suppose it's no use offering you a pipe?" said his host. "Indeed it would be of use," replied the parson, "like you, I am a smoker." The result may be guessed. The following Sunday the parson's own pew was occupied by the unwanted

presence of his quondam entertainer; he became a constant worshipper, and found the money to restore the church! Envy and detraction could not leave Mr. Isaacson to do his good work in his own way, and he was summoned before his Bishop for keeping the company of tradespeople and smoking with them! We have read in a certain old Book a similar complaint, as to associating with publicans and sinners. "It is perfectly true, my lord," said the impenitent one, and then he told the whole story. The Bishop dismissed him with a blessing, and the injunction to "go on smoking!" We should like to record the name of this discreet dignitary, but the book gives it not. Mr. Isaacson had a turn for light, sparkling, facile versification, almost equal to Barham's, and imitations of Horace are given which almost attain the unattainable charm of the original.

Mr. Smith revives our acquaintance with many old friends,—Wright, Fairholt, Barham, Lient. Waghorn, whose name has recently been once more a household word, Bland,—strangely so called, for, as a magistrate, he rode single-handed into a prize-ring and forcibly stopped the fight, "a dem'd savage lamb," as Mr. Mantalini would say,—Brent, Lord Lonsborough, Dawson Turner, the two Crokers, and last but not least the ever dear James Robinson Planché of happy memory. Copious extracts are given from his delicious extravaganzas, of which the prodigious number of 176 flowed like a stream of molten gold from his enchanted pen.

But we must draw to a close. Mr. Smith has not only been an indefatigable worker in all the walks of antiquarian research, but a voluminous author, and the mere enumeration of his contributions to periodical literature would fill a volume. We have before referred to his dramatic gifts, which were ever ready to delight or aid his friends, to his rare musical ability, to his conversational powers and social charm. He is, moreover, an ardent floriculturist, and a successful grape-grower, and his genius is as many-sided and versatile as one could wish. May he still have many years of happy life. We have read every word in his charming book; we close it with reluctance, and lay it aside with regret,—a regret which is tempered by the reflection that this volume is an instalment of a promised series, and that we may at no distant date extend our acquaintance with these lively, entertaining, and instructive "retrospections."

A FEW OLD FAMILIAR FACES.

"Dicito, quid insit, et quâ facie, memorato omnia."
PLAUTI, *Rudens*, 4, 4, 105.

"THIS is the chief tavern in London"; so, in Maitland's time, ran the inscription upon the Boar's Head, East Chepe, successor to that in which Shakespeare lays such matchless comedy. And it had other claims to celebrity. Stow says there was no tavern in East Chepe in King Henry IV.'s time; but history records a certain riot here of Prince Henry and his brothers Thomas and John, which ended in their being brought before the justices. The message itself dated from as far back as King Richard II.'s reign, when one William Warner gave a tene-ment, so called, to the College of Priests, founded by Sir William Walworth, for the neighbouring St. Michael's Church, Crooked-lane. The back windows of the tavern looked upon the churchyard, a small portion of which until lately remained, wherein Walworth was buried (1385).^{*} There, too, was laid John Rhodoway (1623), "vintner at the Boar's Head," and Robert Preston (1730), the favourite drawer and worthy successor to the nimble-tongued Francis, whose epitaph is copied in the Lansdowne MSS., 889, art. 73. Upon the turning over of a rubbish-heap, carried to Whitechapel from the ruins of the Fire, was found a carved box-wood bas-relief of a boar's head, set in a circular frame, made of two tusks mounted with silver, and inscribed at the back, "William Brooke, landlord of the Boar's Head, Estchepe, 1566." That relic passed into the hands of Stamford, the bookeller, and was subsequently purchased, on January 27th, 1855, by Mr. Halliwell, at Christie's. The later sign, carved in stone, bearing the landlord's initials, "J. T.," and date 1668 above the snout, is now in the City Museum, Guildhall. It is about 1 ft. 4 in.

^{*} For Walworth's association with this spot, see the *Builder*, vol. xlv., p. 841,—"*London's Mediæval Fish-markets.*"

high by 1 ft. 8 in. long, and shows the head of a veritable "tusk" in bold relief.

Washington Irving and Goldsmith have written essays upon the Bear's Head, so charmingly that we can pardon the latter for characteristically forgetting that the tavern as he saw it had been built since the Fire, and the former for accepting an antique sacramental flagon from the church hard by for the actual parcel gilt goblet upon which the good easy knight, sitting in her Dolphin Chamber, at the round table, by a sea-coal fire, swore he would marry mine Hostess Quickly. For the approaches to the present London Bridge, which stands some yards above the former, were pulled down, together with the church as rebuilt by Wren, the four taverns that occupied so much of East Chepe as lay between Small-alley and St. Michael's-lane. They were the Chicken, next to the alley; the Three Kings; the Plough; and the Bear's Head. King William IV.'s statue marks the site of the last-named, on the northern side of the Chepe. Of the several inns bearing this sign one in Southwark belonged to the Sir John Fastolf of Caistor Castle, in Norfolk, who is said to have given a name to Shakespeare's character; another, owned by Dr. Johnson, adjoined his birthplace, in the market-place at Lichfield.

In the Guildhall collection are two examples, in stone, of the sign of the Three Kings or Magi. These come respectively from Lambeth-hill, Upper Thames-street (this one bearing date 1667), and Bucklersbury. Mercers especially affected the latter locally; and Bagford* connects the sign with their calling. "The mercers," he says, "introduced into England fine linen, three girdles finely worked from Collin. Collin the city which then at that time of day flourished much and afforded rarer commodities and these merchants that usually traded to that city set up their signs over their doors of their houses the Three Kings of Collin, with the arms of that city, which was the Three Crozens of the former kings in memory of them, and by those signs the people knew in what wares they doted in." The story of the Three Kings of Cologne was highly esteemed in the Middle Ages. It was printed by Tresyre, at Paris, in the year 1498, under the title of "La Vie des Troys Roys, Balchazar, Melchior, et Gaspard," and at St. Pierre, in 1516, by Wynkin de Worde. In *Marguerite de Valois's* "Comédie de l'Adoration des Trois Roys" they appear as Sir Isopart of Tars; Sir Melchior, king of Araby; and Sir Balthazar, king of Saba. An Eastern diadem and long hair plainly distinguish each of the latter two on the Lambeth-hill stone; in the Bucklersbury carving Balchazar has strongly-marked Moorish features and Melchior, on his left, a heavy moustache. The cognate sign of the "Three Crowns" is represented by a boldly-cut specimen in the museum, dated 1667, from Lambeth-hill. Near it are an anchor, with initials, B. H. E., bearing date 1669; a large mullated George and Dragon, from George-yard, Snow-hill; and a full-length figure, minus the face, of a gardener holding a spade, rescued from Gardener's-lane, Upper Thames-street, by Broken Wharf, and of date 1670. The large wooden figure, of temp. Charles II., stands for the giant who is said to have once inhabited what subsequently became known as Gisor's, corrupted into Gerrard's, Hall, a popular hostelry in Basing-lane. Of this, the mansion of John Gisor, pepper, and Mayor of London in 1245, the last remnant in the shape of its thirteenth-century crypt was destroyed for the extension of Cannon-street about thirty years since, when some curious old merchants' marks were found. The giant's war-staff Stow regarded rather as a Maypole, his tilting-helmet was long preserved in St. Mildred's Church in the neighbouring Broad-street. The crypt, though generally resembling an ecclesiastical structure, was built solely for the storage of merchandise, and formed a unique example of a wealthy merchant's warehouse at that time.† The civic authorities can advance nothing authentic concerning the finely-shaped lion passant, or the metal plate (1733) which, were it more ancient, would well pass for a Diana in the chase.

Down to a recent period, Newgate-street was

singularly rich in three sculptured groups. Two still remain: the one possibly in situ in Panyer-alley, the other at the north-western corner of Warwick-lane. The latter has-relief is reputed to be Guy, Earl of Warwick. Dressed in a full suit of pot-helmet, chain armour and surcoat, with sword and shield, he stands beneath the date 1668 and between the letters G C and a coat of arms. At his feet is cut, "Restored 1817. J. Deakes, archit." Eldenese-street was renamed after the inn of the Earls of Warwick; here Cecile, Duchess of that title, was living 28th Henry VI. Eight years later Richard Neville, the king-maker, brought hither his six hundred men-at-arms, and kept open house after the sumptuous fashion chronicled by Stow. Guy, Earl of Warwick, his wondrous feats the theme of many a ballad, occurs frequently amongst signs and trade tokens of the seventeenth century. Tradition has it that, returning from the Holy Land in a pilgrim's guise, he found Æthelstan in sore distress for want of a champion to fight with Colebrand, a monstrous Danish giant, who had challenged any Englishman to encounter him in combat single-handed. Unknown by any save the king, Guy met Colebrand and slew him forthwith.* The Dances thereupon yielded the victory; Guy retired privately to a hermit's cell near Warwick, where he closed his days. Our hero is said to have been son to Simon, Baron of Wallingford, who temp. Edward the Elder became Earl of Warwick on marrying Felicia, daughter and heir of Richard, Earl of that county.† His killing the dun cow on Dunsmore-heath is widely commemorated under that sign. A little westwards of the former church of St. Michael le Querne there is fixed in the eastern wall of Panyer-alley, level with the pavement, the curious little figure which long went by the vulgar name of "Pick my Toe." A naked curly-headed boy seated upon a panner squeezes a grape-bunch between his hands and left foot. Below this is an inscription which we have only once seen transcribed correctly:—

"When Ye have sought
The City Road
Yet still this is
The Highest Ground
As yet the 27
1683."

The parish of St. Michael le Querne, or St. Michael ad Bladum, is now united with that of St. Vedast, Foster-lane, where is preserved a copy of R. Tresswell's picture (1585) of St. Michael's, a foundation of Edward III.'s time, as re-built in 1430, with the houses and Cross adjoining. The epithet *le Querne* is derived from the corn-markets at the eastern end of Newgate-street and Paternoster-row. The church which stood by Sir Robert Peck's statue was destroyed in the Fire and not rebuilt. Stow writes that westwards of the church is a passage leading out of Paternoster-row "called (of such a sign) Panyer Alley, which cometh out into the north over against Saint Martin's Lane." The alley probably distinguishes the dwellings of the panyers or basket-makers, who congregated here during the fourteenth century. The stone itself is conjectured to have been substituted for the one mentioned in the conveyance of A.D. 889 of the parcel of land whereon it stood by King Alfred to Werewich, bishop of Worcester, for the purpose of the market there. It has been argued that the words "Hwaet-mundes stane" of the grant signify the stone mundes stane. But in an article in the *Antiquary*, vol. ii., Mr. Kerlake proposes that wheat-mund stone is meant, mankind still denoting a large basket. The stone may thus have formed the original market cross to which wheat or other grain was taken.

Upon the widening, some twenty-five years ago, of Butcher Hall-lane, — formerly Blow-bladder, and now King Edward-street, — Bull Head-court disappeared and with it the carved stone over its entrance from Newgate-street. This bore two figures dressed alike, the one with a long staff in his right hand being twice as tall again as the other. Over the shorter are "and dwarf," above his companion "M.P.A. the King's Dwarf." Walpole says this was the sign of a house called the King's Porter and the Dwarf,

which was burned in the Fire. William Evans, a native of Monmouthshire and porter to the king, is mentioned in Fuller's account of that county; he was 7 ft. 6 in. in height. Jeffrey Hudson, who was but 3 ft. 9 in. high, led a chequered career. Born in 1609 at Oakham, the son of a stalwart father, keeper of the baiting-balls to the Duke of Buckingham, he was when about eight years old and 18 in. in stature retained in the duke's service at Burleigh-on-the-Hill. At the visit of King Charles I. and his Queen the duchess had little Jeffrey served up to table in a cold pie which she presented to the sovereign. The Queen took him as her dwarf in which capacity he afforded much entertainment at court. Returning from France in 1630 with a midwife for the Queen he was taken prisoner by Dunkirk pirates and robbed of many valuable gifts in his charge. On this accident Davenant wrote his mock epic "Jefferides," in which the dwarf is rescued from a turkey-cook by the gentlewoman whom he escorted. At the outbreak of the civil war Hudson received a captain's commission in the royal forces. Accompanying the Queen to France in the year 1644 this fiery little particle there engaged in his duel *à outrance* with Lord Crofts's brother. Having shot his antagonist dead on the spot he was expelled from the presence. Forced to his travels again he was captured by a Turkish rover and sold into Barbary. Redeemed from slavery and returning to England at the Restoration, he was arrested upon suspicion of complicity in Titus Oates's plot. He died in 1682 shortly after his release from the gate-house in Tothill-street, Westminster. That he was sometimes carried about in the giant porter's pocket is not incredible for he remained at 18 in. high until thirty years of age, when he suddenly grew and reached the standard above mentioned. His blue satin waistcoat slashed with pink and white silk, breeches, and stockings in one piece of blue satin, are at the Ashmolean Museum.*

Two of the most celebrated London signs in coaching days were the still-existing "Bull and Mouth," and the "Swan with Two Necks," the Queen's Hotel, St. Martin's-le-Grand, representing the former. Over its main entrance is the figure of a bull above a huge mouth, with a legend beneath testifying to the capacities in more than one sense of Milo the Cretonian. The sign is repeated over the entrance into the modern railway parcels and booking-office in the back premises in Angel-street. The Bull and Mouth was famous in the days of stage coaches and stage wagons, pillions, and pack-horses. It had one of the galleried court-yards, of which no perfect example can now be found in London. Strype refers to it as being "large and well built, and of good resort by those that bring Bone lace [imitation of Italian raised points, chiefly used for ecclesiastical vestments], where the shopkeepers and others came to buy it." Like the old Bull and Gate in Holborn, familiar to readers of "Tom Jones," it commemorates a time when Boulogne was as popular with the English as it is now. The two inns were styled Boulogne Mouth and Boulogne Gate, in compliment to King Henry VIII.'s capture of that town in 1544. The White Hart, the George, and Queen's Head, in Borough High-street; the Bell in Holborn, and the Katharine Wheel in Bishopsgate-street Without, retain some vestiges of the galleries which ran around the yards. The Southwark inns here mentioned, together with the small portion, in a sadly neglected and tottering state, of the King's Head in the same locality, are well worthy of a visit. But it should be borne in mind that these several inns were entirely rebuilt in their ancient fashion, and with their former signs, after the fire which devastated Southwark in 1676. Before the building of a regular play-house in London, about the year 1570, players used to perform in the court-yards of the principal inns. It is singular to notice how in its interior arrangement even the most recent theatre reproduces the leading features of an inn-yard, when adapted for the actors and their audience. A "gallery" yet ranges round the three sides of the house; the boxes answer to what were long termed the "rooms" of the theatre, whilst the pit corresponds with the benches which were ranged on the ground of the inn-yard. The stage, it is true, has changed its place, having originally been erected with its back to the inn gateway where the

* Harl. MSS. 5,910, vol. i., p. 103.

† "One great house of old time, built upon arches, and with arches gates of stone brought from Caen, in Normandy." — *Stow*.

‡ See the illustrations in J. T. Smith's and Wilkinson's works.

* We shall say more of Colebrand *à propos* of the giants in the Guildhall.

† See the Rev. Sam. Pegge's paper in the "Topograph. Brit.," iv.; also Speed "Britannia," 63; Dugdale's "Warwickshire." See, Camden, Edward, &c.

‡ Pennant places the stone over a Bagin-court, since Pincok or Pincost lane and then Bath-street.

Confer also Walpole's "Painters," and Granger, Scott's "Familiar of the Peak," and his portrait by Mytens, in the Communication Gallery, Hampton Court.

entrance-money was taken. Moreover, not only did the construction of an inn-yard of any pretensions lend itself readily to the requirements of an age as yet unskilled in dramatic exhibitions, but the itinerant players were themselves successors of the private companies who used to act in the "inns" or town mansions of their several proprietors.* Tradition runs that James Burbage and his son Richard,—to which latter King James I. gave the patent dated at Westminster, May 19, 1603,—together with Ben Jonson and Shakespeare, frequently took part in theatrical representations at the Bell Savage on Ludgate-hill. The sign of the Swan with Two Necks at Lud-lane, now the western end of Gresham-street, Aldersgate, is of doubtful origin. That it is a corruption of Swan with Two Necks is more plausible than correct. For we must remember the London signs spoke for themselves, having seldom any inscribed title to elucidate or determine their import. For security they were placed too high above the footways to enable the passengers to distinguish minute points in their painting or carving. It is difficult, then, to believe that the particular number of necks on a swan's bill would be relied upon as a means of identification or distinction. More likely the Swan with Two Necks forms a variation of the device of two swans swimming side by side, their number being more easily discernible by their curved necks than by their bodies. The sign in question appears in the keystones of the two arched gateways of the present receiving-house of this style in Gresham-street, and also over the doors of Nos. 74 and 75, Aldermanbury. At No. 70, too, in the latter street, a carved pelican is inserted in the wall.† Two necks in the bill was the particular mark of every swan owned by the Vintners' Company, and forms one of the 219 marks of date 1570, set forth in a roll printed in the *Archæologia* for the year 1812. Machyn in his diary (1556) mentions the self-drowning in Moorfields of a woman who lived next door to the "Swanne with the ij Nokes in Mylke-street end." Facetious commentators would connect a double bill with this once famous carriers' sign. A carved Swan in stone appears in the front wall of the house in Cheapside (north-east corner of Friday-street), which stands on the site of the old Nag's Head Tavern, nearly opposite the Cross. The Nag's Head, scene of the fictitious consecration of the Protestant bishops at Queen Elizabeth's accession, and its sign are conspicuous in the view of the entry of Mario de Medici at her visit to King Charles I. and her daughter Queen Henrietta Maria. In front of No. 67, Knightrider-street (the three first-floor windows carrying the initials and date M. T. A., 1668, in their keystones), is preserved the sign of the Bell, a possible relic of the tavern of that name in Carter-lane whence in 1598 Richard Quiney directs a letter, the only one addressed to the poet known to exist, "To my loving good friend and countryman, Mr. Wm. Shakespeare, deliver these." A boldly-cut Bear and chain, with monogram of M. B., and date 1670, is fixed in the wall of the new premises, No. 6, Cox's and Hammond's quays, Lower Thames-street: a stone which would not seem to be noticed in any work upon London. The device that may be seen here and there of the head and bust of a Virgin with flowing hair and a diadem, or obdional crown, within a nebuly border, is the armorial sign of the Mercers' Company. Reserving for a future occasion our notice of London stone and the two time-honoured effigies in the City Guildhall, we may state that street houses were not distinguished by numerals until the beginning of last century: the first to be numbered being that on the eastern side of Northumberland House, Strand. The multiplicity of signs had then become a serious evil, both by their position on the house-fronts themselves as by their frequent similarity. The advertisements and announcements of the time afford many curious instances of the way in which it was sought to indicate particular premises, not alone by the sign, but by its relative position as being near to or opposite another.

* This interesting question may be followed in greater detail in Malone's "Historical Account of the Stage."

† In their work upon "Signboards," Messrs. Larwood & Hotten aptly observe that the pelican, from being a bird of no enviable repute, had been transformed into a mystic emblem of the Saviour: whom Dante designated as "Nostro Pelicano." The device of the "Pelican in his Piety" (feeding her young with her own blood) is common in heraldry.

‡ As, for instance, in Drury-lane, in Ironmonger-lane, and Nos. 13 and 14, Trinity-square, Tower, by Katharine-court.

GAS ACCOUNTS AND THE PROTECTION OF THE SHAREHOLDER AND OF THE RATEPAYER.

We have received "An Analysis of the Metropolitan and Suburban Gas Companies' Accounts for the year 1882, compiled and arranged by John Field, in continuation of previous years, for the Metropolitan Accounts, from 1869." We know of no work of the kind which can at all compare in excellence with this compact little analysis, with the exception of Mr. Fleming's "Index to our Railway System," of which we have not seen any number later than the fourth. Unobtrusive in size and limited in range as Mr. Field's analysis is, it deserves the best attention, not only of those persons who own gas shares, or who consume gas, but of all those who hold shares in water companies, railway companies, tramway companies, canal companies, or any industrial enterprises carried on by joint-stock capital, as well as of the still larger number of persons who are seriously concerned in the incidence of local rates. The very first condition of real economy is the preparation of accurate accounts. And this involves something far more extensive in its range than that truth of account which is ascertained and verified by audit. Persons are now taught to believe that the audit of accounts by a respectable auditor or auditors is all that is necessary for the protection of shareholders or of other persons interested in the prosperity of the undertaking of which the accounts are so verified. No assumption can be more incorrect. One thing, indeed, is secured by a faithful audit, and that is, that direct robbery on the part of officials is thus prevented. The auditor verifies receipts, expenditure, and balances; and thus renders it impossible for the cash-keeping and cash-spending officers of a company to divert the corporate funds to their own use without detection. But the guarantee afforded by audit stops here. The auditors are not expected to report on the well-advised or ill-advised character of the expenditure. They only verify its amount. Neither have they, as a rule, anything to say as to the form of the accounts; or to the presentation to the public or to the shareholders of every branch or item of account a knowledge of which may be necessary to the true understanding of the undertaking. Nor, in the third place, is it their duty to present such an analysis as may enable persons, even if unversed in figures, to see what their property actually is, and what it is tending to become.

It is this third function of accounts (which is, indeed, the object and outcome of all book-keeping) which is almost universally blinked. And it is this which Mr. Field's analysis faithfully and intelligently renders. Dealing with the totals first he shows (in due detail) the gross capital employed, amounting to 13,393,104*l.* for the four metropolitan gas companies, and to 2,073,251*l.* for the fourteen suburban gas companies. On the whole of this capital (passing now to page 6) a net profit of 10·42 per cent. on the stock and share capital raised for the metropolitan companies, and a net profit of 9·22 per cent. on the stock and share capital raised by the suburban companies, was earned in 1882. This, in brief, is what the shareholders want to know. But they may, and it may be added ought to, wish to know something more. The shareholder in the London Gas Company may with propriety inquire why he only receives 7·84 per cent. on his capital, while the South Metropolitan shareholder receives at the same time 11·68 per cent. on his. Now, without going into a detail that is chiefly interesting for the shareholders to whom we have referred, we may say that it is possible to extract an answer to this question from the full and clear tabulation of Mr. Field. And we hold that fact to be one of great public interest. For not only does it concern the payers of the three millions and a half sterling of annual metropolitan gas rental, and the recipients of the one and a third millions sterling of profit on the same; but it shows the holders of the twelve millions and waterworks property, of the eight millions and a half of tramway property, and of the 750 millions of railway property (to say nothing of the twenty millions of canal property, or of the holders of water stock or gas stock other than that of the metropolis), what sort of accounts they ought to demand as to their own capital and income. With such an analysis of railway accounts in his hand as that furnished by

Mr. Field for the gas companies, the shareholder in the Midland or in the Great Northern Railway would be able to ascertain for himself why his net earnings on capital have fallen from 5·91 per cent. to 4·93 per cent. in ten years, while during the same ten years the net earnings on capital on the London, Brighton, and South Coast Line have risen from 3·39 per cent. to 5·34 per cent. By such accounts the questions now occupying the attention of more than one Parliamentary Committee would be reduced to such simplicity that they would settle themselves. It is only a question of proper accounts that requires solution, in order for the entire subject of inland transport to be reduced to as plain a system as the time-table of a railway.

Again, the ratepayer is in still more need of the protection to be derived from properly-tabulated accounts than even the railway shareholder. Parliament or the Board of Trade may say, that if any person chooses to invest his money in the carrying business, it is his concern, and not that of the Government, how that business is carried on. This, indeed, we are in a position to show, in black and white, is the position taken up by the Board of Trade. We may ask what, if the position be a correct one, is this justification for any interference with the accounts of companies by the Board of Trade at all? But let that pass. Let us leave the railway shareholders to take their chance. What about the ratepayers? What about that enormous and rapidly increasing national expenditure under numerous local authorities which is fast assuming proportions equal to those of the whole imperial taxation that comes under the regulation of Parliament? Gas, water, paving, draining, sewage,—is there a householder who reads these lines who does not feel something of a twinge as we name the items?

Now on this enormous and rapidly-growing expenditure an analysis, something on the lines of that carried out by Mr. Field, would be a check,—and probably both the best and the only available check. We need not go into invidious details. But when the ratepayer in district No. 1 finds that he is paying two or three times as much for a given item of rating as his neighbour in district No. 2, it is pretty sure that he will be disposed to know the reason why. Take an illustration from Mr. Field's analysis. The shareholder in the Richmond Gas Company makes a profit of 10·67*l.* on every 1,000 cubic feet of gas sold. At the same time the shareholder in the Barnet Gas Company makes a profit of 31·11*l.* on every 1,000 cubic feet of gas sold. As we said before, Mr. Field's analysis will admit of a comparison of notes between these two proprietors, which may be to their mutual interest. But what does this one fact suggest as to the possible difference in rating, or in expenditure defrayed out of the rates, by these two, or by any other two, local authorities?

The publication of such analysed accounts as shall tell the public what is being done with its money is thus of the utmost importance. First, it will enable those who will take the trouble to ascertain what they want to know; secondly, it would hold such a rod in *terrorrem* over the expenders of other people's money as to serve as a real and constant check, even if it were not often put into operation in practice.

For this kind of account, something more is needed than Parliament can supply. Individual energy must be applied; and, in order to obtain this, it must be made worth the while of competent men so to occupy their time. It will be a wise economy to pay them liberally. Every pound so laid out would earn 30, or 60, or 100-fold. For without descending to slang, or laying any blame on Parliamentary officials, it can hardly be denied that the chief object of the compiler of most returns ordered by Parliament may be said to be "How not to do it." That is to say, these returns are generally moved for by members who give what seem to them to be the heads of the information they require. It is impossible to make these heads at once simple, definite, and exhaustive, without long practice, great care, and some correction, from time to time. But the officer who has to make the return, naturally, and it may even be said properly, limits himself to the exact words of the order. It may be that there is a palpable error or omission in these words,—it may be that the addition of a word or two more would convert a wholly useless into a highly valuable return. It is not the duty of the functionary to make that little correction. Of course it is

not done. Nor is it his duty to give those totals, averages, or other outcome of the facts collected, which are required in order to give the information available utility. So that is not done. The public are treated to a mass of undigested figures, and the result is often a more complete barking of a subject than if no figures whatever were published.

In this thankless, but most important work of analysis of Parliamentary returns, our readers will bear us witness that we have long laboured. We do not hesitate to say that if, for example, our analysis of the water companies' accounts had been taken into consideration by the framers of more than one Bill for the regulation of the Metropolitan Water Companies, the rate-payers of London would now be paying some 10 per cent. less water-rate than they do. The same consideration applies to the competitive and non-productive traffic on railways. Waste, jobbery, and misuse of means, lurk always in the vague, the shadowy, and the general; and neither the shareholder nor the ratepayer can be secure against either the one or the other, until he sees that the detailed and audited accounts are put into such a form (as in the case of the gas accounts now before us) as admits of immediate comparison,—in fact, of comprehension at a glance. Mr. Field has done good service to the public in showing how thoroughly this can be done.

THE EXHIBITION OF FRENCH PORTRAITS AT THE PARIS ÉCOLE DES BEAUX ARTS.

SOME time since we announced in these columns that the admirable institution,—the Société Philantropique,—which in Paris performs the work for many years so successfully carried out in our metropolitan "night-refuges," was about to form, with a view to raising funds, an exhibition of French portraits. The exhibition has now been opened, and has met with a success which should certainly prompt a similar step being taken in this country by some one, or even several, of our great charities. It is evident that with our neighbours, as with ourselves, a competition in the attractions afforded by picture exhibitions, so far from proving as disastrous as it does in many other directions, only stimulates further interest, and notwith standing that the *Salon*, with its thirty rooms crowded with pictures, is now open, and M. Petit's exhibition of international art, where our country is so ably represented by Mr. Watts and Mr. Colin Hunter,—notwithstanding these and numerous other counter attractions, the portrait exhibition at the École des Beaux Arts is largely attended. Many of our readers will recall the success at the Manchester Exhibition of 1857 of the series of portraits and miniatures gathered together by Mr. Phillips and Mr. Peter Cunningham, as also the series of portrait exhibitions held some years ago in the building which has since those days become the home of the National Portrait Gallery. A genuine interest seems to surround such gatherings, and if the returns of visitors to the institution in Exhibition-road appears to show a less satisfactory total than might be expected, it must be remembered that the attractions in South Kensington in the immediate neighbourhood of the National Portrait Gallery are so numerous that the position is essentially one in which the visitor is embarrassed by the wealth of instruction at his disposal.

The success, however, of the temporary gatherings of historical portraits at South Kensington some years back, and the similar exhibition now open in Paris, point to the existence of no want of interest on the part of the public, and this interest is easily understood. Never was shown a better appreciation of the value of works of art than in that oft-repeated remark of Sir Robert Peel, that there was no truer historical picture than a good portrait, and the collection of portraits now gathered in the pleasant rooms of the École des Beaux Arts singularly shows the truth of Peel's opinion; the series ranges over an important period of French history from the present day back to the last years of that eventful eighteenth century, not to have lived in which, Talleyrand used to say, was not to have known the pleasure of existence. Here we have portraits by Greuze, who though essentially belonging to the last century, did not die, let it be remembered, till 1805; portraits by Madame Vigée-Lebrun, by Vestier, and many another of the

fashionable painters of the days before that deluge which the Pompadour had so correctly predicted, portraits among which naturally find their place the unfortunate Marie Antoinette and Louis XVI. It can be understood what interest is connected with the small portrait of the ill-starred little Dauphin, a work said to be by the son of that typical court-painter, Fragonard, whose portrait, it may be mentioned, hangs not very far off. The Court in the declining days of that *ancien régime*, of which M. Taine and Carlyle have told us so much, is not ill-represented, and a singular contrast the pretty *marquises* and their adorning form, to the sturdy revolutionaries who hang so closely by their side. With the terrible reputation attached to their originals, there is an element of curiosity in this seeing these executioners,—so many of whom were themselves executed,—standing before one, simple mortals. True, there is Mirabeau, the familiar figure painted by David, whose portraits here of this period are of the greatest interest when one remembers how intimately he was acquainted with most of the leaders in the great movement. They are scarcely the portraits of such historically blood-stained characters, these mild faces of Robespierre and St. Just, and the man who, so long the friend of Robespierre, was the first to approve his execution, Bertrand Barère, who but by luck escaped the fate he so richly deserved. It is a singular gallery of portraits, this series by David. How little did the painter of those coldly classical outputs at which he toiled so hard imagine how sincerely he was engaged in the true art of the historical painter in handing down to the future those heads of his contemporaries, to mention more than a few of whom, and the associations they each and all evoke, would carry us far beyond the limits at our disposal.

Fortunately for us again, David's industrious pupils continued the traditions of the master in not neglecting that great branch of the historical painter's art,—portraiture. Gros and Girodet and Gerard are all here, and many are the portraits they show of the conspicuous persons of those stirring days in which the map of Europe was so constantly undergoing radical changes under the influence of the original of the little portrait by Greuze, which, painted as far back as 1789, shows us Napoleon when he was twenty years of age, the friend of Paoli, the Corsican patriot, and carmelite Boswell's favourite. It is a portrait of the utmost interest, this head by the good-hearted, simple-minded author of all that series of domestic subjects which depict so charmingly the pure side of the life of the eighteenth century. It is the first of an interesting series of three portraits, which show us Wellington's old enemy at three very different periods of his eventful life. Here we see him in Greuze's work, when, young as he was, the dreams of his future were already almost entirely formed. David is to show him to us as the classic Napoleon, the ideal head that so resembles the famous bust of the young Augustus. Another step, and we see on Pagnest's canvas Greuze's young lieutenant, the Emperor, in all his imperial finery. The next, by Prud'hon, of poor Josephine, seems only too like a cruel allusion to her own sad life. Sir Thomas Lawrence's sketch of the unfortunate king of Rome, the Duc de Reichstadt,—doubtless produced at the time when Lawrence was in Paris after the peace of 1814,—is another sad reminder of the transitory nature of the Emperor's realisation of his youthful dreams. Lawrence, it may be mentioned, has another very representative portrait, executed at the same time as that of the Duc de Reichstadt, showing us the Duc de Richelieu, the Prime Minister of Louis XVIII. There is a goodly gathering of the imperial court, and readers of *Mme. de Remusat*'s recently published "Mémoires" would not have not a few,—let us hasten to say, rather theatrical representations,—of the characters about whom the worthy lady has told us so much. Napoleon's marshals, of course, stand out conspicuously. Soult, our old enemy in the Peninsula, and who, more than one still living among us can probably remember at the Queen's coronation, arm in arm with his old *quondam* opponent Wellington; Kleber, of Egyptian fame; and Berthier, one of the good old stock who went out with Lafayette to found the great nation which those whom we term "Americans" love and know so well as "the States." Talleyrand, the diplomatic old churchman, naturally could ill afford to be absent from

such an assembly; he who also crossed the Atlantic, and thus saved his knowing old head. Madame Recamier, in Gerard's charming portrait, which represents the bewitching coquette who touched so many hearts, among them that of the Iron Duke himself, is here in all the classic simplicity of the period when the nudity of Greece was almost revived in the clinging draperies which Madame Recamier helped not a little to introduce. Is there not here also Pauline Borghese, the fair model who posed to Canova for the Venus now at the villa Borghese in Rome?—and are there not here, too, among the charming representations mostly by Gerard, of the ladies of a period when *salons* were still in vogue, the pretty heads of Mdlle. George, the fascinating actress of the Français, and her sister artist the great singer Pasta, the original *Norma*? And not so far off, that eminently characteristic figure of the period, Chateaubriand, of whom we have here two portraits,—one by Guérin the ideal, the romantic Chateaubriand, he whose privations over in London, it will ever remain the honour of the Literary Fund Society to have alleviated, as the ambassador of later years used to tell in such touching words; a very different Chateaubriand to that which represents him as a peer in his stately robes.

The admirable chronological arrangement of the collection carries us a further step in the story of France during the earlier portion of this century, and, with the aid of the brushes of Delacroix and Ingres, we have brought before us a goodly show of the men who directed, as best they could, the bark of the state so rudely driven about by the storms of the Revolution. The era of black coats has commenced, as if in consonance with the solemnity of the duties entrusted to such statesmen as Guizot, whose portrait, by Delacroix, hangs at no great distance from his energetic little enemy, Thiers; and there also is Lamartine, whom so many still alive remember well a prominent figure in the London society of a generation or so ago. By his side hang more than one literary brother labourer; such men as Villemain and Lamennais, painted by the friend of Charles Dickens, Ary Scheffer; another figure, familiar even to himself with his mother, as he represents interest. It is Ingres, however, who is the artistic hero of this portion of the Exhibition, and his masterly portrait of the great journalist Bertin,—of whom there is another portrait representing him as a child, from the brush of Greuze,—is one of those pictures which, once seen, can never be forgotten. Even those who only know M. Henricquel's masterly engraving, the squarely set figure, the hands firmly planted on the knees, could never fail to accept Ingres as a great painter, yet, strange to say, we have here many of the worthy old professor's works which are alone worthy of attention on the score that they are portraits of representative men and women of his time, a remark equally applicable to Winterhalter, who is well represented here.

The romantic period figures well, Balzac at work in his famous Dominican's dress, a sketch by Delacroix who has portrayed himself in the inkly cloak of the master of Ravenswood, a characteristic piece of homage to the "Wizard of the North" who influenced so deeply that brilliant period of which there now remains but one figure,—Victor Hugo. Dovereis, in an interesting sketch, shows us the young author of "Hernani" negligently stretched on a couch, doubtless, in the artist's studio. Alfred de Musset we see in a pastel, and George Sand is naturally not far off,—a small sepia wash by Delacroix, the high-priest painter of the romantic epoch, Rachel and Malibran hover near, and many another familiar figure of those exuberant and Bohemian days.

Following the chronological order with the fresh transition we reach the second empire, with Flandrin's sentimental figures: the portrait of the emperor by the painter who decorated so lovingly the old church of St. Germain des Prés, is of high interest. With the more modern portrait-painters we meet with the friends of recent years, Lehmann, and Cabanel in more than one of their graceful, eminently *distingués* portraits; Meissonier as faithful and as broad as the greatest painters of the past, the veteran Parisian-American Healy, Bonnat, Carolus Duran, and Baudry, brilliant representatives of the modern school of French portraiture with which, however, we in England are disposed to have but little sympathy.

THE HOUSE OF THE COMTE DE CHAMBORD AT GORITZ.

RECENT events have attracted no small share of attention to the house of the Comte de Chambord at Frohsdorf. Between this retreat and his country residence at Goritz, the Count has, now for many years passed his exile. Frohsdorf, which lies at about an hour by rail from Vienna, has more than once been described, its square, and, if anything, decidedly uninteresting exterior, and its characteristic contents. The Count's pleasant home in the mountains is, however, not so often visited. A special interest connects Goritz with the fortunes, rather should we say the misfortunes, of the Bourbons, as in the humble monastery of Castagnovizza lie buried not alone Charles X., of France, the grandfather, it will be remembered, of the Comte de Chambord,—but also the Duchesse de Parme, and the interesting Marie Thérèse de France,—the daughter of Louis XVI.,—who shared so long in the Temple the captivity of her unfortunate father and mother, and the little dauphin, her brother. With her lies buried her husband, Louis Duc d'Angoulême, Charles X.'s eldest son.

Goritz, or Görz, "the Austrian Nice," is now, from its sheltered position and mild winter climate, a favourite health-resort for the Viennese, but when it was determined on as the residence of the exiled Charles X. it was a wretched hamlet buried in the mountains, far away from civilisation. Well can one understand the dethroned king wondering who could have thought of relegating him to such a spot. There is a touching story told of the first appearance of Charles at the little church of Goritz. On coming away he found the inhabitants in their gala finery awaiting him at the door, all uncovering and bowing low as he passed by.

The castle occupied by the Comte de Chambord in the environs of Goritz is no stately or imposing pile. The house is old and massive, and, but for any architectural pretensions it possesses, not much unlike a barrack. There is no deer-park as at Frohsdorf, and none of the ceremony there observed, and admission is not difficult to obtain. The life, in fact, is much like the place, patriarchal in its simplicity. The furniture possesses little of that regal splendour generally associated with royalty. Of show here is little or none,—a few pictures and trophies of arms, guns, and hunting-horns, for the Comte de Chambord is a great huntsman. Near his home at Frohsdorf the Comte possesses a charming "box," the rooms of which are entirely decorated with stag's heads and antlers and stuffed birds, trophies of his skill in his neighbouring forests.

That amusing traveller, M. Tissot, whose works on Germany, Hungary, and Russia are almost as familiar in our country as they are on the Continent, visited Goritz not very long since, and in a chapter of his "Vienne et la Vie Viennoise" has related an informal interview he had with the Comte de Chambord; as perhaps interesting at the present moment, we venture to reproduce some portions of M. Tissot's narrative. With a foreigner a visit to any "personage" becomes a matter of ceremony, but to the English reader there is something most amusing in the comic seriousness with which the author describes how, having obtained the promise of an audience of Monseigneur for two o'clock, he fully fitted himself out in what we understand as evening dress, and, having obtained after certain difficulties the obligatory pair of "*gants rovenables*," he presented himself at the château, and was shown into the presence of the Comte. M. Tissot, it must be remembered, is not a Frenchman; he is a native of the Swiss Republic, and can, therefore, scarcely be accused of partiality. His description of the personal appearance of the Comte is most prepossessing; but over this we must hasten.

"We chatted together for nearly twenty minutes," writes M. Tissot. "A stranger to the party struggles which so sadly divide France, and citizen of a neutral country, I considered it my duty to avoid any reference to politics. We spoke of literature, of the fine arts, and a little of Germany,—that gory spectre which rises everywhere before one. The Count is well posted up on most matters; he knows the last book which has appeared, or which is shortly to be published; he is acquainted with the successes of the *Salon* which has just opened, or the pieces applauded the week before at Paris. The old authors of his preference are Montaigne, Molière,

and M^{me}. de Sevigné, who seems to have bequeathed to him the secret of her inimitable style; for this son of a king is a writer in all the sense of the word, and a writer of the *grand siècle*. His letters will live as models of form and well-thought-out expression. The social question for twenty years and more has been the constant object of his meditations and study; he believes that this grave question is the enormous problem which will have to be resolved in a not remote future, and that the crisis will be a terrible one in Germany, where socialistic ideas are so rampant. The Comte de Chambord is a partisan of all species of associations or unions formed by the working man; he is a warm defender of their common interests, and an advocate for the establishment of trade-committees entrusted with the friendly arrangement of all difficulties that may come up relative to the conditions of labour, capital, and wages. Military questions interest him, and he has a chivalric admiration for the soldier; he speaks of the German army with the experience of an old Prussian general."

Exile is a rude school; courtiers never cross its threshold. "The years of exile," once said the Comte to one of his followers, "are like those passed in a campaign, they count double. Exile has been a blessing to me; in France I should never have known, except at a distance, the misery and sufferings of the people; and perspective sadly reduces defects. Thanks to my exile, I have seen with my own eyes, I have myself suffered from misfortune, injustice, and the abuse of force, all which are necessary to know profoundly to be able not only to remedy but to sympathise with."

An indefatigable worker, he rises with the sun. His work-room serves the double use of studio and library, for the writer is an artist of no small talent. Seated at a large mahogany table, littered with books and papers, he writes industriously till breakfast. After this meal, which, in accordance with French custom, is at midday, he usually drives out. Dinner is at six, and at a quarter to seven host and guests rise and pass into the drawing-room, where conversation and music occupy the rest of the evening.

SOME SANITARY ARRANGEMENTS OF ANCIENT DWELLINGS.

At periods which come so regularly as to be called stated periods, we are reminded by the outbreak of an epidemic, or the visitation of a wide-spreading, dire disease like cholera, that we have not attained perfection in sanitary science, notwithstanding our self-sufficiency, and that there are diseases which come like scourges on the land, which are not occasioned by foul drains, or the imperfect dwellings of modern builders. The advance we have made in our study of zymotic disease has not prevented a thrill of alarm occasioned by the outbreak of cholera at Danietta; and it does seem strange that, notwithstanding our experience of cholera in India, we can find no other means of coping with the disease than drawing a cordon round the infected spot, and shooting those who refuse to meet death in one of its most painful and repulsive forms. The ball of perfume which our sovereigns carried to sniff when they suspected unwholesome odours is quailed by the bright idea of inclosing our Indian letters in well-tarred bags to prevent the taint of cholera being brought to our shores. Continental nations have adopted a strict quarantine in all their ports, and in this they are no wiser than the poor townsmen of Atherstone who refused to permit the victorious soldiers from Bosworth's fatal field to enter their town because they were fever-stricken; for Henry of Richmond's necessities had caused him to empty the foreign goals to find recruits for his mercenary army, and thus brought the sweating sickness into the land, which, in the opinion of many, more than balanced the blessings of the greedy rule of the Tudors. We are so apt to sneer at those who were the "fathers of the land," for their ignorance of sanitary laws, that we forget that with all our science and advancement we are far from perfect, even in our idea of a City of Hygiea. We can go into raptures over the sanitary engineering of ancient Greece and Rome, whilst we overlook the examples afforded us of forethought and skill of those architects who built our religious houses, fortified the great castles, and erected the mansions

of which we are so proud. Yet many of them would teach a lesson to those wise in all the learning of the schools. We are too apt, when speaking of the "middle ages," to condemn without reservation the dirt, the filth, and the gluttony which characterised the "sturdy fighting Briton" in the days of the Plantagenets, and the clergy who were supposed to look after his spiritual welfare. The "odour of sanctity" was a reality more to be avoided than sought, we are told, and the dwellings of the people were little better than hovels, devoid of everything we call comfort and the conveniences of life. This charge may be true generally, but could only be true of the clergy in remote places, or living as a recluse in the *domus inclusæ*, of which we have so many examples. We know full well the inner life of a monastery. The lavatories yet exist in many of the cloisters of our cathedrals for the washing of the hands and faces of the monks, and there are examples for washing the feet also. Water was laid on from the best sources of supply, and at Worcester could be replaced at a comparatively small outlay, for the reservoir which supplied the monastery yet exists, and the leaden pipes which passed over the ancient bridge across the Severn were only removed during the Civil Wars to provide material for bullets. The arrangements of the Cistercians for the health of the inmates and the prevention of foul gases were as admirably adapted for their purpose as any of our modern hygienic contrivances. The neighbouring stream was diverted to pass under the kitchen, and open grids of stone were placed, through which all refuse could be swept into the fast-flowing stream below. The hospital was isolated from the main body of the monastic buildings in the same manner as the guesten chambers in which strangers were received, and we have no good reason to believe that the bathing of the body was so systematically neglected as we have been led to suppose. At Worcester, for example, there was a water-gate which opened on to the Severn, and through which boats could enter into the undercroft of the hospital and adjacent buildings. The hospital was placed east and west, and was lighted and ventilated by small loops or slits, which still remain, for the hospital of the monks was preserved as the hospital of the citizens until little more than a century ago. In addition to this negative evidence we have the existing bath constructed by Edward I. at Leeds Castle, near Maidstone, and we have steps leading to the ancient lake at Kenilworth from the apartments which were constructed on the western side of Lancaster-buildings, connected with the curtain wall, and supposed, on good grounds, to be King's Chamber, mentioned in the Pipe Rolls. The absence of middensteads about our old monasteries points to the fact that all the refuse was systematically removed and used for manure; whilst in the Norman keeps we find one tower,—at Kenilworth and Devizes it was the north-west tower,—left open at the top to receive the contents of the garderobes of the garrison. This was a survival of the old midden-well which we meet with near many Roman settlements, and was soon exchanged for the open shoots on the walls and in the interior for contrivances not dissimilar to the earth closets of to-day, with removable boxes. Kenilworth supplies instances of all these arrangements,—the only fault of which was the fouling of the water in the moat. This could not apply to Ludlow or Carlisle, and at Raglan special means were taken to prevent the fouling of the inner moat. This is especially evident in the moated houses built in the time of the War of the Roses. In the centre, as it were, of the forest of Arden, where Shakespeare laid the scene of the Duke's retirement in "As You Like It," there is a moated fortified mansion of fifteenth-century date. It has a passage round the quadrangle, the roof of which only rises about 2 ft. above the level of the moat, yet there is not the smallest sign of damp penetrating the walls; and beneath the level of this covered way a well-built drain crosses the bed of the moat and conveys all the sewage and refuse of the inhabitants into the fields beyond. Special measures were taken to prevent this *cloaca* from being utilised by a freebooter as a secret passage to the interior when the draw-bridge was raised. In this, and in numerous other instances, care was taken to keep a good supply of drinking-water, and the moat pure enough to serve as a fish-pond. Such care was taken to keep the enclosure healthy that

all the cattle were housed and stabled outside the moat at the *de pont*, so that the building could be utilised as a baracca as well as a sanatorium. At Denbigh, where it was found impossible to dig a well within the precincts of the castle proper, a tower was built over the well and the water supplied by a species of conduit. A similar arrangement existed at Derizes. So early was the nuisance of a smoky chimney discovered and the remedy applied that the earliest mediæval chimneys had a flag inserted half-way up the flue to divide the draught, so that the cold air might descend without bringing the smoke with it. In the great halls, as at Penshurst, where the fire was lighted in a brazier or cresset in the centre of the hall, and the smoke passed out of the louvres in the roof, the lower casements of the windows were fitted with shutters to admit fresh air, and otherwise sweeten the room. To aid in this the use of strewing the room with sweet flags was practised, for when cleared away the refuse of the garrison and household-dinner was removed likewise. This removal of refuse went on regularly, and like the old sanitary arrangements of the old town of Edinburgh, and which still prevail in some of the little towns in the west and south of Ireland, if unsavoury to the nostrils, prevented that accumulation of festering rubbish so deleterious to health and so productive of fever. The same care to keep the house clear of all that would be injurious to health is seen in those quadrangular dwelling-places of the city merchants and ancient guilds which remain in so many of our old towns and boroughs. Though some of the sleeping places might be destitute of air, there were means provided for a current of fresh air beneath the roof round the quadrangle which gave the vitiated atmosphere a chance of escape. The story of these quasi-warehouses and mansions combined, with all their completeness and manifold contrivances, is yet to be written. The materials exist in the voluminous books and records yet preserved in municipal archives, and in descriptions of them by those who saw them before they were converted into tenements for artisans and labourers. The sanitary arrangements consisted in the removal of all the rubbish day by day to the outside, and the fact of the proceedings against Shalloppe's father in the little town of Stratford-on-Avon show that the authorities were not unmindful of the further removal of the refuse, if they did not remove it themselves. A more careful study of the plans of these old buildings would perhaps result in a hint or two which might be turned to profitable account in these days of hygienic science and æsthetic proprieties. At all events, it would show that our forefathers were not so unmindful of the principles of sanitation as some of our scientists would make out. We hear of pestilences, plagues, and famine, yet but little of the means taken to prevent them, and it argues but little for the advance of scientific knowledge when our faith is so easily scared by the prospect of a visitation of Cholera.

CONTRACTORS' PLANT.

MR. JUSTICE PEARSON has recently given judgment upon a point of considerable interest and importance to all parties who are engaged in large contracts, whether they be employers or employed. The question was a simple one, and may be dealt with in a small compass. The contract was one between the Helston Railway Company and a contractor named Maddison, and it contained the usual clause that all materials, &c., left by or by order of the contractor on the works should be the property of the company, for the use of the company, and not removable without the consent of the company's engineer. There was also a stipulation that the contractor should not assign any part of the contract, but that he might sublet any portion of the work. As a matter of fact Maddison sublet some parts to another contractor named Relf. Difficulties arose between these contractors, the works were suspended, and a compromise at last having been effected, the only matter in dispute which was left open was connected with Relf's plant. This, it was contended by the Company, belonged to them; while, on the other hand, Relf asserted he had the right to remove it. It is unnecessary to point out how important a point this was, because it brought into conflict the respective rights of employers and of sub-contractors in cases where

the employers stipulated to the effect already stated above. Mr. Justice Pearson, after considerable argument, decided the case in favour of the sub-contractor, on the ground that the only person to whom the clause would apply was the actual contractor with whom the company had made the agreement. He seems further to have been of opinion that the employers' claim was manifestly inequitable. The result is that employers in similar circumstances have no right over the plant of sub-contractors. We are by no means, however, so sure as Mr. Justice Pearson seems to have been that all the equity was on the side of the sub-contractor; for under this decision the first contractor has only to sublet the various portions of the work to nullify wholly a stipulation which is put in for the benefit of the employers, and is intended to be acted on.

Further, it has to be remembered that presumably the sub-contractor took his portion of the work with full knowledge of the terms of the agreement made between the employers and the principal contractor, and was prepared to stand in exactly the same position as the man for whom he undertook to do a portion of the work. We are not now arguing that the judge gave a wrong interpretation to this particular contract when he held that it did not include a sub-contract in this particular clause. But we desire to point out that justice rather leans to not depriving the employer of his remedy in case of a stoppage of the works, even though those works are being executed by a sub-contractor. The practical result of this decision seems, then, to be that in future employers must have what we may call the plant clause so drafted that it shall apply not only to the principal contractor, but also to sub-contractors. If it is just that there should be such a clause at all, it seems equally right that it should not alone apply to a person who may do but a part of the work himself, or may possibly even sublet the whole.

THE ART MANUFACTURES OF JAPAN.

IN the book of Dr. Dresser's on the architecture, art, and art manufactures of Japan, to which we recently referred,* no mention is made of the rise, progress, and fall,—if those terms may be considered admissible,—of her art manufactures in the markets of the West. In fact, nothing is said of the way in which those products became first known and were eagerly sought after, how the demand for them here and on the Continent brought with it abuse and decadence through a policy of wholesale manufacture pursued in Japan, which ended in glutting the European market with Brummagem Japanese goods. Little attention has hitherto been paid to this question, and for this reason a paper on the subject, by Herr Th. von Huber Liebenan, of München, which appears in a recent number of *Wick's Gewerbezeitung*, deserves to be more widely known. The author points out how with the first international exhibition ever held, that of London in 1851, a new era commenced in that branch of industry known as art manufacture. The latter, which had its origin in the Middle Ages, and reached its most flourishing period during the times of the Renaissance, when Teutonic art feeling was blended with the classic, was almost annihilated by the Thirty Years' War. Though the traditions of art survived that ordeal, art and manufacture were thenceforth entirely distinct. The introduction of steam-power helped to widen the existing breach. It was only with the advent of international exhibitions that art manufacture once more raised its head, those exhibitions serving to encourage and foster its development. But the exhibitions also introduced to us the art products of foreign nations, especially those of the far East, until then comparatively little known.

Japan occupied a foremost place, and its art manufactures soon began to rival those of the West. For centuries painting and sculpture had exerted a very great influence upon the various products of her art manufactures. While in the first half of the present century, in our part of the globe, little was done in this department, the Japanese art of decoration was flourishing; and the appearance of Japanese art products, therefore, simply astonished us. Charming sketches of insect and plant life, curious chimeras, dragons, and serpents executed in chased work,

arabesques in many-hued colours, enchanted the beholder of those porcelain vases and services, those bronze charcoal-pans and censers, those plates and boxes of wood with their beautiful colouring, their *ensemble*, and their imperishable lacquer covering, and those thousand and one nicknacks which before that time had been but seldom seen in Europe. They pushed the products of China with their baroque forms and colours entirely out of the market. Japanese art manufactures were best represented at the last International Exhibition held at Paris, the section being one of the most attractive of the whole exhibition. Unfortunately, the author says, the Japanese,—whom he calls the "English of the East,"—careless for furnishing a comprehensive picture of their industrial position and civilisation; their principal object was to do business. And a very good business they did at first, for, notwithstanding the high prices charged, nearly the whole of the exhibits from Japan were sold. But this temporary mercantile success has its shady side. It will ultimately, the author thinks, injure Japanese art industry, and in the same measure as it has raised the exports of Japan since the time when her ports were thrown open to European commerce, so will they steadily decline.

Formerly the products of the country in bronze, lacquer, and pottery, almost exclusively intended for the rich, proceeded from the hands of artists expert in their several branches, who had been in the habit of working with all the customary tradition and deliberation. The great demand for their handiwork which had suddenly sprung up, for Japanese art products had become the fashion in Europe, especially in England and France, soon exceeded production. Yet the dealers of Paris and London continued to send their agents to Yokohama, Hiogo, and Tokio, who soon bought up the whole market, and at last offered prices which caused the Japanese to begin the wholesale manufacture of such articles. This temporary prosperity unfortunately led to the deterioration in quality of the art-products of Japan. What formerly the individual artist invented and completed with great expenditure of time and patience, making it not so much a labour of gain as of love, his productions forming real works of art, and for genuine examples of which the connoisseur now pays almost with their weight in gold, began to be made in thousandfold repetitions. But as the latter were more superficial manufactures,—works of art they no longer could be called,—and their real artistic value was soon recognised in Europe, and paid for accordingly, the cunning Japanese readily devoted their energies to the production of imitations of really classic work. New products were cleverly converted into old ones; some well-known types which had acquired a name were manufactured in masses, and the business in those counterfeitings soon assumed large proportions. This branch of manufacture was for the time a large source of revenue to Japan. On the other hand, the peculiar forms and the tasteful decoration of colouring of Japanese nicknacks ensured them a wide distribution, and at the same time suggested new departures for the art-workmen of the West, and thus did some good.

The success of Japanese speculation, however, threatens to be but short-lived, if it does not ultimately lead to the total ruin of this branch of their industry. The Japanese have begun recently to adopt this method of manufacture to European requirements. They now make not merely Japanese vessels, vases, cups, censers, and other objects which serve no useful purpose, and are only used in decorating rooms, but they also manufacture porcelain lamps, match-boxes, letter-weights, candlesticks of bronze, and even articles of *cuirre poli*. In this branch of industry, however, Western art-workmanship need not fear Japanese competition. The last international exhibition at Paris gave signs of the decadence of the art industry of Japan, although at that time it still presented such an imposing appearance as to cause the envy of many a civilised country of the West. Japanese works of art in bronze especially attracted general attention in a degree commensurate with their importance. It was stated at the time that the bronze industry of Japan occupied the first rank, exceeding even that of France. This is saying much; for France employs in that industry about 7,500 workmen, who manufacture annually articles of the total value of 80,000,000 francs, of which 12,000,000 francs worth are exported. Quite recently the author saw beautiful bronze art objects from Japan, which

* See *Builder*, vol. XLIII., p. 673.

consist of an alloy of bronze and gold, covered with a hue of steel blue patina, charmingly oxidised. Another method employed by the Japanese is to hammer gold or silver wire into bronze, which is said to be more in keeping with European taste, but which, while increasing the cost, scarcely improves the appearance of the work. In ceramic products, the porcelains of Kanga preserve their former reputation. They are mostly ornamented and coloured in black, red, and gold, upon a pure white ground. The faïences of Rioto with dull yellow colouring and naturally coloured flowers and insects, the greyish white-coloured faïences of Satsouma with fantastic mythological figures, richly gilt, and the charming porcelains of Imati, which show blue flowers upon a pure white ground, are to this day much prized. But the real value of all these objects is being gradually depreciated by an increasing wholesale manufacture, and the fraudulent practices intended to give them the look of classic work. Thus a so-called "craquelure" is imparted, which consists of "craquelures" or cracks, covering the glaze of the outer surface like a cobweb; and this peculiarity is now sought to be produced by the counterfeiters, by passing in all directions over the glaze, at a certain degree of temperature obtained during burning, an iron instrument still more highly heated. Great caution should, therefore, be exercised in the purchase of Japanese art objects.

The art industry of Japan is already beginning to feel the effects of a nefarious trade. Its products are now no longer sought in the European market with the same avidity with which they at their first introduction were sought up. The manufactures of China are beginning to come to the front again, and their permanent exclusion appears to be averted. The porcelains of China, as well as Chinese namels, were always much sought after, and found ready buyers. In recent years the old red-coloured porcelain of the country and a special kind, the "famed" porcelain of China, which was produced in the greatest perfection from the thirteenth to the eighteenth centuries, have entered the markets of the West. In this porcelain, all shades of colour, from pure white to the deepest black, are represented, the red lines, so-called *rouge sang de bœuf*,—in the manufacture of which copper probably was employed, being in special request. Since the introduction of the great international exhibitions, a large export of old Chinese works of art to the countries of the West has set in. As China has not yet been so completely emptied of her art-treasures as Japan, and as here fraudulent imitation and the wholesale manufacture of inferior articles have not yet come the fashion to the same degree as in the latter country, it appears probable that Chinese art industry in the branches referred to may gain out-distance that of Japan in the European market. But it remains an open question whether the greed of the people of the Flowery Empire, said to be quite as pronounced as the voraciousness of the "Frenchmen of the East," is another author calls them, may not also lead her former at no distant date into the same path as that pursued by the Japanese, to their own ultimate loss, certainly.

THE REMOVAL OF SION COLLEGE.

"Books are the legacies that a great genius leaves to mankind, which are delivered down from generation to generation, as presents to the posterity of those who are not unborn." ARISTOTEL.

JOHN JAMES's fine church at Greenwich stands over the spot where, in the year 1012, Alphege, Archbishop of Canterbury, was murdered by the Danes. The saint and martyr gave his name to a parish in Cripplegate ward, London. The now parish church of St. Alphege, London Wall, was built in 1777 from the designs, it is said, of George Dance, the younger*; but not as is commonly supposed, on the site of its predecessor. The earlier church abutted on the City Wall, westwards of the churchyard, whereof part with the Wall adjacent yet remains, and near to the ancient St. James's hermitage. The church on the Wall having been suffered to fall into ruin, the parishioners in 1546 paid 04*l.* for the remains of a priory church at the north-western corner of Aldermanbury, over which priory church the present St. Alphege's church was afterwards erected. Dedicated to St. Mary the Virgin, that priory was a con-

version of an earlier foundation, known as Elysng's Spital, that had itself supplanted a nunnery there. William Elysng, citizen and mercer, established his hospital (1329) for 100 sick poor, more especially the paralysed and blind, under care of a warden and four secular priests. Within a few years Elysng re-modelled his endowment into a priory, with a staff of five Augustinian canons regular and a prior,—himself the first. A fire destroyed the priory and part of the priory church in 1541. Valued at 193*l.* 16*s.* 5*d.* at the Dissolution, St. Mary's Priory was bought from the king* by Sir John Williams, first Lord Thame, keeper of the king's jewels, who was living here when that fire totally consumed the Spital, its almshouses, and cloister gallery. The priory church,—escaping not only this, but the later disaster of 1666,—had meanwhile been adapted as the parish church of St. Alphege. Though much decayed, it was not finally demolished until 1724. The lower portion of the existing tower some believe to be the cross of the earlier fabric, a supposition which is favoured by its plan and massive proportions; others, that it is the old entrance-porch. Owned by various tenants in succession, Elysng's Spital was bought for 2,450*l.*, for the purposes of Sion College, which the Fellows have just definitely resolved to remove to Victoria Embankment.†

In his Journey through England, Defoe writes:—"This college and library is designed for the use of the clergy, in and about London, where expectants may lodge till they are provided with houses in the several parishes in which they serve cure. It is also an hospital for ten poor men, and ten poor women; and the whole is governed by a president, two deans, and four assistants, who have their apartments in the college." Thomas White, D.D., vicar of St. Dunstan's, Fleet-street, and holder of other valuable preferments, dying in 1624, bequeathed a capital sum of 3,000*l.* to provide a college for the London beneficed clergy, together with an almshouse for twenty indigent folk. He further gave yearly sums of 120*l.* to the pensioners, and 40*l.* to the College fund.‡ According to an inscription on the Philip-lane front, the foundation dates from 1631, the royal charter bearing date 6th July. John Simpson, rector of St. Olave, Hart-street, executor to White's will, built at his own expense over the original almshouses, the library, whose contents have since constituted the chiefest attraction of the college, together with some students' chambers in the southern side of the precincts. Adverting to the joint-founders, Dr. Arris, M.P. for St. Alban's, 1661, composed, teste Pennant, the following rather involved elegiacs:—

"Ille Dator rerum tibi res indulsit opimas,
Atque animam indulsit qui bene donet opes;
Alter erit quisquis magna hec exempla sequetur,
Alterutri vestrum nemo secundus erit."

The buildings thus lay between Carriers' Hall and Aldermanbury, having London Wall to the north, the garden and St. Alphege's Church to the east. The Philip-lane tablet records how greatly the college buildings suffered from the fire. There were destroyed one-third of the books, which included the St. Paul's Library carried thither twenty years previously, the hall, library, almshouses, and chambers, with the librarian's and clerk's residences. To reconstruct these premises proved a heavy drain upon the narrow resources of the trust fund, and for the sake of immediate gain leases were granted on terms far from profitable in the end. Later demolitions leave only the hall, gate-house, and the western block containing the library, 121 ft. by 25 ft., on the upper floor. The once twenty rooms beneath proved unsuitable, in that ten of them opened immediately upon Philip-lane, and that the street had risen to nearly 3 ft. above the ground level. A fresh set was accordingly erected by Hardwick in 1847. But the hospital trust allowing of twice the number of pensioners, with an increase in their annuities from 3*l.* or 4*l.*, to 35*l.* each, the authorities ultimately decided to close the almshouses and send the recipients to live outside where they would.§ The Fellows have a

* For this, and some lands of Nutley Abbey, co. Buckingham, was paid 26*l.* 18*s.* 2*d.*

† Mr. Arthur W. Blomfield's projected design for the new structure, exhibited at the Royal Academy, 1880 (No. 1162), was reproduced in the *Builder*, vol. xxviii., p. 542.

‡ Dr. White also founded a lectureship at St. Paul's, a chair of Moral Philosophy at Oxford, and Temple Hospital at Bristol, his native city.

§ The Merchant Taylors', the parishes of St. Dunstan's and St. Faith's, and the Bristol Freeman jointly appoint the almsholk.

water-colour drawing, painted in 1806, showing the college from the north-west, as it appeared before the extensive repairs of some seventy years since. In the Soane and British Museums may be found other views made, before and after that period, by Whichelo, the two Shepherds, Munson and Wise.

Discontinued are the Latin sermons, followed by suppers, of which the first was preached in 1633, by Dr. Westfield, who took for text the eighteenth verse of the fifty-first Psalm:—"Benigne fac Domine in bonâ voluntate tuâ Sion." The chambers have long since disappeared in which Fuller lodged (being then lecturer at the Savoy), whilst engaged upon his Church History, and Torperley, a once famous mathematician. But the old-world shelves and bookcases survive, amongst which Psalmazar, to whose acquisitions and erudition Dr. Johnson pays so high a tribute, compiled his share of the Universal History. The collection, numbering upwards of 58,000 volumes, has been enriched with the gift from George, fourteenth Baron Berkeley (created Earl of Berkeley, 1679), of half the library of his uncle, Sir Robert Cooke, and that from King Charles II., of the contents of a Jesuit study, seized at Holbeck in 1679; with bequests by the widow of Thomas James, printer, by John Lawson, Archdeacon Waple, and sundry donors besides. Moreover, agreeably with the Copyright Act, 8th Anne, c. 19, the Fellows were entitled to a gratuitous copy of every work entered at Stationers' Hall. This privilege, however, would not seem to have been fully exercised, as it was commuted at the close of King William IV.'s reign for a yearly allowance which the Treasury assessed upon an average value of the books received for the seven preceding years at 363*l.* 15*s.* 2*d.* This sum henceforward affords the principal source for supplying additional works. The books are mainly theological; the MSS. neither numerous nor of exceptional value. But to the antiquarian and bibliographer the Gibson and Russell tracts, the "Psalterium pulcherrimum" of Simon de Meopham, Archbishop of Canterbury (1327), some Caxtons, the rare York Breviary, and a few late Greek Evangelistaria,—one written in golden letters,—possess the greatest interest.*

The two windows in the hall are decorated with the corporate device of the Good Samaritan, and coats of arms, in stained glass, of some presidents and bishops of the diocese (visitors of the college) since its foundation. In the hall hang portraits of King Charles I. (a fine painting), King Charles II., and James II.; of Edward, Lord Cherbury; Dr. Thomas James, first librarian of the Bodleian; his grandson, the printer, and Eleanor James, the latter's wife, in which the curious may study, though not without some difficulty, the costume of a well-to-do citizen's wife temp. William and Mary; and, over the fireplace, Dr. White. The series of church dignitaries comprises likenesses of Tenison, Secker, Compton, Sherlock, Gibson, Howley, Blomfield, and the late Archbishop of Canterbury. The singular painting deposited in the Library, bearing the face of the Almighty on its front, and on its back the beheading of St. John the Baptist, is a supposed relic from the Spital. Our readers will be reminded of that other Library in the neighbouring Red Cross-street, founded by Dr. Daniel Williams for Nonconformists, and which has since been transferred to University-street, Tottenham Court-road.

THE POSITION OF ARCHITECTS IN SOUTH AMERICA.

A CORRESPONDENT of the *Wochenblatt für Architekten und Ingenieure* writes from Buenos Ayres that the professional emoluments of architects are by no means large in that part of the world, while their social position is not the same as in Europe. There is no restriction as to any one who has a mind to do so calling himself an architect, and persons intending to build, after getting the skilled opinion, and even the designs of an architect, sometimes dispense with his services when they have secured his ideas, leaving him without remuneration. The Italian working masons are skilful in copying whatever is placed before them, and this fact is referred to as exercising an injurious effect upon the prospects of architects in South America.

* Our acknowledgments are here due to the present librarian, the Rev. W. H. Milman, M.A.

* Others say of Mr., afterwards Sir, William Stailes.

BRISTOL AND CLIFTON JUNIOR
ARCHITECTS' SOCIETY.

THE BUILDINGS OF THE PRESENT DAY.

THE Council and members of the above Society met at the Fine Arts Academy, Queen's-road, Clifton, on Friday, the principal object being the distribution of prizes to the successful competitors. Mr. J. C. Moncrieff presided, in the absence of the Mayor of Bristol.

The chairman, in presenting the prizes, said that it was customary to make a review of their position, the work done, the losses the Society had sustained, and the advancement of architecture. The object of the association was that its members might work in harmony with the interests of the world, and that art might be more widely practised, better understood, and more admired. There had been of late years a tendency to devote more time to science than to art, and all must be fully aware that the art of building, did not admit of perpetual discussion. The country-house built in the last century was not to be compared with the houses built nowadays. The builder of the present day sacrificed his money to place "glimcrack" ornaments in front of the building, and these were costly to keep in repair; the floors of the houses were so thin that sounds could be heard from one floor to another, and the stormy breezes found their way through the small crevices. In former days they found mansions built with simple good taste and solidity, and yet they, as a Society, were indirectly responsible. How many of them were brought up to the idea that all buildings ought to have a good front? It was time that this question should receive more discussion and action. One of the fundamental principles of architecture was that it should be solid before ornamental, for ornament could not be applied to a building like the loose-fitting garments of the present day, to cover defects that were not supposed to be seen. How many inventors claimed that their inventions were cheap, and occasionally convinced them they were lasting! Let them look at the architectural buildings in the ancient city of Bristol, and compare them with the buildings now being erected, with lumps of terra cotta highly-suggestive of chimney-pots. Were they what builders of the last century would erect? No doubt a constant and vigilant influence, checking with authority all that was bad in art, and fostering in favour all that was good, would have a beneficial effect; and examples of solid, tasteful, and simple works might exercise an influence indirectly towards the chastening of taste. He might mention that that was the first year for obligatory Examinations for admittance to membership of the Royal Institute of British Architects. The Examinations had been made to raise the standard of education and so keep out those who were wholly incompetent. They were inducements only to those hard-working and industrious students in the shape of prizes, and could only be gained by those who had achieved artistic excellence. He was pleased to inform them that the University had undertaken to deliver a course of lectures on the history of architecture, and they had appointed Mr. W. E. Jones, of Bristol, as lecturer, who, as they were aware, was well versed in the higher branches of the profession, and he sincerely trusted the students and members of the society would avail themselves of the opportunity of obtaining a thorough grounding in the science and art of building, which was the only means of making them proficient in their profession. There was, however, one controlling influence which all of them ought to make it their best endeavour to educate, according to their strength and means, namely, public taste. There were two classes in that Society, the old and the young, and of the former he regretted to see so many absent. The younger members were trying to work in a groove which ran parallel to their own, and he could not see why some means might not be devised for enabling it to join theirs. He felt that in the energy with which they pursued their work, and the high excellence of much of it, surely some plan could be devised amongst them without forming two societies. In doing so he hoped that they might not only be able to work together, but also to be represented at the Council of the Bristol Academy of Arts, as suggested by the late president of that institution.

Several new members having been elected, the Chairman distributed the prizes in accordance with the awards.

IMPROVING EDINBURGH.

At no time of the year does Edinburgh appear to greater advantage than at mid-summer, and year by year its loveliness increases. At present the foliage of the trees in the gardens which intersect the new town is as luxurious, and the grass as verdant, as in the open country. Mr. Macleod shows great taste in the management of the city grounds, and the Princes'-street gardens are remarkably attractive. The groups of trees, shrubs, and hardy perennial flowers recently planted in the Links and Meadows have produced a marked change upon these formerly unkempt open spaces, and the trees planted along some of the broader thoroughfares receive due attention, and, when they attain their full growth, will impart a new aspect to the localities. When the city parks receive so much attention we might look for something more being done with the Queen's Park. Its natural features of hill and valley are such that they may best be left alone, but there are spots about the outskirts which might be greatly improved by judicious planting.

The Improvement Act, promoted by and carried out during the Provostship of the late Dr. Chambers, will shortly expire, and the assessment under it will cease. The question has been mooted in various quarters as to whether powers should be applied for to continue the rate, with a view to carrying out further improvements. The scheme of Bailie Cranston for the formation of a third viaduct across the Cowgate does not seem to meet with much acceptance. Other suggestions have been made which would not be excessive in cost, and would not involve engineering difficulties. It is alleged that they would, if carried out, not only be of much practical utility, but would effect desirable improvements in the aspect of the localities operated upon, which are generally in the line of main thoroughfares. We shall briefly touch upon the most prominent of those that are most likely to meet with general approval.

The Lothian-road forms the beginning of the thoroughfare from the west end of Princes'-street to the rapidly-increasing suburbs of Morningside and Merchiston, and a double line of tramways is laid down on this route. The Lothian-road itself is of ample breadth, but at its southern extremity it joins Earl Gray-street, which forms a narrow neck between it and Hand-street, which is of a sufficient width. The widening of Earl Gray-street is a project to which it would be difficult to find objection. The property is of an inferior description, and if acquired would probably pay its way. The buildings on the west side of the street are superior to those on the east side, and might properly be left alone, although, as a rule, we think it is a decided mistake to improve one side of a street only. A glance at St. Mary-street and Blackfriars-street will convince any one of this. The value of the old property is enhanced, but the improvement effected upon it by the proprietors is infinitely small, and the contrast between the old and the new sides is distressing. The next line of thoroughfare under review is that by the Mound and George IV. Bridge southwards. Here again we have an amply broad line extending from Bank-street to Bristo-street, but it is only accessible at either end by narrow ways. The property at the west side of Bank-street is old, and of an inferior description; the site is a valuable one for business premises, and would readily find a market. It should be thrown back to a line with Melbourne-place, and it would be of advantage to round off the northern angle westwards to the Free Church offices. Bristo-street is narrow and tortuous, and to widen it would not only be of advantage as a thoroughfare, but seems called for in order to allow of the extension of the new College buildings eastwards.

If an opening were formed into St. Patrick-square (the open space of which has been acquired by the city) traffic could be carried onwards to Clark-street, thereby affording relief to the crowded thoroughfare of the North and South Bridge and Nicolson-street. In connexion with this a desirable improvement, but one of not pressing need, would be to carry the line of Buccleuch-place eastward to the Queen's Park. The opening up of the Meadow-walk for carriage traffic seems a necessity which cannot be escaped.

Another suggestion is the continuation of the

sufficiently broad lines of Jeffrey-street and St. Mary-street southwards by widening the comparatively narrow roadway of the Pleasance and St. Leonard's-street onwards towards the open Dalkeith-road.

We doubt if a proposed roadway along the south side of the Princes'-street-gardens from Cornhill-street on the west to Waverley Bridge on the east, would be an improvement in an æsthetic sense. It would involve the expense of a second tunnel through the mound, and would, to a very great extent, destroy the seclusion which adds so much to the charm of these gardens in the very heart of the city. Let the gardens alone; their beauty may be easily impaired, and would be difficult to add to. They should be strictly reserved for recreation, and not be cut to pieces for facility of traffic. The railway has already done that to a serious extent, and further encroachment would be fatal.

When digging out the foundations for a new vestry to the south-west of St. Giles's Cathedral, the base of a clustered pillar was laid bare. This appears to have belonged to a chapel which was improved out of existence by Mr. Burn in 1830. The new additions to the cathedral, now completed, consisting of the choir, vestry, and the porch to the Royal pew, are, to our mind, too subservient to the work done in 1830. The heavy unpierced parapets over the aisles and the clumsy inellegant pinnacles to the buttresses are repeated at the low level of these additions, which do not rise above the eills of the aisle windows. This seems all the more remarkable as so marked a departure from Mr. Burn's work has been carried out in the west doorway, which is extremely florid, and the reverse of being hard and uninteresting. The reinstated twelfth-century doorway* might, we think, have suggested a different treatment in the carrying out of the new porch, which is a characteristic example of early Scottish Gothic.

As regards new buildings, the Lyceum Theatre is completed, so far as regards the exterior. It cannot be considered of much account as an addition to the architecture of the city, being a production of brick and compe, with the most commonplace detail of pilasters and pediment. It is, fortunately, not in a conspicuous, although in a suitable and convenient, position. In the last exhibition of the Royal Scottish Academy we described the elevation by Messrs. Kinnear & Peddie for new branch offices for the Bank of Scotland in George-street. The elevation, we may shortly repeat, is Italian in style, and of three stories, with bold fenestration and flanking porticos. The ground-floor and cellars are to be appropriated to the purposes of the bank, while the two upper floors are to be let out as chambers. Behind the main building is a two-story erection of two stories and basement, also to be fitted up as business chambers. The flanking porticos have coupled columns with enriched entablatures and pediments, the one leading to the bank premises being distinguished by having the arms of the bank carved on the pediment; the other is the access to the chambers. The bank telling-room is 53 ft. in length by 42 ft. in breadth, with a height of 24 ft. On two sides are Corinthian columns on ornamental dados, above which is an ornamented entablature and a richly-pannelled ceiling. The floor is of marble mosaic, the doors and windows of wainscot, and the telling-tables and desks of mahogany. The estimated cost of the building is about 13,000l.

We observe a building in St. Andrew-square which is approaching completion, and which answers very much to the description given of these bank premises as regards the general grouping of the external features, but if it is compared with the Scottish Provident Institution in its immediate vicinity, its weakness as regards detail is manifest. The building in question is designed by Mr. McLachlan, and is to be devoted to business chambers.

Westgate-on-Sea.—The tender of Messrs. Naylor & Son, of Rochester, has been accepted for the erection of the new Church of St. Saviour, for 6,046l., from the amended plans of Mr. C. A. Beazley, architect, Delahay-street, Westminster.

* The detail of this doorway suggests a later date than the attributed to it. It must be kept in mind that the round arch continued in use during the whole period of Scottish Medieval architecture.

THE BUILDINGS OF SIR THOMAS
TRESHAM.

An interesting subject was hit upon by Mr. Gotch, when he determined to describe and fully illustrate the curious buildings in Northamptonshire attributed to Sir Thomas Tresham. He appears to have measured everything with much care, and prepared thirty-four sheets of general and detail drawings which have been reproduced by photolithography; also to have sought diligently for information from published and unpublished sources about Sir Thomas and his life and works, and then condensed it into fifty pages. The whole forms an elegant volume* very creditable to Messrs. Taylor & Son, of Northampton, the printers and publishers.

Sir Thomas is a picturesque historical figure, for he was of ancient family and good possessions, and yet devoted himself in mature life to the service of a proscribed religion, and suffered fines and imprisonments during a whole generation, rather than conform to the laws. A man with this sort of fibre in him, who is also a good father, and has elegant tastes, and is strong enough in all ways to make his bent evident to succeeding generations, will necessarily stand out well from the crowd, and each additional trait which is brought into sight is sure to be well relished. The family had been settled for several generations in Northamptonshire; the manor of Rushton having passed with other estates into the hands of Sir William Tresham about 1428.

Sir Thomas the Prior, the grandfather of Sir Thomas the Builder, was made,—after he had been left for the second time a widower,—by Queen Mary the first and last prior of the re-erected order of St. John of Jerusalem. He died in March, 1559; and his monument may be seen in Rushton Church. John, the father of our Sir Thomas, died in 1546, his son being then two years old. This son was, consequently, about thirty years of age when he was knighted by Queen Elizabeth at Kenilworth in 1575. He had been brought up a Protestant, but was reclaimed to the Catholic faith in 1580, and in that year he suffered his first punishment for recusancy. By 1 Eliz., c. 2, it was enacted that all persons who, without a reasonable excuse, failed to attend some usual place of prayer, should be censured and fined for every omission. Later legislation punished the breach of the law with severer penalties. He is said to have paid during Elizabeth's reign 260*l.* a year as a recusant. He also suffered imprisonment,—the first time in 1580. In December, 1597, he was discharged for the last time, after a year spent in prison. He proclaimed James I. at Northampton, in 1603, sharing the general anticipation by his party of favourable treatment from the new king's government; and died, disappointed in that hope as in so many others, in September, 1605. Thomas Fuller thought he had done his duty by his family:—"Having many [really 6] daughters, and being a great house-keeper, he matched most of them with Honourable, the rest into Worshipful and Wealthy families." His eldest son, Francis, was concerned in the Essex rebellion, but his life was saved. When his father died, Francis contributed 2,000*l.* towards the furtherance of the Gunpowder Treason. He is believed to have sent the letter of warning to Lord Mountague,—the husband of his sister Elizabeth, was put in the Tower, and died there December 23, 1605. He is the Tresham intended in the punning verses written by John Favor, Vicar of Halifax, 1593 to 1623, with reference to the plot:—

"Vivere qui poteras patrij venerabilis oris,
Perditennū generis tui pudor [Tresham] esto tui."

Mr. Gotch faintly suggests (p. 32) that Lewis, the second son, who became the head of the family on Francis's death, completed the "Old Bield" at Lyveden. The Cockayne obtained Rushton by purchase after 1605, and they went on building at the hall, dating their work 1610, 1620, &c., and putting up their arms. Acknowledgment is pleasantly made in the preface of services rendered to the author in his researches, by gentlemen who bear the old name of Cockayne, and the name appears also several times in the list of subscribers.

* A complete Account, illustrated by measured Drawings, of the Buildings erected in Northamptonshire, by Sir Thomas Tresham, between the years 1575 and 1605. Together with many Particulars concerning the Tresham Family and their Homes at Rushton. By J. Alfred Gotch, architect. Northampton: Taylor & Son. London: Batsford. 1883.

In the third volume of the *Builder*, thirty-eight years ago (November 8 and 15, 1845), an illustration was given of the Triangular Lodge at Rushton, and a notice of it based upon careful studies on the spot. In those early days of professional journalism our subscribers were well contented with eleven pages of text and one principal and one minor woodcut,—nowadays three or four times that amount is necessary in consequence of the wider sphere addressed from week to week. Then "no access whatever could be obtained to the interior of the lodge, or of the manor-house, the estate being in charge of an agent notorious all over the country for his boorish rude disposition." Things are happily different there now when Mr. Clarke-Thornhill not only takes the greatest care of everything, but liberally invites inspection.

The family seat and the triangular lodge at Rushton, the market-house at Rothwell, and two houses at Lyveden are treated of in this volume:—let us call to mind how these are placed and one or two things in the country round them. If a straight line is drawn on the map about nine miles in length, declining slightly to the south at its west end, it will join Lyveden New Building and Rushton Hall. Rothwell (pronounced Rowell) is a couple of miles south-west of Rushton. Lyveden is in the woods about five miles south-west of Oundle. "Den" indicates its position in the midst of the Royal Forest of Rockingham, a continuation of the Derbyshire and Nottinghamshire woodlands, and one of the largest in the kingdom,—now much reduced in size from its early dimensions, which in 1286 extended from Northampton to Stamford,—33 miles, and from the Nene on the south-east an average breadth of eight miles. The *Builder* stated in 1845 that Lyveden "is now only occasionally seen by the sportsman while in pursuit of game." Mr. Gotch marks the "increasing purpose of the ages" by finding it "the bourne of pic-nic parties for years." Brigstock is two miles west of Lyveden,—a manor in the heart of the old forest, so called from the bridge over the Harper's Brook which drains the little valley, and at times floods it severely, and finds its way into the Nene near Thrapstone, passing on its way Lowick, famous for its old oak tree, for its church tower, with the fine octagonal upper stage, and for the wonderful Greens and Stafford monuments. Farming woods, the seat of Lord Lyveden, who owns and derives his name from the old possession of the Treshams, is a mile on the north of the straight line, and the enigmatical Boscage Stone is half a mile further on. At about the sixth mile from Lyveden, at the junction of three roads, is Geddington-cross,—one of the three Eleanor Crosses still remaining; and the Mediaeval bridge still carries the road over the upper length of the sluggish Ise, just turning southwards to feed the Nene near Wellingborough. The northward road for Stamford and Lincoln is crossed at Geddington,—the road along which Eleanor's body was borne for Northampton and London. The mansion-house of another branch of the Treshams was close by, at Newton-in-the-Willows. It no longer exists,—but the large dovecot still bears the trefoils, and in the fields may still be seen the site of the mounds and terraces. Kettering, possessed of a fine church and friendly antiquaries, is four miles south-west of Geddington. The great Leeds road, which runs through Kettering, crosses the line we are following about 1½ mile to the east of Rushton.

Fuller, in his "History of the Worthies of England," mentions Sir Thomas Tresham,— "hard to say whether greater his delight or skill in building, though more forward in beginning, than fortunate in finishing his fabrics. Amongst which the market-house at Rothwell, adorned with the Armes of the Gentry of the County, was highly commendable." It stands in an open space not very far from the large church of the village, well known for its crypt and Transitional nave arcade. "Thome Tresham militis fuit hoc opus" is the commencement of the remarkable inscriptions on the lower frieze,—wherein (of course still in Latin) it is made clear that the market-house was erected as a tribute to his sweet fatherland and county of Northampton, but chiefly to this (Rothwell) his near neighbor. The date of erection is fixed between 1575 and 1580. The market-hall on the lower story is reached through eight semicircular arches. A circular staircase at the south-east angle leads up to the public hall,—a well-proportioned room, lighted by six-mullioned and transomed windows. There is a projection

from the centre of every side giving a picturesque outline, and the highly-pierced portions, containing arches and windows, are well steadied by the simple solid walls of the projections. Two pilasters are applied to each main division of each story. The frieze, "to the perpetual honour of his friends," goes round the whole building; and above the upper story is an entablature containing the shields of the friends inserted in panels; there are ninety in all on the building; the extra depth of the frieze makes the entablature an effective cornice to the whole building. The joists of the floor are no longer there, but the holes remain, and occasionally a bit of joist is seen; there is no roof; probably the works were stopped when he went to prison in 1580, and never resumed. The Archaeological Institute visited Rothwell in 1878, and the members thought it would be well that this building should be floored, roofed, and otherwise completed, and made into a public reading-room. Mr. Somers Clarke, jun., reported, and his report was accepted by the Institute, but there the matter stands. The masons' work is very good,—the facings being finely jointed ashlar from Stanion or Weldon, nine miles off towards Kirby,—quarries of freestone which are said to have supplied the stone for old St. Paul's, and for St. Dunstan's, Fleet-street, and a good deal of work at Cambridge,—belonging to the uppermost beds of the inferior oolite. Ironstone of the district is used for backings. The upper portion of the staircase no longer exists; some portions of the pilasters have slipped off; they were not regularly built with the walls but attached; with the exception of these losses, and of a missing detail here and there, its three hundred years have dealt very gently with it. Among the shields in the deep frieze is that of Sir Humphrey Stafford, for whom John Thorpe designed the great house at Kirby,—"Kerby," as he calls it on his ground-plan, adding, apparently with satisfaction, "wherof I layd y^e first stone, A^o. 1570." In the very small pedestals over the very large pilasters in the court-yard at Kirby, we may see Stafford's, or Thorpe's, or a mason's love of brevity, or contempt of orthography, thus:—

HUM	STA
FRE	FARG

If so disposed we may see also in this a generous trait in Lord Chancellor Hatton, who took over the house, and carried it to the completion in which it stood till Inigo Jones set to work at the entrance portico in 1638. He seems, however, to have visited Kirby but rarely, having a stronger liking for Holdenby, where he was born in 1540,—and for the rust house which he built there. In the hands of Mr. S. E. Waller,—"The Day of Reckoning" No. 524, in the present exhibition of the Royal Academy, the courtyard of Kirby,—altered to suit a different site, and by being put into a strange perspective,—aids in pointing, by contrasting magnificence and ruin, the moral which passes through the mind of every one who has seen and cannot forget its desolate courts and halls. There is no plan of Rothwell discoverable in the book of Thorpe's designs, of which Walpole made good use,—many others following his example, purchased in 1810 from the Greville Library by Mr. John Soane. A strong case cannot be made out for Thorpe's connexion with Rothwell, seeing that the whole case is that he was at work at Kirby about the same time, that Kirby was not a dozen miles away, that the section of the upper cornice at Rothwell is almost exactly like some of the Kirby chimney-heads, and that other details have a general similarity. Still, it is not improbable that the connexion with Sir Thomas may have commenced now,—which we know existed thirty years later. Some of the details will not bear close examination. The upper pilasters simply carry a slip of architrave, of which the surroundings of the shields in the frieze do not pretend to make use,—without the break they would have found a ledge sufficient to sit upon; but that, after all, is merely an odd vagary to which modern practice might well incur us. Some of the mouldings are very dull and clumsy; our author credits them (p. 19) with "rude profiles," which shows a general moderation.

The Triangular Lodge at Rushton is quite close to what is now simply the branch from Leicester to Hitchin; it bore the London traffic of the Midland on to the Great Northern till

the main Leicester and London line became a necessity. In an open space, surrounded by well-grown trees, half a mile to the north-west of Rushton, this quaint building comes into sight. With the exception of unworked mitres and one or two such trifles, the building is complete. It has been carefully preserved in all respects, and seems likely to endure for many generations; it is not inhabited as it was some years ago. The object of the designer appears to have been to make the observer think of the number 3 as often as possible. The *h* in Tresham's name was, no doubt, silent. In the State Papers 1581 to 1590, for instance, we have Tream, Tream, Tream, each several times. Francis Tream was the signature of the conspirator. The heralds had put three trefoils on the shield borne by the family, using the *tre* of the name; their crest was an animal with a trefoil in his mouth. It has been suggested that Sir Thomas "intended the whole as a grand illustration of his own name and arms, an innocent conceit, for the elaboration of which his imprisonments had given him ample time. That the doctrine of the Trinity should also be illustrated and adapted as an exemplification of the idea was, probably, merely subsidiary to the main design; because it has several sacred symbols carved on it does not prove it to have been for an exclusively religious end." Mr. Sweeting may also mean to imply that the triangular plan of the Cross at Geddington, five miles off, and the triangular bridge at Crowland, thirty miles off, influenced Sir Thomas, who had, no doubt, seen them both. Such notions may, however, occur to different people quite independently, without any one being entitled to be very proud of them. The Church at Baura, in Austria, was not built till 1755, but its designer had probably not heard of the lodge at Rushton. It is dedicated to the Holy Trinity, is triangular on plan, has three doors, three windows, three sacristies, three organs, is built of three sorts of Sicilian marble, and cost 333,333 florins.

At Rushton the length of the side of the equilateral triangle at the upper level is 33 ft. There are three stories;—on each, two little equilateral triangles occupy two of the corners, a circular staircase the other corner, and there is a hexagonal chamber in the centre. The walls are 2 ft. 3 in. thick; the stone showing externally is in alternate layers of dark and light, with dressings at the quoins and windows. The lower story of each side has three trefoiled panels, each with a triangle sunk through in the centre. On the middle story of each side are three windows, each consisting of twelve circular openings with stonework between,—a kind of plate tracery, and on the upper story are large trefoils pierced with triangles. [Were not the crosses in these windows **I** and **T**; were they cut through after the windows were completed?] On the middle story there are twelve shields; on the upper story six shields and six letters above the shields, and there is an inscription of thirty-three letters on the frieze. Above the cornice on each side of the triangle are three gables, each being an equilateral triangle; a triangular pinnacle with a trefoil as a termination surmounts each gable. From the point where the nine roofs join, a large triangular chimney rises, finished by a large trefoil. Small trefoils are scattered over the sloping sides of the chimney, and there are three sinkings on each face of its cornice. Above the string over the windows of the middle story metal letters are put each 3 ft. high,—**T T** on one side,—**15** and **93** on the others; 1595 appears on each side of the chimney,—probably the date of the completion. Proper acknowledgment should be made of the ingenuity and skill shown; but it must be confessed that a triangle running out to its points is not a happy plan for a building of this size.

John Thorpe's employment here is seen to be probable, because a singular string-course here is also used in a modified form at Kirby. Mr. Gotch, who knows that too much may be inferred from such resemblances,—maintains a happy uncertainty, and probably the reader will be disposed to do the same. On page 29 we read, "If John Thorpe was actually the architect employed, the supposition [that it was a play upon Tream] is strengthened, for in Thorpe's Book of Plans, in addition to several quaint designs, is a plan of a house, &c." (referring to Thorpe's mild joke about a house made up of **I** and **T** on plan). On page 44, on the other hand, we read,—"It is highly probable that the leading ideas . . . were supplied by

Tresham, being wrought into practicable form by Thorpe; . . . there is nothing in Thorpe's book to render it likely that all the ingenuity displayed was his; only one or two of the plans can compare in quaintness with the Triangular Lodge," &c. But surely,—folios 145, 146,—"A ground-plan of circular form inclosing places of geometrical figures," which is a powerful design, ought to settle the question of capacity; and, if not, folio 161,—"a large triangle, inclosing a hexagonal court,"—might be quoted for its resemblances; and Longford Castle, too (folios 155, 156), a triangle on plan, with circular rooms at the external angles of the triangle; and (strangely enough) the well-known "*pater non est filius*" emblem of the Trinity drawn in the centre of the courtyard. But perhaps, after all, somebody suggested the idea in each of these cases also.

After Tresham's final release from prison he probably devoted part of his means and leisure to Lyveden New Building, and was at work there when his death took place in 1605 at the age of sixty-one. "Nothing more was done to it; it remains with many of its mouldings half worked, and their mitres unfinished." After his death there was no one to carry on the works; "it was therefore left a ruin before it was finished." It is a Greek cross in plan, about 70 ft. in extreme length, with a five-sided projection at the end of each arm of the cross. The earth stands against the walls for about 5 ft. of the basement story; the rest of that story and two stories over it make up a height of 84 ft. above the ground. It is, therefore, the most considerable effort made by Sir Thomas. Our author has lingered affectionately over its details, of which, indeed, and the inscriptions and emblems, there is plenty to be said,—and he has said it with much, but not with undue respect. Some of the profiles are worthy of the pencil of our great modern master, Sir Charles Barry; and its astyler character,—there not being a column or pilaster about the building,—might have come naturally from his hand at some portions of his career. Probably there would have been parapets to the bay-windows, and four gables, a low story and parapets on the main walls, something as at Rushton itself; gabling round the bays, as at Kirby, is not a happy device. As it stands, however, the pleasing form of the building, its admirable execution, the seclusion of its site among the woodlands, coupled with the mystery and sadness of its fate, force it into the memory. Join Thorpe's connexion with it may be considered established, for Mr. Gotch had the good fortune to identify as the basement, ground, and one-pair plans of Lyveden, what have hitherto been indexed merely as "Three Plans, fol. 215, 216," in the book in the Soane Museum. He has reproduced these to about half the scale of the originals, and has thus produced a piquant thing for those who are amusing themselves with the irresolutions of their contemporaries, and their own, day by day. The plans had been brought to the stage which, before an architect arbitrator, might be described as "careful sketches, ready for the preparation of contract drawings." Several parts were, however, being reconsidered; and, partly in pencil and partly in ink, fresh suggestions were noted on the plans. The staircase was especially in debate. Should it be a circular one, such as that which had been put at Rothwell, or a straight staircase with broad flights, such as was fashionable in the mansions of the time? It was eventually prepared for in the building as originally designed,—that is, two flights, each 5 ft. wide, placed in the arm of the cross opposite the entrance,—the holes for the joists of the half landings remain. But it was marked across on the sketch-plan, and a circular staircase was sketched at one re-entering angle, and square staircases tried at the other angles. In fact, circular stairs were scratched in with the compass point at each angle,—but only inked over at one,—a detail which it would be difficult to express by lithography.

This discovery, remembering the number of unnamed designs in Thorpe's book, leads one to hope that other similar identifications may follow. When Mr. Albert Hartshorne publishes the complete drawings he has made of Kirby, he will not need to make a similar discovery, but Thorpe's plan of it has plenty of interest. It has been worked over like the Lyveden plans, with ink and pencil, and the executed building differs from the plan. Where the two great bay windows are now a straight wall was shown at first, then a five-sided bay-window was drawn

on; and we can see what was passing through the mind with reference to the ends of the wall containing the principal entrance, and rest well satisfied that the alteration sketched out was dropped.

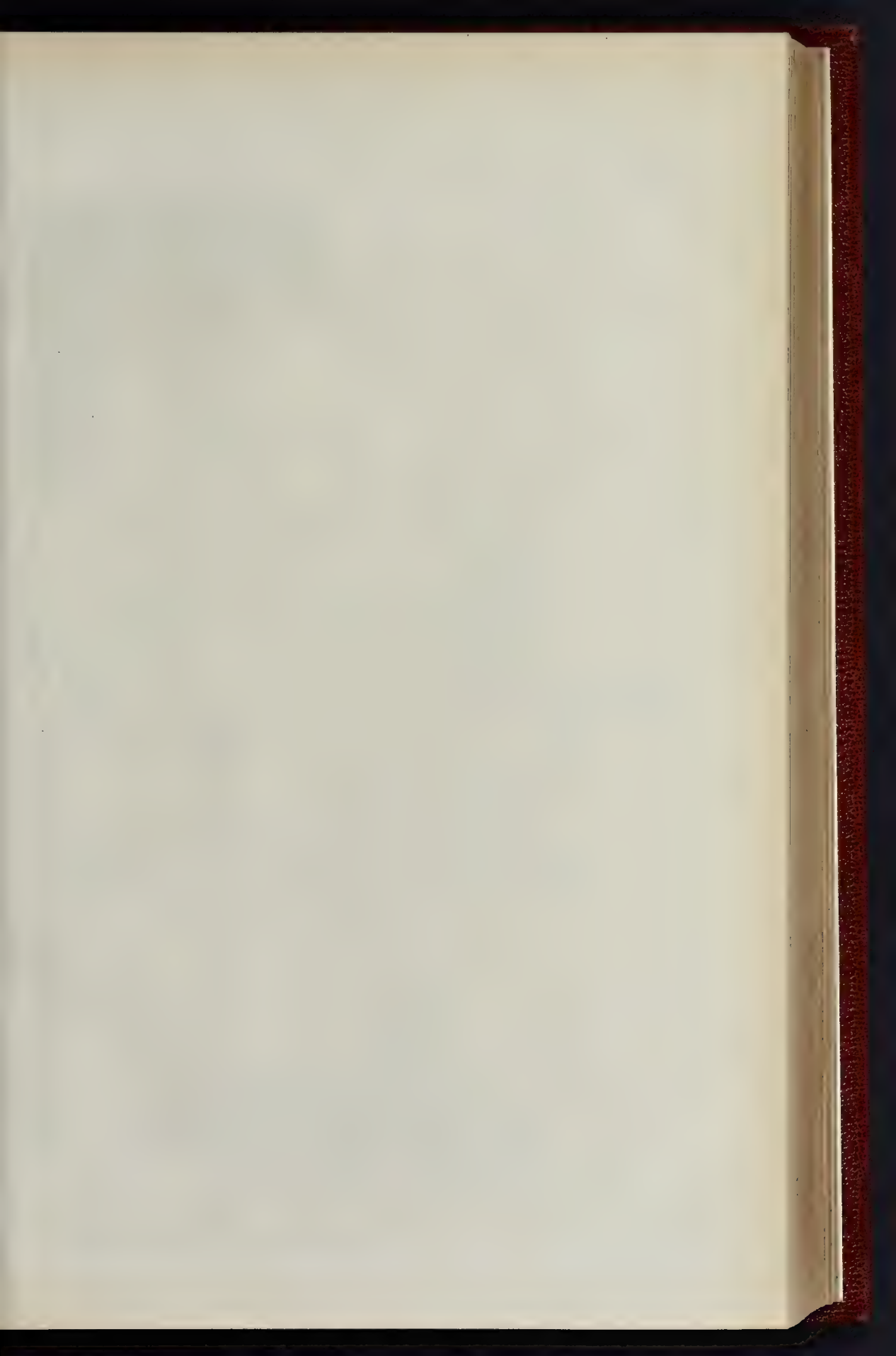
The representation of the Crucifixion in the Oratory at Rushton Hall is noteworthy on many grounds. If the date, 1577, has not been tampered with it would show Tresham's bent towards ecclesiastical subjects and mysterious language before his becoming a Catholic. The other work at Rushton has none of his peculiarities, being simply enlargements of the house, a work which the Cokaynes afterwards continued; all, however, working towards the harmony and dignity of the result we now see. Tradition states that Dryden wrote some part of the brilliant poem,—"*The Hind and the Panther*," at Rushton, and tradition may be in the right, though it is unsupported by evidence of any positive kind. There is no letter from Dryden, written after pacing in 1686 and the early part of 1687, the site of the green alleys in which, at a later day, a memorial urn was placed, and no letter from him nor from any contemporary alluding to such a visit. Northamptonshire makes much of his birth at Aldwinkle, All Saints', three miles N.E. of Thrapstone. No register of births for the parish can be found older than 1650, but visitors have been shown the room in the Parsonage in which he was born in 1631, "interruptedly from his birth to the present time," at least so Mr. Christie states in his painstaking memoir (1881). The Pickering Manor-house at Tichmarsh, the house of Sir Gilbert Pickering, his mother's grandfather, has disappeared, but nobody at Tichmarsh forgets Dryden's visits to his cousin Mrs. Creed. There is no doubt about those visits, nor about those to Cotterstock. Rushton is only a dozen miles in a straight line from Tichmarsh, and it seems to be thought nowadays that the aggressive polemics of the

"Milk-white Hind, immortal and unchanged," fit in well with the memory of the recumbent Sir Thomas Tresham, which belongs to Rushton. Even Mr. Christie puts it thus,—"*composed at Rushton, the old mansion of the Treshams*;"—of course, though literally true, an anachronism seems to be implied, for Rushton had been taken over from the Treshams for nearly the space of four generations. The idea is evidently steadily welcomed in spite of the want of all encouragement—it is apparently felt that it would be comely for the birthplace of those "full resounding lines" to be within sight of the walls of Rushton, and of the enigmatical Triangular Lodge.

We had hoped to have devoted some paragraphs to the bearing of these buildings on the general history of the English Renaissance; and to some of the still unsolved enigmas;—towards a solution of which Mr. Gotch in his modest preface states that he hopes to contribute, "by increasing the opportunity for their leisurely study." The arrangement of the shields at Rothwell, the mystery about the inscription there; the chimney, the hiding-place (or store for treasure), and the unexplained figures at the Triangular Lodge; the purpose of Lyveden, the underground passage from its south entrance, the use of definite proportions, "Major Creed's house at Oundle" built with the timber from Lyveden; and the Tresham papers at Rushton, which require and should have a thorough examination forthwith, &c.—there are plenty of pleasant little tasks for somebody, burdens not heavier than a man might lift with a finger,—but now waiting for the right finger to be applied.

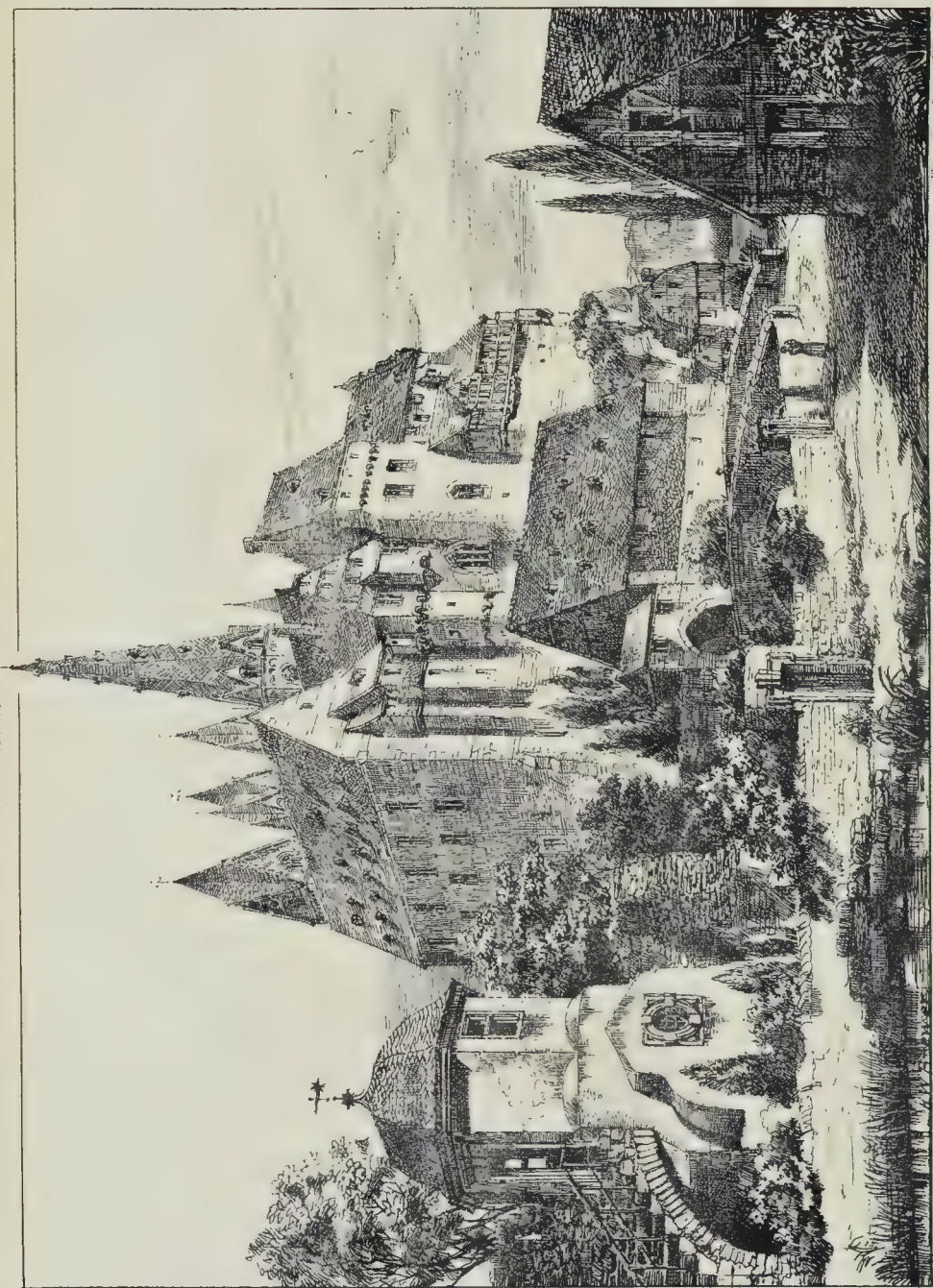
We give two pages of illustrations from the Market House, the Lodge, and the New Building,—a plan, elevation or view, and some details are put together in each case. It will be seen that the work has been done in the right spirit, without stinting of time or of labour. We hope Mr. Gotch may be induced to identify himself still further with his county, and with work of Tudor or Stuart date, which he evidently values without worshipping its faults. Such tasks often prove sadly heavy to an architect in active practice, but he has good years before him.

Nottingham Municipal Buildings Competition.—The drawings submitted in the second competition are now hung in the Council Chamber, and will be on view to the public on and after Monday next.



THE BUILDER.

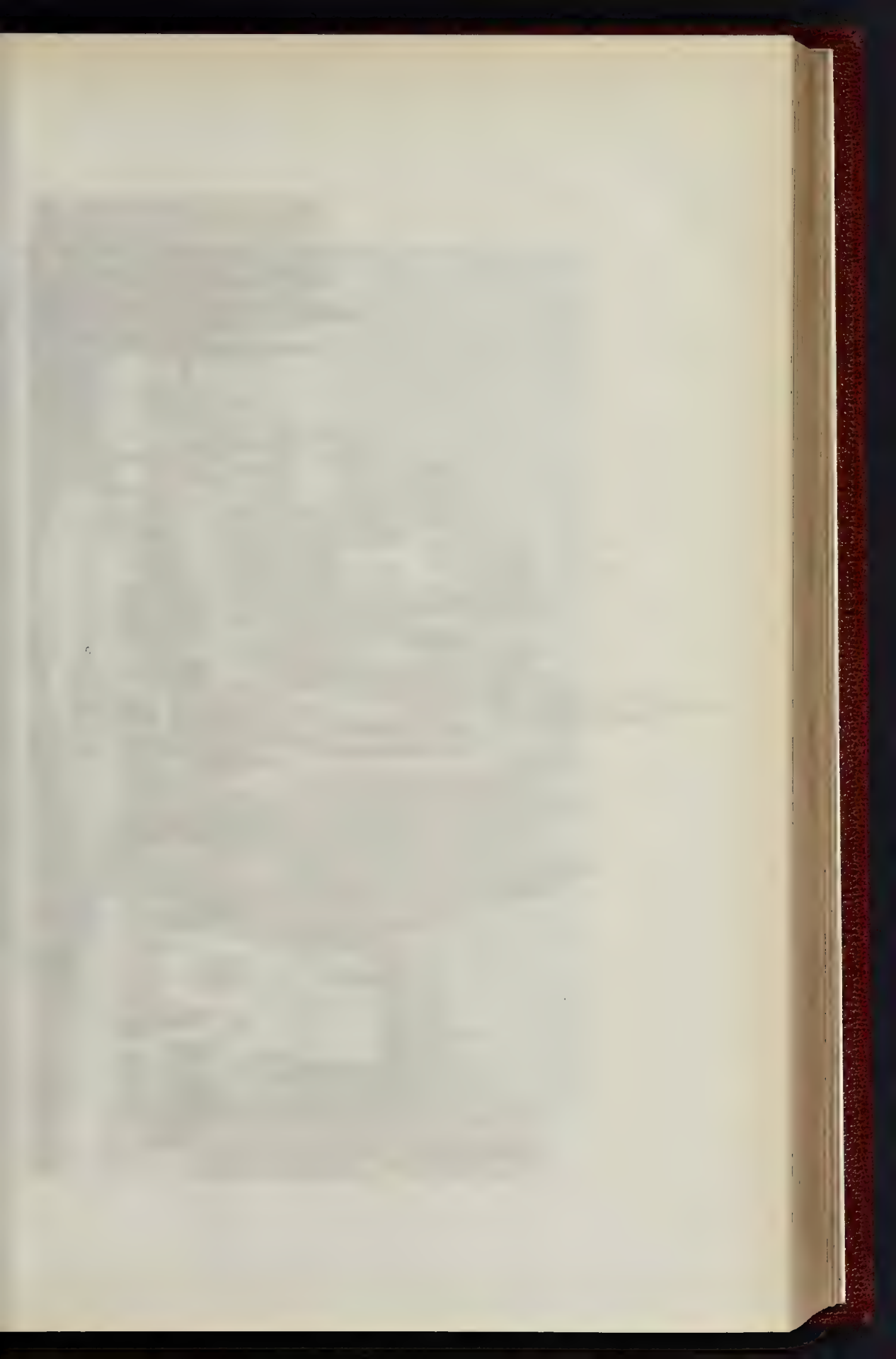
JULY 24, 1893.



W. G. M. & Co. Photo. litho. 235 High Street.

LIMBURG CATHEDRAL, FROM THE SOUTH-EAST.

W. G. M. & Co. Photo. litho. 235 High Street.



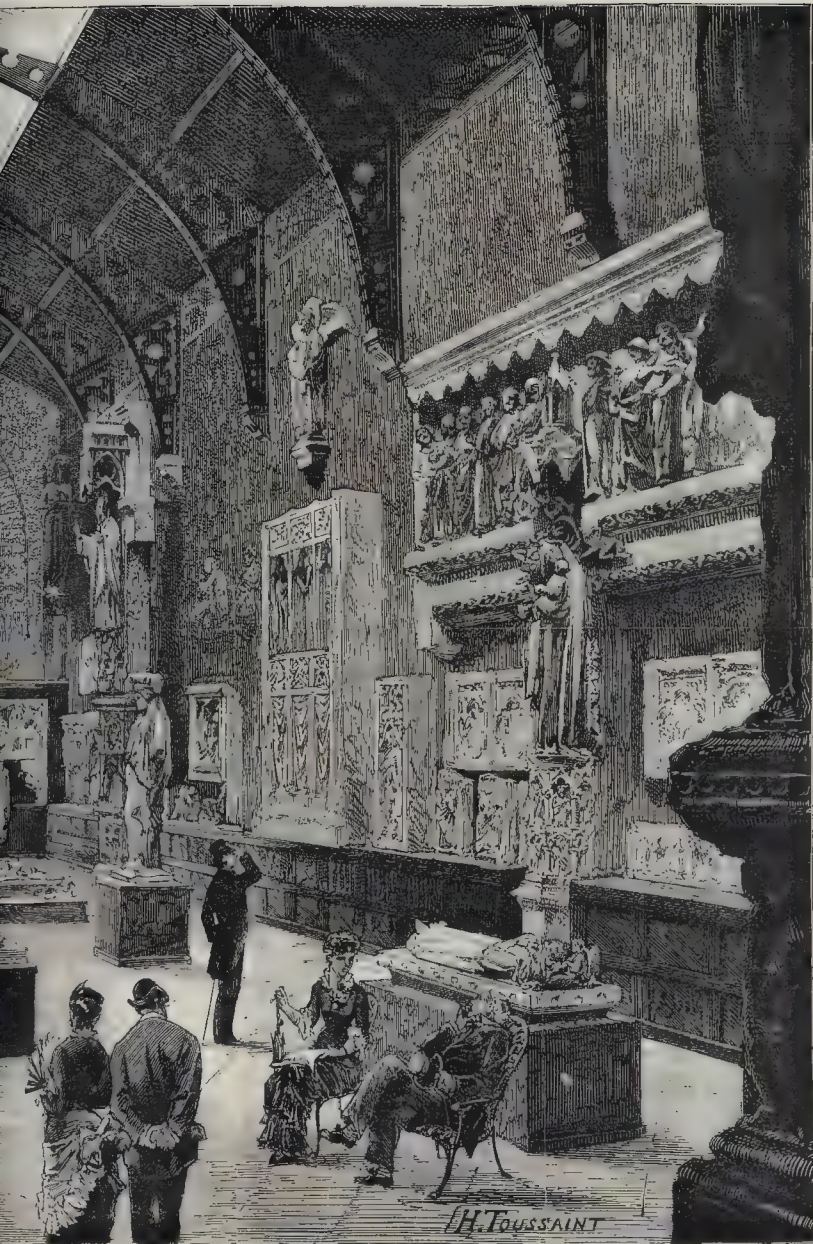


Figures from the Cathedral of Chartres,
Seventeenth Century.

Hermes of Praxiteles,
Tomb of the Son of St. Louis.

Pillar of the Angels at
Strasbourg.

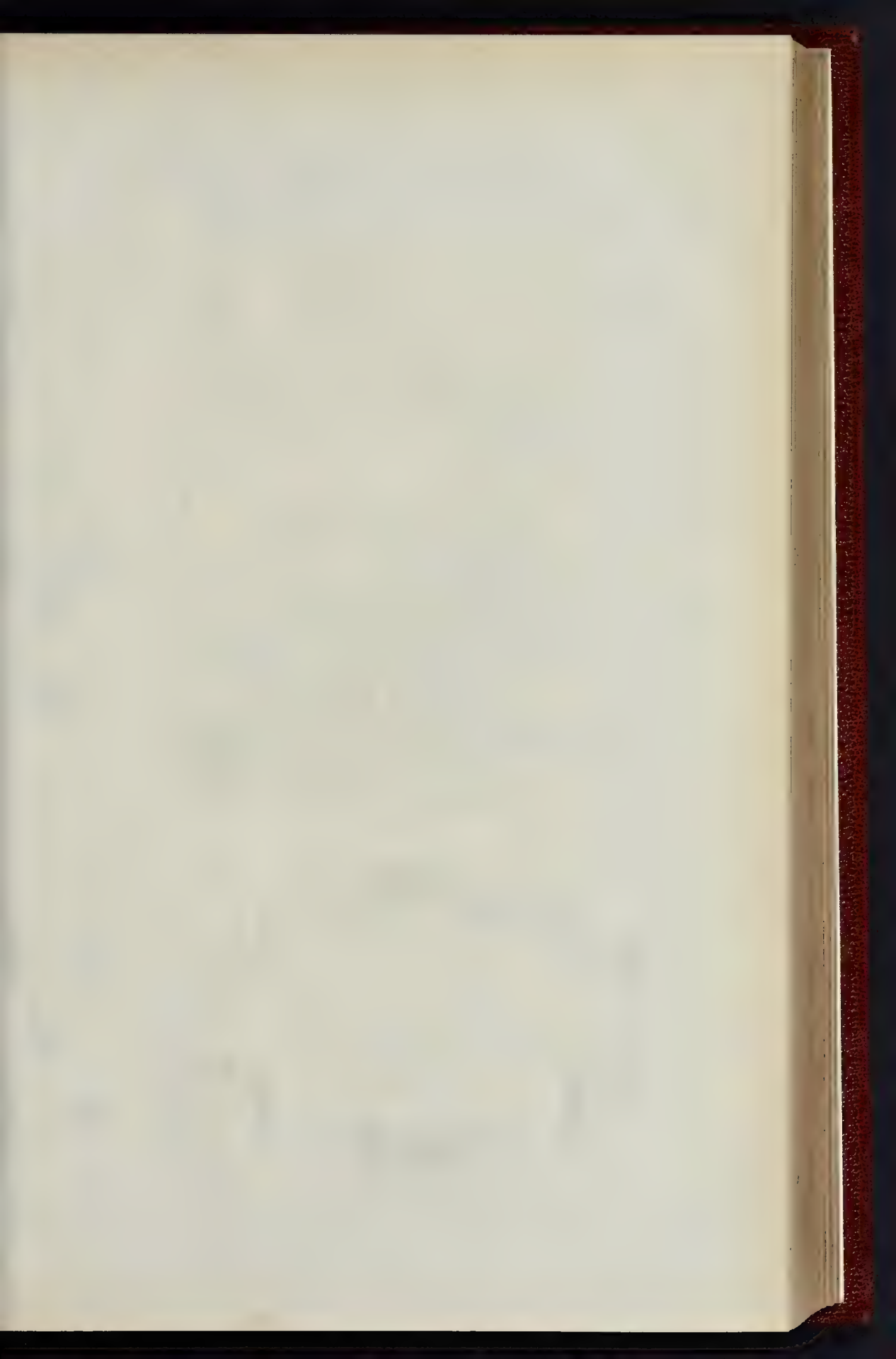
THE MUSEUM OF COMPARATIVE SCULPTURE

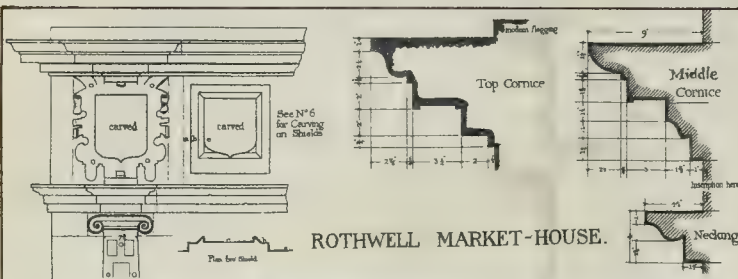


Tomb of the Brother of St. Louis.

The Twelve Apostles, from the Lintel
of the gilded Virgin, Amiens.

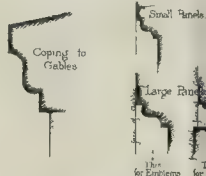
PALACE OF THE TROCADÉRO, PARIS.



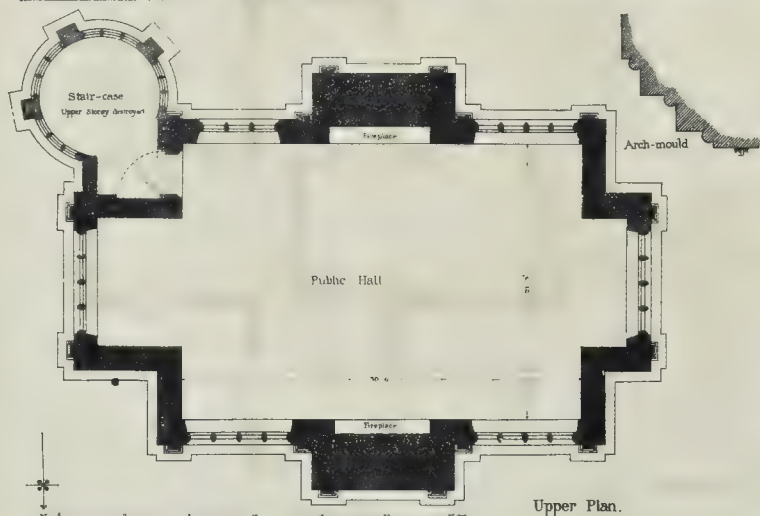
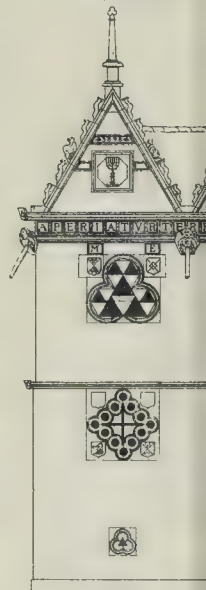


THE TRIANGULAR

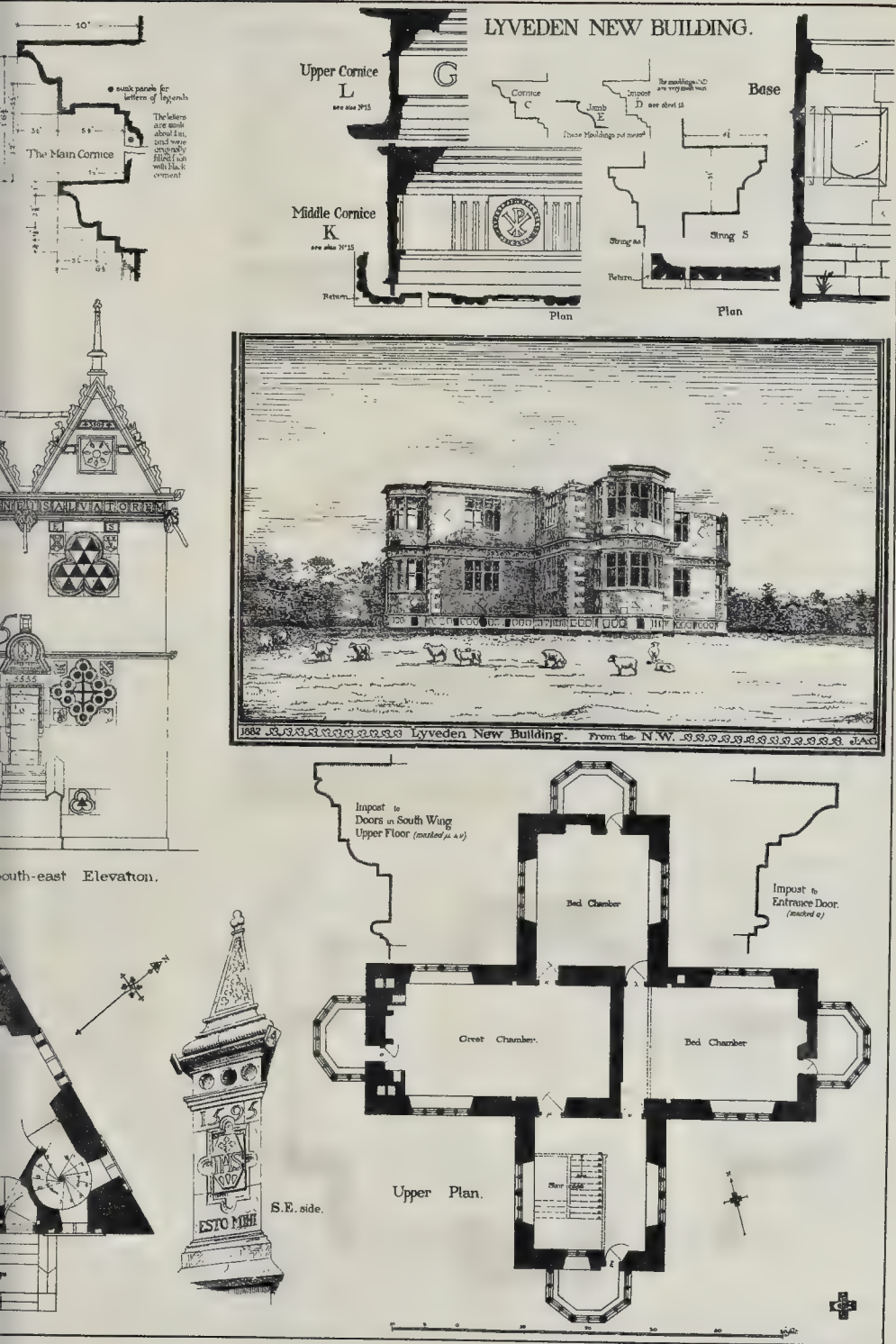
Rushton.



In the Nine Gables (not preserved)



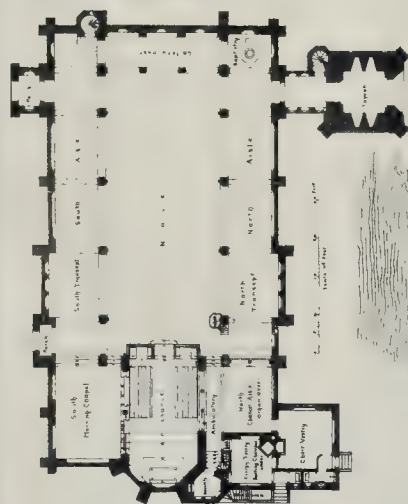
Ground Plan.



DESIGN FOR ALL SAINTS' CHURCH, IPSWICH.

MR. THOMAS GARRATT AND MR. C. H. LOHR,

JOINT ARCHITECTS.



C. P. Hall Photo Litho London E.C.

Wm. & Sons Printers & Quen.

THE MUSEUM OF COMPARATIVE SCULPTURE IN THE TROCADERO.

The Minister of Public Instruction and the Fine Arts has inaugurated the new Museum of Sculpture due to the initiative of Viollet-le-Duc and to the preserving efforts of the Commission of Historical Monuments. Thus, then, there is at last a national foundation, and one which will singularly resuscitate with the public the prestige of old French sculpture.

As far back as 1855, the author of the "Dictionnaire Raisonné d'Architecture" proposed to the Minister of State, who at that moment was at the head of the Department of Fine Arts, to supply gratuitously models of statuary and sculptural ornamentation cast from the finest French monuments of the twelfth to the sixteenth century, a thing easily done, as England had just obtained authority to have these casts taken for the collection at the South Kensington Museum, and had agreed to leave in each centre a duplicate of every cast. But the four thousand pounds spent by the English Government remained unfruitful for the French, as there was no spot ready to receive a collection, so little by little all was lost.

But the project has once more been taken up and acted on, and from this moment, however incomplete the installation, one can judge of the result obtained. The plan has been to classify these united types in such a manner that the progress of art can be easily followed in each centre of development, at the same time that a comparison can be made by the examination of the objects ranged in methodical order,—consequently in three great divisions:—

1. The relation between sculpture belonging to different epochs and to different civilisations.
2. For France, divisions by schools and successive epochs.

3. Application of sculpture according to the system of architecture employed.

The programme of Viollet-le-Duc has been adhered to point by point by the Commission, whose every aim has been to realise it. The first *salon* contains Egyptian works, Greek works, and French works, and it is curious to see, placed one after another, Egyptian statues of the Archaic period, Greek statues copied from the pediment of the Temple of Egina, and models of statues borrowed from the French monuments of the twelfth century. The analogies are striking between these manifestations of art at its commencement and such diverse civilisations.

A little farther on are statues copied from the royal doorway of the Cathedral of Chartres, which, seen near to certain Greek ecclesiastical figures, seem to belong to the same school, by the manner of interpreting nature and the conception of type, and we also find a certain bringing nearer to each other of great interest in the development of sculptural art among the Greeks, dating from the time of Pericles, and in France dating from the thirteenth century.

There is in this conception, provided one does not exaggerate its importance, a fertile lesson for the philosophy of the history of art. If, immediately afterwards, we enter those rooms which are exclusively consecrated to the French schools, we are struck by the marvels which present themselves to our sight. The majority of the great cathedrals and of a large number of churches little known to the general public, the rich civil edifices of the Middle Ages, all contribute their share to this magnificent and truly patriotic collection.

We see here defined, with incredible distinctness, a movement some had only suspected. It is the twelfth century marking the end of hieratism,—architecture leaving behind it the Romano-monastic traditions to inaugurate an art based on new principles, and at the same time sculpture leaving archaism on one side, to have recourse to the study of nature, and finally all the disseminated schools tending to a fusion, and, little by little, towards the fourteenth century two schools absorbing all the others,—the Burgundian school, invaded by Flemish elements, and the properly so-called French school.

The arrangement of the third division of the Museum is not yet completed, but it will not be less interesting or less instructive; and one will see how in certain cases, so to say, sculpture becomes one with architecture, and in the other it seems but a borrowed decoration; and also in what a conventional manner, during the period of hieratism, the Flora and the Fauna were treated, and how from an attentive study of nature the

great epochs of art date as much in antiquity as during the Middle Ages and the Renaissance. Finally, views and partial abstracts of the monuments will complete the work in its synthetical character as a perfect means of instruction.

We have only been able to sketch in a summary manner the idea of Viollet-le-Duc from a remarkable report in which he developed his project with his habitual lucidity. The new Museum must be seen for one to appreciate the service it is destined to render. One is wonder-stricken at the riches it already contains, and astonished at such a result being obtained in less than two years; and a great deal of gratitude is due to the Commission and its indefatigable President, Monsieur du Sommerard.

We shall give a view of another part of the Museum hereafter.

LIMBURG CATHEDRAL, FROM THE SOUTH-EAST.

We have previously given views of this interesting church from the west and south-west, and we have illustrated the interior. The chief object of our present view is to show the curious old collegiate buildings which surround the east and north sides of the church. Although the church is now called a cathedral, and it is at present the see of a bishop whose diocese is commensurate with the old Duchy of Nassau, yet it has no ancient claim to the title of cathedral, and the bishopric dates only from about the year 1815. Before the French Revolution Limburg Cathedral was known as the collegiate church of St. George, and the building attached to it was called the "Georgius-Stift," or St. George's College. It was, in fact, a college of priests, similar to Southwell, Beverley, or Westminster Abbey, with a Provost or Dean at the head. During the period between the suppression of the collegiate establishment and the establishment of the bishopric the old building was allowed to fall into decay, and has since been disused; this is much to be regretted, as it is an excellent example of clerical domestic architecture, and is a singular cross between a Medieval castle and a monastery. There is rather more domestic character about it than we should have expected to find in such works. This is especially visible in the "post and pan" work of the upper story, the oggee gables of the roof, and the wooden galleries surrounding the inner court. With us in England we do not associate the idea of wooden construction with ecclesiastical or monastic works, and we are rather apt to destroy such structures when we find them in the neighbourhood of our cathedrals or churches. Undoubtedly much harm has been done in this way. At Willesden, a few years back, the old parsonage-house, which was a valuable example of "post-and-pan work," standing in an angle of the churchyard, was destroyed, and many buildings of the same character have disappeared from the neighbourhoods of Norwich, Canterbury, Westminster, and other churches. That the ecclesiastical-domestic buildings were sometimes of wood, or of post-and-pan work, is proved from those existing at Windsor, where the "horse-shoe cloisters" and adjoining houses are fine examples of this class of building. These still belong to the collegiate church of St. George. We believe that the late Sir Gilbert Scott saved these buildings from being removed, and if so, great thanks are due to his memory, for they are by far the most interesting buildings in the whole castle. That monastic buildings were sometimes of wood is certain; it is, in fact, known that the greater portion of the domestic work at Crowland was of this character.

The buildings within the enclosures of old castles were also very frequently of a thoroughly domestic character, and were of wood, or "post-and-pan" construction; fine examples exist at Windsor, Stoke, and the Tower of London. Unfortunately, most of the domestic work at the Tower has disappeared in the various restorations which have taken place during the past thirty years, and the buildings which have replaced them are totally unlike anything that would have been done during the Middle Ages. Fine examples of work in domestic "post-and-pan" construction are to be seen at Coburg; the Wartburg, near Eisenach; the castle at Nuremberg; &c.

The chief character of the external portions of the Georgius-stift at Limburg is derived from the great height of the walls, which are pierced by small windows. The window of the

chapel, or oratory, is an exception, as it is of three lights, with cusped heads. The long building to the south of the church is of a late date, probably not earlier than the end of the sixteenth century. These buildings, with the spires of the church rising over them, form one of the most picturesque groups in Europe.

ALL SAINTS' CHURCH, IPSWICH.

The chief object in the consideration of this design (seeing that the money proposed to be expended was limited to 7*l.* per sitting) was to make the plan interesting and the general grouping effective, keeping all detail as simple as possible; for instance, the low shallow transepts, the small western gallery, the chancel breaking forward into the nave, the narrow arches on either side, the chancel arch, the sacristy, the organ-chamber over the north choir aisle, and, perhaps, the most important of all in keeping down the cost, viz., the absence of clearstory, are all features calling for attention.

The tower and spire, and ambulatory connecting it with the church, were intended to be added at a future time.

The walls were to be faced with red brick outside, and inside up to the window-cill level, above which they were to be finished in plaster for decoration.

Stone was to be used very sparingly; and the high-pitched roofs were to be covered with tiles, and the aisle roofs, which are purposely kept flatter, with slates.

The total accommodation is for 828, the estimate amounting to 5,654*l.*, exclusive of the benching, boundary-walls, and tower and spire.

The authors of this design (which was sent in under the motto "MDCCLXXXIII.") are Messrs. Thos. Garratt, 19, Queen Anne's Gate, Westminster, and C. H. Lohr, 1, Lansdowne-place, Brunswick-square.

A SECOND SUEZ CANAL.

At no time within our memory has so rapid, so accordant, and so decisive a voice been uttered by the mercantile community as within the past week, on the question of the new Suez Canal. Of the importance of the freedom of that water-way, not only to every shipper, to every manufacturer, but we may almost say to every working man in Britain, there can be no question. Party spirit for once is silenced on the matter, and political men of all parties, as well as non-political industrial men, are all at one in demanding that full consideration shall be given to any scheme which may, directly or indirectly, tend to prolong what is felt to be an untenable position.

The main features of the case are these. The Suez Canal received last year 2,536,383*l.* of revenue, out of which the traffic expenditure and cost of repairs (mainly dredging) amounted to 183,000*l.*, or 7·2 per cent. The revenue comprises not only a toll on all vessels passing through the canal, but a poll tax for passengers, and an extra charge for pilotage, all which together amount, according to Mr. Norwood, M.P., to as much as 20 per cent. on the gross earnings of a ship from London to Bombay and back at the current freights of to-day. In addition to this heavy charge, the canal is so ill adapted for traffic that it is positively choked by a transit of less than ten vessels a day, five in each direction and that although the area of outlying, which is as much as 3,862 ft. of cross section, would have been enough to allow of a channel of scientific form, 165 ft. wide and 30 ft. deep in the middle, which would thus allow the uninterrupted passage of any number of ships.

Under these circumstances the cry has become very loud for a second canal. The actual company claim the exclusive right to a canal across the Isthmus. The counsel consulted by the ship-owners,—and we may add that their opinion has been long held by engineers,—advise that there is no such exclusive right. The ship-owners propose to make a new canal, and M. de Lesseps has come to London to propose to make a second canal, to belong to the existing Canal Company.

To carry out this, which would have been entirely unnecessary if the first canal had been made of a proper section, it is proposed that the English Government should lend the French Company 8 millions sterling, at 3*½* per cent. interest, to be laid out by the latter without any control on the part of this country. Only three

out of twenty-four directors are English. It is proposed that no abatement shall take place in the present dues (with the exception of an abatement of 2½ francs per ton for empty vessels, and a reduction of the charge for pilotage) until the profits made by the Company amount to 25 per cent. There is to be thus an abatement of 50 centimes for every 3 per cent. of additional profit, so that by the time that the lowest possible toll, viz., 5 francs per ton, is reached, the profit of the company will be upwards of 50 per cent. per annum, not only, it appears, on their own capital, but on the 8 millions which England lends them at 3½ per cent.

The London Chamber of Commerce, a meeting of merchants and shipowners in the City, a meeting at Lloyd's, the West Hartlepool Shipowners' Society, the Sunderland Shipowners' Society, the General Shipowners' Society, the Associated Chambers of Commerce, the Executive Council of the Chambers of Shipping of the United Kingdom, the North Shields Shipowners' Society, the Liverpool Shipowners' Association, and other bodies, have met to protest against the confirmation of the agreement, and the public excitement on the subject rises every hour.

HEINRICH VON FERSTEL.

THIS eminent Austrian architect died on July 15, near Vienna. A correspondent, writing from that city, very feelingly says:—"Vienna is mourning to-day at the mortal remains of one of her most eminent, her best artists, who has had the principal share in making the beautiful imperial capital what it is. Not only the two grand edifices which were designed and executed by him, the Votivkirche and the new University, sing his praises, but his mind and his advice have contributed towards the architectural development of Vienna, for he has had a share in all her great works. A few days after his friend and brother architect, Theophil von Hansen, the builder of the Austrian Houses of Parliament, celebrated a kind of jubilee on his seventieth birthday, when all Vienna artists, as well as the whole city, did him honour, Heinrich Freiherr von Ferstel succumbed to his sufferings in his villa at Grinzing. He has not been permitted to be present at the solemn opening of the new University Buildings, by the side of which rises the work of Friedrich Schmidt, the new Town-hall, which in a few weeks, on the occasion of the celebration of the anniversary of the siege by the Turks, will be freed from the last trammels of scaffolding. At this celebration, also, which would have been in a certain sense a forerunner of his own, the architect, Ferstel, was not allowed to assist, by inexorable Death. But the Votive Church stands finished in all its details, in everlasting memory of its builder, a joy and edification for ever for the Viennese, as well as the stranger who stays here only a short time, to visit and admire it as one of the greatest architectural marvels. Ferstel has died almost in the prime of his career, for he was only fifty-five when death overtook him. His success may be said to have commenced with his years of study. Even as a student at the Polytechnic High School, during which he also attended lectures at the university, he carried off numerous prizes. When, after his attempted assassination, the Emperor Franz Joseph, at the suggestion of the Archduke Maximilian, resolved to erect a memorial church, Ferstel carried off the palm in the competition. The young artist,—only twenty-five,—beat more than sixty competitors, among them his teachers and masters, and thus entered at once upon a glorious career. Ferstel had to labour hard to complete his work, but with perseverance he succeeded. It was a proud moment for the architect to witness the consecration of the Votive Church on the occasion of the silver wedding of the imperial pair. Although this church is, as every one knows, Gothic, Ferstel worked in various styles. Like all architects, he had a preference for one style; but in all his public buildings he was perfectly free in his treatment from mannerism, and Vienna now possesses works by him in the Gothic, Romanesque, and Renaissance styles, each of which is a *chef-d'œuvre* of its kind, and a monument to its architect for ages to come. Heinrich von Ferstel was appointed in 1866 Professor of Architecture at the Vienna Polytechnic High School, and in 1879, on the occasion of the consecration of the Votivkirche, he was ennobled by the emperor."

The two principal works of the deceased

architect, the Vienna University Buildings and the Votive Church, have been illustrated in the *Builder*.

Last year the Royal Gold Medal of the Royal Institute of British Architects was awarded to Baron Ferstel, who was the thirty-fifth recipient of the Medal. An account of the presentation, together with a list of his works, will be found in vol. xlii. of the *Builder*, p. 700 (June 10, 1882).

BUDGET OF NEWS FROM SYDNEY.

SINCE the despatch of my letter in September last from New South Wales,* a few interesting events have occurred. Four days after it was posted the Exhibition building was burned down, and was a complete wreck in an hour's time. The fire was first seen at 5.20 a.m. by a watchman who was about leaving. I arrived on the scene by 5.50 a.m., when the sight was a grand one; the flames were spreading with a roaring voice, and soon the great central dome fell, followed at intervals by the four towers; the galvanised-iron sheets covering the roofs were whirled up into the air like so many sheets of brown paper, and some were carried a distance of two miles. Fortunately, the wind was blowing from the town in a north-westerly direction, for had the mass of flames reached the other side of Macquarie-street there was no knowing where the calamity would have ended. It having been erected only as a temporary building, the loss was trifling, and the Government had not insured it. The Government had, leech-like, gradually utilised parts of the building for various offices, which, with their contents, were uninsured, viz., the Census Office, Amsterdam Commission, Diamond Drills, Forest Conservancy branch, Occupation of Lands, Railway Surveys, Harbours and Rivers departments, the Technological and Sanitary Museum, Mining department, Fishing Commission, the Linnean Society, studio of Signor Ferrarini, and gallery of statues.

The greatest loss was in the Occupation of Lands department; during twenty years the documents of the pastoral runs had been collected, and there were no duplicates kept. The Trial Surveys of Railways was the next greatest loss; among these were routes that had been surveyed and approved of, and the contractors not having been made the surveys have had to be done over again, but as the routes have been tracked out it will not be such a heavy job to go over again. The draughtsmen lost all their instruments. The Queen's statue was under the central dome; it was smashed up like tinder, nor was anything saved. The building covered an area of 5½ acres, and the dome and towers formed the most conspicuous objects in Sydney. The Government was very slow in removing the building, and even now, seven months after the fire, the public are excluded from the grounds around it. The origin of the fire has never been discovered. Among the crowds assembled there was mostly a feeling of sorrow, but the youngsters were jubilant, saying it beat any fireworks exhibition they had ever seen. Among many of the well-to-do working classes there was a savage satisfaction, which was explained by a feeling of contempt shown towards them by the authorities, in charging for admission to the various concerts, flower-shows, and musical displays, at a rate too high to allow of their seeing them, and considering that it was a public building, paid for out of the public moneys, those in authority should have remedied this disgraceful state of things. Attention had been repeatedly called to the danger of a large gunpowder store on an island off Miller's Point. The Government was quite indifferent, but as soon as the exhibition was burned it very soon woke up to a sense of its duty, and had the explosive removed to a hulk in Middle Harbour, a few miles off.

On the 11th of November, the town was startled by the report of the sinking of the *Austral* steamer at her moorings in Neutral Bay. To most persons it appeared incredible, but there she was sunk. At the time of her sinking she was being loaded with coal for the voyage home. In order to economise labour, large port-holes had been made in her sides instead of hauling the coal over into the hold; the ship had a partition down its centre, and when 1,500 tons had been loaded on one side, the ganger of the coal-heavers did not notice the great list the ship had; the captain of the *Woonona*, that was discharging coal, was in

bed. At 3 a.m. a puff of wind sent the port-holes below water-mark, and soon the *Austral* went down; the crew and stewards were asleep, and it was with great difficulty they were roused up. Five were drowned, including three Arabs. The *Woonona's* crew had great difficulty in cutting the ropes to save them from being sucked in the whirl; fortunately the *Austral* sank in a muddy bottom in 52 ft. of water, and a small portion of her bow was above water. In London, a consultation was held, and instructions sent to block up all the port-holes and construct a strong coffer-dam around the upper part of the ship, which was done by the aid of 450 men, and on the 1st of March she was effectually raised by some steamboats, and stranded close by; the water in her smelt horribly, through the decay of provisions; some sharks were entombed in it. She was taken round to Biloela Dock, but at the high tide they were afraid to risk her entering. She is now at her anchorage where she sank, to be sent to her birthplace, and taking a load of coals to deposit at the Company's calling-places for coals. Her machinery was found to be uninjured, which is an important consideration; she cost 220,000*l*. The ship was unfortunate on her first voyage, when she had a slight accident to her machinery; on the second voyage she met with two accidents and had to arrive partly under sail, so that she was delayed in the return voyage, when the sinking disaster took place. It appears that before the vessel was completed the English Government chartered two of the Orient Company's boats to convey troops to Egypt; this caused a strain on the company's regular boats, and the contractors were urged to finish the *Austral* with all speed; the consequence was that the ship, although intended as the wonder of the age, proved the adage, "More haste, worse speed."

Our Parliamentary proceedings have been rather lively. At the end of the year the amended Land Bill came on for discussion; it was a patched-up affair, and as full of holes as an old tin kettle. The Government was defeated, and chose to resign, feeling sure of its popularity in being returned by their constituents. The elections were made in a very brief time, so that in several of the scattered constituencies there was not time for the voters to arrive, still less to discuss matters for whom to elect. Owing to the undue stringency of the new Licensing Act, the voters rejected most of the members who had promoted such a one-sided measure. Among them was the premier, Sir H. T. Parker, who had starred it through America and Europe, and been fêted and satiated into an Australian deity; at various places he tried to be elected unsuccessfully, but by a fluke he got returned for Tenterfield, a town of 1,810 inhabitants, in the north of the colony, the squatter who had been nominated telling them quietly that the late Premier would obtain a railway for Tenterfield purely out of gratitude for his having been returned, whilst he himself could never expect to obtain it by his personal influence. There was not time to nominate another candidate, it having been understood at Tenterfield that there was to be no opposition to the squatter. The sense of the elections is allowed to be carried out in a peculiar manner. Mr. McIlhove, the member who had been the chief cause of the resignation of the Ministry, determined to oppose the late Premier in East Sydney, simply for the sake of opposing him, and was successful. He is then allowed to resign on purpose to be returned for his former seat, the Upper Hunter, where he succeeds. A fresh election has to be made for East Sydney, the most important constituency in the colony. One of the members elected was Mr. Copeland, who was appointed Minister for Works, when a third election had to be gone through, and, of course, he was returned, the peculiarity being this, that although it is the richest constituency in Australia, it has no public hall for municipal or election purposes; the consequence was that a wooden structure of two stories was built, and pulled down no less than three times during the last election, which was a very disgraceful economy on the part of the municipal authorities. In consequence of Mr. Stuart being elected Premier, he had to be elected again for Wollongong, which was only a matter of course. Yet is he opposed by Dr. Renwick, the late Minister for Mines. How he could ever have allowed himself to enter the lions' den in the teeth of a newly-elected Premier surpassed my comprehension. His friends the late ministers all crowded for him, but in vain. Soon after the session began

* See *Builder*, vol. xlii., p. 633.

measures were very promptly passed, and the go-ahead propensities of the new Ministry contrasted strangely with their predecessors' doings. The member who had been the great element in the break-up of the Ministry refused a portfolio, saying he preferred being unfettered. His forte is opening up abuses, inquiring into doings of past legislators, and correspondence on various subjects relating to any dirty Parliamentary work. When meeting with opposition, he becomes irritable, very abusive in his expressions, and sometimes foams at the mouth. He is of Irish descent, and has gained a competency in the wool and hide business. This session he met a most stalwart opponent in Mr. A. G. Taylor, twenty-five years of age, 6 ft. 3 in. in height, stout in proportion, fearless in debate, a very fluent speaker, and a great exposé of political jobbery, being not at all particular in his words of whom he speaks. His hobby seems to be to let out personal expressions concerning his opponents, when the Speaker calls him to order, and requires that he will retract the offensive expressions, which he always does, but winds up with something still more personal to the sense of the honour of the House, and then he has to bring forth the unreserved apology, which he does quite elegantly. The hostility between the two candidates came to a pitch in February, when a challenge was thrown down by the Mudgee youth that they should both send in their resignations and contest one another. This was accepted. At Mudgee the contest took place, and the stalwart youth was returned, while the Irish champion was returned for his old electorate, much to the disgust of all well-meaning politicians, both in and out of the House, who had sincerely hoped to see them both excluded.

Since the passing of the new Licensing Act, the machinery of the press of the leading journal of the colony has frequently broken down, as also was the case with the duplicate cable laid to Europe.

While these scenes were performing, Mr. Redmond, an ex-M.P., came out from England to lecture on the Irish grievances and distresses, in order to collect funds for the Land League. By some colonists he was warmly supported, but the majority were against his mission being introduced into these colonies as uncalculated for, and as inciting quarrels and reckless crowds. An anti-Irish meeting was held in the Protestant Hall, the late Premier being a prominent speaker. When he had finished a section of those in the hall, who had evidently come to upset the meeting, began their row: chairs, forms, and tables were taken up, smashed into splinters over men's heads; the police were utterly powerless, being only a few; the crowd from outside pushed rows of spectators down from the gallery into the pit below; the Premier had great difficulty in escaping; a cabman valiantly coming up, the cab was surrounded by his friends, who beat the rioters off, they flinging stones as hard as they could. A week after this the Irish Agitation Question meeting took place, with Mr. Redmond for its leader, and, although the Government was known to be against it, yet did the Minister for Works choose to be there, in gratitude, as he said, for the support of the Irish voters, to whom, he said, he owed his election. In spite of his friends' persuasions and attempts to silence him he made such a speech as seldom falls to the lot of a leading journal to chronicle. The result was his ultimate resignation. The second reading of the Amended New Licensing Act resulted in an amendment that, instead of travelling five miles on Sunday, people should not go less than 500 miles for a drink at a "pub." while the third reading brought it down to ten miles. The Legislative Council, instead of being satisfied, chose to make it twenty miles in the county of Cumberland and ten miles in other counties, which is perfectly unwarrantable in a tropical climate, and those who voted for such a measure ought to be compelled to walk twenty miles themselves before they had a drink; nor would they sanction the stopping of drinks in clubs on Sundays. The amendment allowed of "Bush" hotels paying a licence of 15*l.* should the district magistrates think fit to call for it. It had caused the "Bush" publicans to rob men who came to them with their year's cheques from the nearest station. They literally spend a year's wages in the "pub." in a few days, and a case was quoted recently in the *Bulletin* where a master, who knew that his labourer was spending his money there, sent to the publican asking him to get the fellow round soon, to which the Boniface

answered that he was doing it as quickly as he could, for the fellow had had forty-five drinks that morning before breakfast!

That a Colonial Government, which is prosperously opening up its resources of gold, minerals, and coals in various quarters by means of railways, should persist in overlooking the claims of travellers to accommodation at public-houses in its great travelling centre, proves to reasoners that the Legislature out here is composed of a factious and unreasoning body that will be spoken of with contempt by a future generation. The purposes for which the houses were enlarged was solely for travellers, yet if one goes to them for a night's lodging, as a rule he is refused. A class of houses should be instituted in opposition to the present system, where those who accommodate travellers should pay but a third of the licence fee paid by those who sell drink alone. The teetotallers would show wit and sincerity were they to commence the move of introducing light colonial wines among the working classes such as are sold in New England at 4*d.* per pint in place of agitating against the fiery drinks and adulterations that are unchecked at public-houses, simply for the sake of a paltry revenue, that might, with advantage, be reaped from other sources over these perpetual amendments. I can only foresee fresh perplexities in the future of public-houses. The Municipal Council have had an interesting time of it since my first letter. To a stranger who sifts matters out here there has always seemed to a taint of corruption that occasionally leaks out in a very unpleasant fashion. The Coonanbarra hat affair last year promised a harvest to lawyers and newspapers. It appears that on some festive occasion the Mayor wished to give the aldermen and their friends a picnic; for that purpose it was intended to hire the Coonanbarra steamer. The matter was entrusted to an energetic and most prominent aldermanic teetotaler, whose good name was as the smell of violets. It seems the crew had been promised white hats, which they never received; the Mayor had paid for them to an individual, who stuck to the money. Subsequently splits among the aldermen revealed that a lot of jobbery had been practised. The Mayor was willing to pay it out of his own pocket, having plenty of money, but the council protested against it, wanting to bring the wrong-doer to justice. The latter gave back the money for the hats and talked of bringing an action against the Mayor for slander, damages 20,000*l.* The Mayor's action is to come off this month, when strange revelations are expected. J. B. WATTS.

THE CLEANING OF WATER-PIPES.

At a recent meeting of the District Association of German Engineers at Karlsruhe, Herr Merz explained the principles on which the selection of the material for water-pipes should be based. He considered cast-iron the best substance to meet the requirements of the case. Some pipes are not affected by the water which flows through them, while others, after a few years, are so incrustated that it is a question whether they can be used. The deposits consist, for the most part, of oxide of iron and carbonate of lime, and the removal of these incrustations is a fundamental part of any system of water-pipes.

Three methods are suggested by Herr Merz for arriving at this result:—1. The removal of the pipes, which are subsequently heated, and from which the incrustations are afterwards scraped. 2. The dissolving of the deposits by means of acids, &c. 3. The mechanical purification of the pipes by the removal of the deposits before they become hardened, scrapers, brushes, &c., being used for this purpose.

By the employment of the first method the cost is said to be about two shillings per running yard, being a saving of about 75 per cent. as compared with the expense of new pipes. The second plan (first used by Arcet) costs about the same.

The third method was described in a detailed manner by Herr Merz, who exhibited models illustrating its application at Nuremberg and Karlsruhe. A rope or chain is introduced into the portion of the water-pipes which requires cleaning, and by means of this contrivance a brush of a size to correspond with

the diameter of the pipe, is drawn to and fro until the deposit has been removed. The water is allowed to flow as usual during the operation, so that any particles of the deposit which are dislodged are carried away at once. Herr Merz has devised a brush for use in cases where the pipes bend a good deal. At Karlsruhe the entire water-pipe system has been cleaned by this process, the total length being about 24,000 yards, of a diameter of 8½ in. to 13 in. The operation took 78 days and cost 114*l.*, being at the rate of about 1*d.* per running yard.

EXCAVATIONS AT ROME.

The excavations carried on at the instigation of Professor Lanciani at the Minerva Temple in Rome have brought to light recently a stone monument, an obelisk, 3,300 years old, dedicated to one of the oldest anti-Semites, the Egyptian king Ramses, called by the Greeks Sesostris, who is known to history as the oppressor and expeller of the Jews. This gigantic piece of granite is entirely uninjured, so that its erection in front of the Collegio Romano may be at once proceeded with. Of the hieroglyphic inscriptions covering its four sides, the first, according to the translation of O. Marucchi, runs as follows:—"Gold, mighty bull, favourite of truth, king of Upper and Lower Egypt, son of the sun: Ramses, loved by Ammon, subjected every country by his power, mighty sun of justice, elected by the sun, loved by Harmachis of the two horizons." The second reads:—"Gold, mighty bull, son of the god Alum, king of Upper and Lower Egypt, mighty sun of justice, elected by the sun, son of the sun: Ramses, loved by Ammon, king of Upper Egypt, whose thought is like that of Osiris, the ruler of the crowns. Ramses, loved by Ammon, loved by Harmachis of the two horizons." The third runs:—"Gold, mighty bull, loved by justice, mighty sun of justice, son of the sun: Ramses, loved by Ammon (made) these times. Lord of the world, mighty sun of justice, elected by the sun, loved by Harmachis of the two horizons." The fourth side, upon which at present the colossus lies, has not yet been deciphered. A beautiful sphinx has also recently been found at the same spot.

ARMENIAN ANTIQUITIES.

A MEMBER of the Ephorate of the celebrated Armenian monastery at Erseindjian, in Asiatic Turkey, recently sold to a French archaeologist who was travelling in those parts several interesting relics of ancient Armenian art belonging to the church of the place in question. The relics consist of four pictures of saints artistically worked upon velvet, and are many centuries old. The traveller at first bought two of these objects, and sent them to Europe. He was afterwards requested to purchase any other he could find, and succeeded in securing the remaining pair. It had been the custom to display these four pictures at certain festivals of the Church, and it was not long before their absence was remarked. On being called to account, the Armenian who had disposed of them confessed that he had sold the precious relics for 11*fr.* It was believed that they had only been sent to Smyrna, and the Armenian Archbishop, Melchisedek, of that city, was requested, if possible, to recover them. The purchaser, however, who was in Smyrna, declared that he had sent them to Europe, and that it would be necessary to apply to the present possessor. The Armenian papers, in reporting the case, state that the relics are worth a thousand times as much as the Frenchman gave for them. The property of Karabet Kurdian, the native who unlawfully disposed of the pictures, is to be confiscated; but little hope is entertained that they will ever again reach the hands of their rightful owners at Erseindjian.

Venice.—A correspondent writes:—"I never remember the smells so bad at Venice as this summer, and they are even worse on the Grand Canal than elsewhere. This, no doubt, arises from the constant stirring up of the water, and consequently also the solid deposit of sewage matter forming the bottom, by the new steamboats. While all the sewage of the city is deposited in the canals, it is clear that at least in the hot season the water should be disturbed as little as possible."

PROPOSED METROPOLITAN STREET IMPROVEMENTS:

AND NEW COMMUNICATIONS NORTH AND SOUTH OF THE THAMES.

At the meeting of the Metropolitan Board of Works on the 13th inst., the Works and General Purposes Committee presented an important report, recommending the Board to apply for power to construct three bridges or tunnels for the accommodation of the north and south traffic eastward of London Bridge; to widen Whitehall to Parliament-square by clearing away Parliament-street, or rather by throwing Parliament-street and King-street into one; and to make improved communications between Holborn and the Strand, in the vicinity of the Royal Courts of Justice, and to effect certain improvements in the Strand itself in the neighbourhood of the Law Courts. The report concluded as follows:—

"The conclusion at which your committee have arrived is that it is, in the interests of the public, desirable that the Board should endeavour to carry out all these undertakings. With reference to the question of cost, it is manifest that whatever may be the particular plans ultimately decided on, a very considerable expenditure must be involved, and your committee have accordingly considered the financial aspect of the question. The Board have already made representations to the Government as to the expediency of continuing the Coal and Wine Dues, which are now leviable only till the year 1889, and if the Board is to undertake the extensive and costly works of utility and improvement referred to in this report, it will be more than ever necessary that the time within which these dues may be levied should be prolonged. The resolution which your committee beg to submit for adoption by the Board is as follows:—

"That the Board do proceed to obtain power, in the next Session of Parliament, to construct communications across the Thames, east of London Bridge, to widen Parliament-street, and to improve the approaches to the Law Courts; and that, for the purpose of carrying out the same, Parliament, through her Majesty's Government, be asked to sanction the extension of the Coal and Wine Dues."

Mr. Selway, in moving the adoption of the report, pointed out that a very large portion of the population of the metropolis was east of London Bridge, and that below London Bridge, with the exception of a small foot tunnel, there was no communication between the north and the south. The want had been felt by the Board for a very long time, and it was referred to the Works Committee to consider the best means of providing such communication or communications. In August last the Engineer brought up a report in which he recommended the provision of three modes of communication, one by means of a bridge, and the other two by means of tunnels, at a total expense of over five millions of money. The Board, thoroughly admitting that there was a necessity for some such means of communication, applied to the Government for assistance with regard to the provision of the ways and means. The three means of communication referred to in the report were matters of very great magnitude, and they would be of very great importance to the community lying eastward of London Bridge, but he wished it to be distinctly understood that the committee did not pledge itself to the precise sites of these communications, nor did they pledge themselves to the precise modes of communication. There was much difference of opinion in the committee on the subject, as to whether, for example, the communication nearest London Bridge should be a high-level or a low-level bridge or a tunnel. Upon these points the committee had not yet come to a decision, but they thought it was now time that they should lay before Parliament some scheme embracing these modes of communication. Then with regard to the street improvements. The Government had called their attention to the necessity for widening Parliament-street, although it was hardly necessary that the Government should have called their attention to that matter, as it was obvious that there ought to be a better approach to the Houses of Parliament than there was at present, and it would be a grand thing if Whitehall could be continued the same width to Parliament-square. It was also a matter of urgent necessity that the approaches to the New Law Courts should be improved, but as to the nature of the improvement to be effected there were many differences of opinion. He thought the Committee had had some seven or eight different schemes before them. To the

extent of either of these street improvements the committee did not ask the Board to pledge itself. Up to the present time they had had no detailed estimates, but he thought that the expenditure on the matters referred to in the report would be something like seven or eight or even nine millions of money. That was much too large a sum to throw upon the rates of the metropolis. The Coal and Wine Dues would cease in 1889. If they were not renewed we must look forward to a considerable addition to the rates without any further improvements being undertaken.

The motion was, after some discussion, agreed to by thirty-three to three.

THE INDUSTRIAL EXHIBITION AT CORK.

This Exhibition, opened on the 3rd inst., is one of some interest and extent, and it has been promoted in the interests of Irish industries, to which we wish success, together with peace and happiness for the inhabitants of the Sister Isle. The origin of the Exhibition is somewhat curious, being entirely owing to circumstances almost accidental in character. At a meeting of the County Cork Agricultural Society held on the 7th of October last, the question was raised as to where the next show of the Royal Agricultural Society of Ireland should be held. Cork initiated steps for having the show in the south. A warm but friendly controversy took place between Limerick and Cork, and the Royal Agricultural Society threw in its vote in favour of Limerick. A large indemnity fund had been subscribed in Cork, and, on the suggestion of Alderman Nagle, this fund was devoted towards the foundation of the movement for an Industrial Exhibition. At first the suggestion was not received with that enthusiasm which has since characterised the exertions of those connected with the project, as the time and the then condition of the country seemed unfavourable to a display of material wealth; but by degrees the matter was taken up by the Corporation and other public bodies, and then its progress was merely a matter of time. After the inception of the project the Executive Committee left nothing undone to insure its success. The Corn Market trustees granted the use of their market, an admirable site, and the erection of the necessary buildings was commenced. The Exhibition buildings occupy close on four acres of ground. The structure consists of a great central hall, from which are built thirteen avenues, separated by light pillars. The hall of the Corn Exchange itself has been utilised as the main entrance-hall. It leads from the river front directly into the great hall, which is about 200 ft. long. The thirteen avenues surrounding the great hall are each about 400 ft. long. The building is almost wholly composed of timber. The whole is lighted by the electric light. The exhibits are numerous and important. Every branch of industry in Ireland, and many of the more important in England, are well represented. The progress that Ireland has made in the manufacture of various materials of ordinary commerce is abundantly and significantly shown, while the reality of the recent home manufacture movement is strongly attested by the revival of trades that for some years past had been allowed to languish almost to extinction. English and other exhibits in the heavier materials are not numerous, but this will be accounted for by the fact that the Exhibition has not aspired to the character of an international or a universal display. Special inducements and rewards were offered to stimulate working men to become exhibitors, and a committee was appointed with a view to securing as a result of the Exhibition the establishment of a technical school for the city.

The buildings in which the Exhibition is being held have been erected from the plans and under the direction of Mr. Walker, architect, by Mr. Delaney, contractor. In connexion with the opening ceremony there was an imposing trades' procession, in which the representatives of the building trades in Ireland took a prominent part.

Art appears to be well represented in the Exhibition, and the authorities of the South Kensington Museum having contributed a loan collection.

An interesting portion of Class II, Section B, is that devoted to the entries for the Villiers Stuart prize for models of labourers' cottages.

Mr. Stuart, M.P., has offered a prize of 50l. for the best plan and model, at a scale of 1 in. to the foot, of a labourer's cottage, the cost of erecting which is not to exceed 52l. 10s. There are thirty entries, amongst those who have sent in plans being Mr. J. M'D. Bermingham, 46, Lower Gardiner-street, Dublin; W. P. Butler, 5, St. Mary's-terrace, Monkstown-avenue, county Dublin; Mr. M. J. Dorney, 62, Dawson-street, Dublin; Messrs. Miller & Symes, 197, Great Brunswick-street; G. P. Sheridan, 5, Granby-row, Dublin; Mr. James Howard, Charlemont-street, Dublin; and A. and S. Main, 11, Leinster-street, Dublin.

This is the second Exhibition held in Cork. The first took place in 1852, and was the precursor of the International Exhibition held in Dublin in the following year. The exhibits of the present Exhibition are in number greatly in excess of those at the Exhibition of 1852, while they cover twice as much space. There are 800 Irish exhibitors, a number considerably in excess of that at any previous Irish Exhibition, national or international, that held in Dublin in 1853 excepted.

DISASTERS ABROAD.

The Brooklyn Bridge Disaster.—One of the consequences of the shocking catastrophe that occurred on the new Suspension Bridge between New York and Brooklyn, on the 30th of May last, has been that there have been ten actions brought for damages against the municipal authorities of the two cities and against the managers of the bridge. The prosecutors are mostly children and women, who were dependent on persons crushed to death in the fatal rush on the day in question. The total amount of their claims is 200,000 dollars.

Destructive Tornadoes and Thunderstorms.—During the present summer destructive cyclones and thunderstorms have prevailed in most countries of the Northern Hemisphere. India has suffered much from inundations caused by the excessive rainfall. At Surat no fewer than 6,000 houses have been destroyed, and numerous villages, with all their human inhabitants and domestic animals, have been literally swept away. Railway traffic has been suspended, and the loss of life and property is enormous. Destructive thunderstorms are also reported from various parts of the European Continent. One of the most singular occurred at Lapte, in the Department of the Haute Loire, in France. While the congregation was assembled at mass in the church, the lightning struck the building, killing two persons on the spot and severely injuring upwards of one hundred others. In America, and particularly in New York and the New England States, violent cyclones have prevailed, causing great destruction of life and property. At Crenwell, near Hartford, in Connecticut, a tornado swept down every house in its course, killing fourteen persons. At Lindenau, near Leipzig, a terrible disaster occurred on the 9th inst., showing the danger to which those engaged in building may be exposed in a storm. Suddenly, almost without any warning, a cyclone sprang up at the village in question, where twenty-eight workmen were occupied in finishing the topmost portion of the spire of a new church. On noticing the enormous violence of the wind, the foreman, who was below, called on the workmen to descend from the scaffold immediately, and nine of them succeeded in doing so; but before the other thirteen could get down, the whirlwind caught the building and blew the spire, ladders, and scaffolding to the ground. Five of the men were killed on the spot. All the others had broken limbs, and several are not expected to recover. About the same time the lightning struck a cottage near Brunswick, killing a mother and her four young children instantaneously, though doing no damage to the building.

Workhouse Enlargement, Greenwich.—At the meeting of the Greenwich Board of Works on the 12th inst., the Building Committee recommended that the plans of Mr. Wallen, architect, for enlarging the workhouse, at a cost of 14,240l., be approved by the Board, subject to an alteration proposed by the Local Government Board. The recommendation was agreed to, and the plans were directed to be forwarded to the Local Government Board for final approval.

NEW HOSPITAL AT ROME.

The technical press on the Continent has given currency to the details of the competition opened by the Italian Government for plans of a suitable kind for the above work. The requirements are of a comprehensive nature, and, according to the official notice issued by Signor Baccelli, are to include the necessary administrative offices, a medico-chirurgical hospital of 450 to 500 beds, and a number of special departments for various classes of diseases. The hospital and polyclinical branches are to be constructed on the pavilion system, with buildings one story high. The separate wards are not to contain more than sixteen to eighteen beds.

In sending designs, architects have to furnish a general plan on the scale of 1 to 400. The plans of all the buildings are to be on the scale of 1 to 200. A principal view of the entire work is also required on the scale of 1 to 200, and the most important portions of the separate buildings are to be shown upon the scale of 1 to 100. An explanatory report is to be appended, and an estimate is to be furnished, showing that the entire work will not cost more to execute than eight million lire (320,000*l.*). The designs have to be sent in anonymously (but provided with mottoes) by October 11th. Fourteen days previously to that time the receipt of plans will commence at the Municipal Chancellor's Office in Rome.

The selection will be entrusted to a committee named by the Minister of Public Instruction, and consisting of architects as well as physicians. The best design will receive a premium of 400*l.*, and the two next best ones 200*l.* each. The Government acquires the property of the prize designs, but retains complete liberty as to the choice of the one to be carried out. The necessary details are sent to intending competitors by the Building Office at Rome (*Edilizia di Roma*).

CEMENT FOR STONEWARE PIPES.

A CORRESPONDENT of the *Thonindustrie Zeitung* has called attention to the question of repairing flaws in pipes in such a manner as to give them a good appearance. He admits that for many purposes, if the flaws are not too decided, the pipes are quite as serviceable as if the defects did not exist, but on account of the want of uniformity he considers that the employment of such pipes is in a number of instances not allowable. Being really imperfect, any attempt to hide the flaws should, he considers, be regarded as a deception. In the same way, any interference with the colour of pipes is deprecated, inasmuch as this is one of the few means by which experts can judge of their quality.

THE GERMAN CEMENT INDUSTRY.

The *Thonindustrie Zeitung* lately called attention to the progress which is being made by the above industry, notably with respect to the increased favour with which its products are received in other countries, and the extent to which the imports of the English article have been reduced within a short time. It is remarked that the imports apparently from Holland, Hamburg, and Bremen really originate, to a great extent, from England, the cement having come through Dutch and Hanseatic ports in transit.

The marked development of the exports to Hamburg is conjectured to indicate an indirect trade of growing importance with the United States and other Transatlantic markets in which German enterprise has of late years been specially active. In Russia the heavy protective duties and the partiality shown in that country for the domestic cement industry have contributed to invest the trade in the German article with difficulties of an appreciable nature. The importance of the receipts from France is attributed to the excellent system of canals in Alsace and Lorraine, by means of which the French manufacturers have special advantages for continuing relations with those provinces. Italy is considered as practically a new market, only really open to the German manufacturers since the construction of the St. Gothard tunnel. The trade with the United States is also regarded as an outlet of future importance to the German industry.

As to the statistics of trade with England, it

is remarked that the receipts are probably used at the ports and in their immediate vicinity, while the internal commerce of Germany has taken largely increased quantities of the home-manufactured article. It is supposed that the exports to Bremen represent to some extent cement intended for England, but it is admitted that the general introduction of German cement into the English market will be a matter of more than ordinary difficulty. The following table shows the totals of imports and exports for the period under review:—

	1880.	1881.	1882.
	Tons.	Tons.	Tons.
Imports ...	30,624	28,206	25,175
Exports ...	211,465	234,896	249,074

LIME IN THE EYES.

THE *Baugewerks-Zeitung* lately called attention to the efficacy of sugar and water in allaying the unpleasant smarting caused by particles of lime getting into the eyes. Water alone is not by any means so efficacious, but there is a chemical action produced by the combination of sugar and lime which arrests the corrosive effects of the latter substance alone. It is sufficient to place in the hand a small quantity of sugar, and after pouring some clean water on it to apply the mixture to the eyes, when the pain almost immediately diminishes.

A MEDÆVAL MANSION IN THE MARKET.

SAMLESBURY HALL, situated about four miles from Preston, was offered for sale last week, at the Bull Hotel, Preston. It is well known as one of the most ancient baronial residences in the country. It was built by the De Samlesburys in the thirteenth century, during the reign of Edward III. In the early part of the sixteenth century it passed into the possession of the Southworth family, and in 1532 it was restored in the Tudor style by Sir William Southworth. It remained in the possession of the Southworth family until about the commencement of the eighteenth century, when family reverses compelled the Southworths to dispose of themselves of it, when it became the property of the Bradyls, an ancient Lancashire family belonging to Whalley, which family also became possessed of Whalley Abbey soon after the dissolution of the monasteries. The Bradyls, however, took very little interest in the mansion, doing nothing to preserve it, and it was allowed to a great extent to fall into a state of dilapidation. During its ownership by the Bradyls it was converted into an hotel, under the name of the "Old Hole," and for many years it was the resort of large numbers of visitors from Preston, Blackburn, and other parts of Lancashire, who repaired to it for the purpose of inspecting the ancient mansion both externally and internally, for although it had been neglected for many years its interesting carving and wood work remained. About twenty years ago the mansion and grounds passed into the hands of the late Mr. J. Harrison, of Blackburn, who at once proceeded to restore it to something like what it was as an ancient baronial residence. The substantial features of the building had, however, suffered little from the hand of time, and the work of restoration carried on by Mr. Harrison involved not demolition, but consisted of a careful and judicious adaptation of all minor additions to the style of architecture of which the building was such a noble specimen. One of the finest rooms in the house is the banquetting-hall, which contains some fine specimens of carved woodwork. Another noble room is the great hall, 35 ft. in length and 36 ft. in width. Its height from the floor to the springing of the roof is 14 ft. 6 in., and to the ridge 29 ft. 7 in. It has been described as an excellent specimen of fourteenth-century work. There is an elaborately carved screen of dark oak at the south end of the hall supporting the minstrel's gallery, dated 1532. The property offered for sale consisted, besides the mansion and manorial rights, of 540 acres of land divided into eleven farms, together with three public-houses situated in different parts of Samlesbury. The mansion, grounds, and farms were first offered in one lot, as it had been undivided for 600 years. The first bid made was 20,000*l.*, and 27,000*l.* having been reached with no further advance, Mr. Walton, the auctioneer, announced the reserve

to be 33,000*l.*, stating that 23,000*l.* had been expended on the mansion and grounds since its purchase by the late Mr. Harrison.

The farms and other portions of the property were then offered in separate lots, when some of them were sold.

NEW BANK BUILDINGS AT PECKHAM.

AMONGST the improvements which have resulted from the widening of the main thoroughfares in Camberwell and Peckham is the rebuilding of the London and South-Western banking premises at Peckham, which have just been completed and opened for business. The new building, which is situated in High-street, immediately opposite to Rye-lane, has a handsome and commanding frontage upwards of 60 ft. in height, and containing four floors. The width of the elevation, however, is limited to 12 ft. An entrance corridor gives access to the main banking premises in the rear, which occupy a ground area of about 2,400 superficial feet. On each side of the ground-floor portion of the elevation which leads into the corridor from which the bank is approached, polished Shap granite columns, on grey polished granite bases, support massive carved cantilevers in Portland stone, these being surmounted by a bold projecting coving, between 4 ft. and 5 ft. in width, forming a balcony at the foot of the first floor. The three upper floors of the elevation are also faced with Portland stone, relieved by pilasters and columns in Corsehill stone, the pediment and arched windows having a profusion of carving. The third floor windows are in the form of ornamental gablet dormers, with vases at the angles. The elevation is finally surmounted by a Mansard roof, covered with Vieille Montagne zinc. The interior of the building throughout is very elaborately decorated. The corridor and vestibule leading to the banking-house has a coved ceiling and cornice resting on coupled Doric columns. The banking-house itself is likewise very richly decorated. It is a spacious apartment 50 ft. by 30 ft. It has a coved ceiling resting on Ionic pilasters and columns in Serpentine, Belgian, Devonshire, and other marbles, of varied colours. It is 27 ft. in height from floor to ceiling, having a central lantern-light glazed with embossed plate glass. The flooring of the banking-house in front of the bank counter is paved with mosaic. The manager's room, and the clerks' retiring-rooms and other apartments, are at the rear of the banking-house. Spacious strong rooms in the basement, immediately under the banking-house, and connected with it by a lift, have been fitted up by Milner's Safe Manufacturing Company, and contain several fire-proof doors. The upper floors contain the manager's residence.

The architects are Messrs. Edmeston, of Old Broad-street, and the contractor is Mr. William Shepherd, of Bermondsey. Mr. Govett being clerk of the works. The carving was executed by Mr. Seale, of Walworth.

HENGLER'S CIRCUS IN THE AUCTION MARKET.

PROPERTY IN ARGYLE-STREET.

LAST week Messrs. James Beal & Son submitted for sale at the Auction Mart a freehold building estate in Argyle-street, Regent-street, comprising the building until recently occupied as Hengler's Circus, together with the adjoining property Nos. 6 and 7, Argyle-street, the whole containing an area of about 25,000 square feet. The property was described as containing a very eligible site for the erection of a first-class West-end club and chambers, a colossal hotel, or a theatre, restaurant, concert-rooms, and club chambers combined. It was stated that No. 7, Argyle-street was formerly the site of the town mansion and gardens of the late Earl of Aberdeen, and that about twenty years ago a portion of this site was excavated to a depth of 25 ft. below the pavement-line, and was then covered over with groined arches, which are now occupied by Messrs. Haig & Co. as wine-cellars, under their ground lease, at a rent of 600*l.* per annum, for a term of years expiring in 1962. It was pointed out that over the principal portion of this large area the tops of the arches are 8 ft. below the pavement in Argyle-street, allowing ample room for a basement story to any future erections which might be substituted for the present circus. It was

added that the arches and buildings in connexion had been most substantially erected, nothing except Portland cement and blue lias having been used, and the thickness of the walls exceeding the requirements of the Metropolitan Building Act, so as to fit them for carrying the largest and heaviest superstructure that could possibly be erected on the spot. The auctioneer observed that Mr. Hengler erected the whole of the circus at a large outlay, and occupied the premises for twelve years at a rental of 1,200*l.* per annum, but that this portion of the property was now estimated to be worth 1,800*l.* a year on a building lease. The entire estimated annual value of the whole of the property in its present state was said to be 3,600*l.* The bidding commenced with an offer of 20,000*l.*, upon which an advance to 30,000*l.* was at once made, and 50,000*l.* having been reached the biddings stopped, on which the auctioneer announced that his reserve was 65,000*l.*, and there being no advance the property was withdrawn.

THE SEA WALL EXTENSION AT EASTBOURNE.

JACKSON V. THE LOCAL BOARD.

A DISPUTE is now going forward between the Eastbourne Local Board and Mr. Jackson, the contractor for the eastern extension of the sea wall, in which the latter claims 7,000*l.* from the Local Board in respect of damages which he has sustained in consequence of the Board having failed to erect groynes in front of the sea during the progress of the construction of the wall. The dispute has been referred to Mr. Harrison Hayter as arbitrator, and last week it came before that gentleman in one of the rooms at the New Law Courts.

Mr. Jackson the contractor's case is that in April, 1880, his tender of 16,923*l.* for the construction of the extension of the wall was accepted. He immediately placed a quantity of plant on the ground with the view of commencing operations at once, but he was confronted with a difficulty at the first instance, being unable to obtain possession of the land whereon the works were to be carried out, having found the ground occupied by a number of fishermen who claimed the right to have their boats on the shingle at this spot. He laid a tramway along the face of the sea, but he was so constantly interrupted that the works were greatly retarded, and he remonstrated with the Local Board several times, but the reply made by the Board was to the effect that he had been put in full possession of the land, and if the fishermen obstructed he might take measures to rid the beach of them. The obstructions continuing, the work had for a time to be abandoned, and it was not until the latter part of May, 1881, that entire possession of the ground was given up and the work resumed. During the progress of the works the contractor pointed out to the Local Board the necessity of groynes being constructed in front of the wall, but the Board repudiated any obligation to do this, although it was contended that they were bound by their own statutes to do all that was reasonably necessary to secure the safety of the wall during the course of its construction. In October, 1881, the wall which the contractor had constructed to the extent of 350 ft. in length,—the entire length to be executed being 1,800 ft.,—encompassed to the force of the heavy sea, which was attributable entirely to the need of the groynes, which, it was contended, came within the definition of the Act that all reasonable precautions should be taken against the encroachments of the sea during the construction of the walls. After the destruction of the wall the contractor wrote to the Board refusing to go on with the work in consequence of the absence of groynes, and this was followed by the Board taking possession of the contractor's plant and proceeding with the work themselves, but, as showing their liability for the damage which had been done, not before they had taken the precaution to lay down several new groynes immediately in front of the wall. In support of the contractor's claim against the local Board, it was shown that a joint report of Mr. Abernethy, C.E., and Mr. Stileman, C.E., stated that the failure of the wall was due to the removal of shingle, brought about by the absence of groynes.

On the part of the local Board it was urged that when the contractor sent in his tender he did not stipulate for new groynes, and that the

Board were not responsible for the damage to the wall. It is also part of the Board's case that the contractor in refusing to go on with the work had broken his contract.

The hearing of the case stands adjourned until after the long vacation.

CASE UNDER METROPOLITAN BUILDINGS ACT.

FLOOR AREA AND CUBICAL CONTENTS.

At the Mansion House, on the 13th inst., Mr. Ebenezer Lawrence, builder, of 16, Wharfedale, City-road, attended before Mr. Alderman Waterlow on a summons at the instance of the Metropolitan Board of Works, charging him with infringing the second sub-section of the twenty-seventh section of the Metropolitan Buildings Act, which provides that separate sets of chambers or rooms tenanted by different persons shall, if contained in a building exceeding 3,600 square feet in area, be deemed to be separate buildings, and be divided so far as they adjoin vertically, by party-walls, and horizontally, by party-arches or fireproof floors.

Mr. Besley appeared in support of the complaint, and Mr. Freeman for the defence.

Mr. Besley said the facts were not in dispute, but the case involved a point of law of much importance to all concerned in the erection of buildings in the City. The building in question, No. 21, Mincinglane, was being erected as offices and chambers for merchants in the colonial trade, and the point was whether as such it came under the provisions of the sub-section under which the summons had been taken, or whether it was a warehouse, which was not liable to be divided by party-walls except in case it exceeded 216,000 cubic feet. It would be a very novel definition if merchants' offices were to be regarded as warehouses. The Act was a most important one, and it was very necessary it should be carried out. Its object was to prevent as far as possible the spread of fire; and especially in the city, where the streets were narrow, and where offices and warehouses were closely intermixed, it was desirable that every protection which could be afforded by the erection of party-walls and fireproof floors should be provided. The building extended to a depth of 99 ft., had five floors, and exceeded the statutory area of 3,600 square feet by 521 ft. He contended that the building came under the provisions of the sub-section under which the case was instituted.

Mr. H. H. Collins, District Surveyor of the eastern division of the City, having been examined in support of the summons,

Mr. Freeman, for the defence, said the decision of the Court on the point would affect a large amount of property in the City. The building belonged to the City of London Real Property Company (Limited), who had been erecting similar premises in the City for the last twenty years without any objection on the part of Mr. Collins's predecessor. They contended that the building did not come within the scope of the 2nd sub-section, but of the 4th, which provided that every warehouse or other building used either wholly or in part for the purposes of trade or manufacture containing more than 216,000 cubic feet, should be divided by party-walls in such manner that the contents of each division should not exceed the above-mentioned number of cubic feet.

Mr. Edward I'Anson, District Surveyor for Clapham and Battersea, and Mr. Edmund Woodthorpe, District Surveyor for the Northern Division of the City, gave evidence to the effect that in the erection of similar buildings they had dealt with them in respect of their cubical contents, and not in regard to their areas, as Mr. Collins had.

Mr. Alderman Waterlow said the question was a very important one, and it was quite right that Mr. Collins, the District Surveyor, should have raised it, though he did not agree with him. It was exceedingly important for the protection of property that buildings and offices should be divided by party-walls and fireproof floors, but he could not override the words of the Act, which brought buildings "used either wholly or in part for the purposes of trade" within the 4th sub-section, and not within the 2nd. He should hold that the office in question came under that category, and he should dismiss the summons.

Mr. Besley said the Metropolitan Board of Works would appeal against that decision.

Monumental Structure at Metz.—The *Schweizerische Bauzeitung* states that it is intended to erect a monumental structure at Metz, in the part of the city known as the Buttes Charles V. The object of the work is to provide a resting-place for the remains of the soldiers who fell in the various battles around Metz during the war of 1870, and who were buried in the neighbourhood. The estimates of the cost vary from 25,000*l.* to 50,000*l.*

INTERFERENCE WITH ANCIENT LIGHTS.

"THE ANGLE OF FORTY-FIVE."

PARKER V. THE FIRST AVENUE HOTEL COMPANY.

This was an action by the plaintiff, who occupies, for the purposes of his business as a photographer, the upper part of No. 40, High Holborn, to restrain an interference with his ancient lights by the defendant company in the erection of their new hotel, and it came before the Court of Appeal on the 14th inst., the Master of the Rolls and Lords Justices Cotton and Bowen being on the Bench.

At the trial of the action during the Michaelmas sittings, 1882, Mr. Justice North granted an injunction, but introduced qualifying words so as to leave the defendant company at liberty to put on a sloping roof on that portion of their building which was immediately opposite to the plaintiff's side windows looking to the west so long as the angle of incidence to the centre part of the plaintiff's windows was not less than 45° above the point of incidence. The company were also not prevented from raising the walls north and south of the proposed sloping roof so long as they did not thereby darken, injure, or obstruct the plaintiff's ancient windows. The plaintiff, who desired to get an absolute prohibition against any building by the company above a certain height, had brought the present appeal for the purpose of getting the qualifying words introduced into the order by Mr. Justice North removed.

Mr. Finlay, Q.C., and Mr. Colt appeared in support of the appeal by the plaintiff; Mr. H. Matthews, Q.C., and Mr. Beddall for the respondents, the defendant company.

Lord Justice Cotton, in delivering the judgment of the Court, said that the learned Judge of the Court below seemed to assume that it was a conclusion of law or necessary inference of fact that no building at an angle of 45 degrees would constitute an interference with the access of light. This idea was, however, erroneous. There could be no such conclusion of law, as it was a question which must depend on the facts of each case. The notion seemed to have been adopted in consequence of some of the provisions of the Metropolitan Building Act, but, if it proceeded upon any theory that so long as light was obtained from an angle of 45 degrees there could be no ground of complaint, the sooner that idea was got rid of the better. The order must be varied by substituting words which would restrain any interference with or obstruction of the plaintiff's ancient lights by the buildings of the defendant company to the south or north of the part covered by a sloping roof, and immediately opposite the plaintiff's side windows facing west either above or conjointly with the sloping roof. The order would also restrain the defendant from allowing to remain any building erected since the hearing of the Court below. The defendant company must undertake not to contend, if any application should be made by plaintiff for a sequestration against them for non-compliance with this order, that the obstruction was caused solely by the sloping roof.

FLETCHER V. MESSRS. SALISBURY & CO.

This was an unusual case, the plaintiff claiming damages notwithstanding that the interruption of light was less than the well-known angle of 45°, the angle of light remaining being about 40°. The premises were in Rotherhithe-street, and were said to be injured by the defendants building, on the opposite side of the road, which is only 21 ft. 8 in. wide, a large workshop, but only being in height about 13 ft. 6 in. above the old height of wall, which was 7 ft. 3 in. from the street-level, the peculiarity of the coffee-shop being its low height and great relative depth, and therefore the low light was of greater value than usual.

The counsel for the plaintiffs were Montague Cookson, Q.C., and W. H. Bleby; the witnesses for the plaintiff were several of the customers who were in the habit of using for some time past this house; and the surveyors, Charles K. Beddell, Banister Fletcher, and W. P. Gibbings. The witnesses for the defendants were those who also knew the premises for many years, and the surveyors, W. C. Bangs and J. S. Quilter.

After hearing the evidence, Mr. Justice Mathew said he was convinced by the plaintiff's evidence that there had been an injury to the premises, and he gave damages, 60*l.*

OLD MEETING TRUST, BIRMINGHAM, COMPETITION.

In reply to two inquiries made in our last week reference to this competition (p. 63, ante), we are enabled to say that not only did the gentleman appointed by the trustees, Mr. Worthington, inspect the designs personally in Birmingham, but that they were afterwards sent to his own office for further examination. Here the correspondence must end.

BUILDING ACT.

RECOVERY OF COSTS.

The Metropolitan Board of Works summoned the Duke of Bedford at Bow-street Police Court, on the 18th inst., for non-payment of certain sums, the costs and expenses incurred by the Board under Part 2 of the Building Act. The Board was represented by Mr. Norman Bayan, and Mr. R. A. McCall (instructed by Mr. J. R. Bourne) was counsel for the Duke.

It appeared from the evidence that the Duke, for the purpose of estate improvements, had been pulling down eighteen stables in Chenies-mews, Gower-street, three of which were in St. Pancras parish, and the remainder in St. Giles's parish. All the stables in the latter parish had been pulled down without any complaint from the District Surveyor, or any interference by the local board. When the work of demolition reached the stables in the parish of St. Pancras, the District Surveyor, Mr. Wallen, telegraphed to the contractors for the Metropolitan Board ordering them to board-in the stables. He afterwards notified to the Board that the stables were "dangerous," and the usual instructions from the Board, and a report from him as Surveyor followed, and subsequently the notice was sent to the owner calling upon him to "board-in and take down." The notice to the owner could not be complied with, as the boarding had been already erected by the Board's contractors. The District Surveyor stated in evidence that he considered any building to be "dangerous" that was being taken down without a board, and that he was justified in precipitate action by the circular letter from the Board of the 6th day of February, 1880, which suggested to the District Surveyors that in any case of extreme urgency involving probable danger, the Surveyors might ask for the assistance of the Board's contractors in putting up shoring pending instructions by the Board.

On behalf of the Duke it was shown that the building, *per se*, was not a "dangerous structure" within the meaning of the Act, and that any question of boarding during the pulling down was governed by the Metropolitan Local Management Act and not by the Building Act. That all proper care and precautions were taken, and that the District Surveyor had mistaken his functions in ordering the Board's contractors to board-in the building.

The magistrate held that there was nothing to justify the precipitancy of the District Surveyor; that the buildings were not dangerous structures, and were being taken down by competent persons, and the greatest care used; and that the District Surveyor ought to have put the Board in motion, and that the steps, if any, should not have been taken by him, but by the Board, as required by the Act; and that upon the facts and law, the case had not been made out, and, therefore, he dismissed the summonses.

BUILDERS' CLERKS' BENEVOLENT INSTITUTION.

THE funeral of Mr. Henry Thomas Bayes, for many years the treasurer of the above Institution, took place on the 12th inst., at Stoke Newington, in the presence of a large circle of friends. Mr. Arthur C. Lucas and Mr. C. T. Lucas (of the firm of Messrs. Lucas Bros., in whose service Mr. Bayes had spent many years of his life), and Mr. Thomas Stirling, were amongst those present.

Messrs. F. Burchell, Mr. E. Brooks, and Mr. H. J. Wheatley (the secretary), attended as a deputation on behalf of the Builders' Clerks' Benevolent Institution, in which the deceased took a very warm interest, and which he actively served until within a few weeks of his untimely death.

SAFEGUARDS AGAINST CHOLERA.

MR. EDWIN CHADWICK, C.B., writes:—"The first General Board of Health being charged with the preparation of defensive measures against the epidemic of cholera which befell the country in 1848 and 1849, the course we took was not to act upon any opinion of our own, but on the most carefully collected experiences we could get. For this purpose we examined officers who had served amidst the heaviest visitations in India as well as at home. We examined them specially as to what in their experience did do, as well as what did not do. Of the measures which did not do there was a unanimous declaration that quarantines had everywhere failed to check the advance of the pestilence. Quarantines, they declared, were of as little avail as they would be against the east wind. Of measures that did do, there was unanimous testimony in favour of cleanliness or sanitation. In the advanced stages of the disease medicine was of no avail. But we found, for the first time, that the pestilence was preceded by conditions of generally-felt bodily depression, or by premonitory symptoms which did admit of a dietetic and medical treatment, which, when combined with or pre-

ceded by, measures of sanitation which reduced foul atmospheric conditions, was always effectual. In the prosecution of the preventive measures of cleanliness throughout the country some places were found to be so intensely filthy with the filthy walls of houses and excrement-soiled sites that the immediate measures of prevention were declared to be impracticable, and the only available course was to remove the population out into tents, which we borrowed from the army stores. After a time some of the people got tired of bivouacking, and went back into the town, when they were attacked with premonitory symptoms. They returned to their tents and were relieved; they returned back again to their homes and were attacked; they returned to their tents and were relieved."

NEW GYMNASIUM, CAMDEN SCHOOL.

HER Royal Highness the Duchess of Teck attended at the Camden School on Monday last to distribute the prizes to the girls of the school, who were assembled in the new gymnasium. The proceedings commenced by the declaration of the Duchess that the new gymnasium was formally opened.

The Bishop of Rochester and Canon Spence were the speakers both at the Camden School and at the North London Collegiate School, where the Duchess repeated the process of prize giving in presence of a large company.

The gymnasium is about 60 ft. by 30 ft. internal dimensions; has an open-timber roof, and was designed by the architect of the two school buildings, Mr. E. C. Robins.

SUB-CONTRACTS.

SIR.—The letter of Mr. Robert Crane in last week's issue, headed "School Board Contracts," opens a subject of the greatest interest to manufacturers who sub-contract with architects for supplying their various specialities.

As we have lately had the pleasure of erecting a hot-water apparatus at our own expense, through the failure of the builder who was entrusted with the amount of our account, we feel the full force of Mr. Crane's remarks, and we believe manufacturers generally would be very thankful to see the present system of paying through the builder done away with. The advantages of direct payments are already appreciated by some of the leading architects, and, if generally understood by the profession, would be commonly adopted.

According to our own experience, 10 per cent. of the contract amount has to be made over to the builder to secure payment, although the specification may provide a net lump sum; but should the sub-contractor have the temerity to stand up for his own, he will, in the majority of cases, find such difficulties in carrying out his contract, and delays in payment, that in the future he will be very glad to come to terms with the man who holds the money. In defence of the builder, it is perfectly reasonable, if the architect holds him responsible for the proper execution of the sub-contracts (the only reason we can imagine for retaining a bad system) that he should receive a fair percentage for his trouble; but the absurdity of attempting to make him responsible for the work of a specialist will be generally conceded, otherwise why not leave it in his hands from the first?

If you could see your way to take the matter up, by using your powerful influence to induce architects to certify direct for all sub-contracts, you would confer a boon on a large number of your readers.

J. BRUNELL & Co.

THE VENTILATION OF THE UNDERGROUND RAILWAY.

SIR.—This railway is divided into lengths of tunnel with openings to the air between the lengths. It appears to me that if means can be adopted to insure a rush of air through each length of the tunnel good ventilation ought to be possible. Every passing train creates a rush,—an immense rush,—as any one watching a train pass a station platform, sucking every dead leaf and shred of paper after it, cannot fail to admit. But at present, with trains passing constantly each way, every current set up by a train passing (say) from Charing-cross to Westminster must be neutralised by the next train from Westminster to Charing-cross in the reverse direction. Why not divide the tunnel? The simplest wooden division, like what miners

call a brattice, hung from the crown of the tunnel to within 6 ft. of the permanent way would, it seems to me, suffice to establish two currents. In such a length of tunnel, for example, as the one referred to, one half of the tunnel would have a current in it passing from Westminster, the other half one passing towards that point. It might turn out that some description of fan or framework projecting from the train so as to take an additional hold on the air might be a valuable auxiliary in increasing the intensity of these currents. This, at any rate, could be cheaply and readily tried, and if the experiment were found successful might easily be applied in every part of the line, or almost every part. If this suggestion has not appeared before (and I have nowhere seen it), I shall feel obliged by your giving it publicity.

T. R. S.

HOSPITAL SITES.

SIR,—You have touched upon a subject the importance and difficulty of which is increasing daily. I am opposed in toto to our large, costly, and permanent hospital structures. As educational establishments in connexion with medical schools possibly they may be essential.

I advocate small buildings, not altogether "jerry" structures, but inexpensive ones, and certainly not destined to last long. However slight their structure, their interiors should be lined with the glazed tile, so well known in this district (the Potteries, Staffordshire), and manufactured at a cheap rate. It is the nearest approach to that beautiful smooth-surfaced and "washable" substance known as Chunam,* and with which most of the modern hospitals in India are lined. Have large buildings if you like, as convalescent hospitals and for the treatment of chronic cases, and the further out of the towns the better; but these small or cottage hospitals are greatly needed in crowded districts and near large works, and could be easily multiplied with the growth of the population. Communities do not yet realise the advantages of surgical (certainly) treatment away from their own homes. When they do, scarcely a village, I expect, will exist without its hospital retreat. I am by no means advocating a charitable institution. I would curtail gratuitous medical advice to the very minimum. It is discreditable, and an abuse of charity by the many well-to-do people who seek and obtain relief from our present charitable medical institutions.

RETIRED.

STAINED GLASS.

Edinburgh.—It is stated that the committee of the Scottish Conservative Club have chosen the design of Messrs. James Ballantine & Son for a window commemorative of the Earl of Beaconsfield, which, at a cost of 300l., is to be placed in the principal staircase of the new buildings of the club in Princes-street. The window is in three compartments, of which that in the centre is 12 ft. and the two others about 8 ft. high. The large central design is a majestic female figure, wearing a crown, intended to illustrate the "Historic or Regal Empire of Britain," and typical of the conservative or constitutional spirit of the party. Firmly held by the right hand is a governing sceptre; the other hand rests upon a sheathed sword; the national quarterings are displayed on the breast, and the rose, thistle, and shamrock are embroidered upon the robe. St. Stephen's and Westminster are seen in the background, and beneath is the Roman motto, "Imperium et Libertas," adopted by the Earl of Beaconsfield as embodying the programme of his ministry. In the under portion of the central compartment the Beaconsfield heraldic bearings are displayed; the pillars are adorned with the collar and jewel of knight of the garter. Female figures occupy the side compartments. That on the right is intended to represent "Politics," and has the British lion at her side, with a globe beyond, significant respectively of home and foreign interests. In her right hand there is a sword, wreathed with the emblem of peace, while a scroll is extended by the other. The corresponding side compartment displays the figure of "Literature," rendered in the usual Classic manner. A pen is held over a tablet, and the head is raised as if in contemplation. The treatment of the whole design is that of the Italian Renaissance period, in accordance with the architecture of the building. Messrs.

* Chunam: mortar made with lime produced from a small shell, and varnished.

Ballantine & Son are furnishing light decorative glass for the corridor and other windows.

Etchingham, Sussex.—A Munich window, by Messrs. Mayer & Co., has lately been erected in the Church of Etchingham, Sussex. It consists of three lights, and represents the Resurrection, indicated by the Angel at the Tomb appearing to the women. A brass plate underneath the window records the fact that it has been erected in memory of Amy Gertrude Russell, October 12th, 1882.

Books.

Handbook of House Property. By EDWARD LANCE TARBUCK. 1883. Third edition. London: Crosby Lockwood & Co.

THIS is, in some respects, an able book,—the subject is one which interests everybody, more or less,—and the author is evidently master of his subject. And yet the book is one which it is impossible to read with satisfaction, owing to the literary affectation and eccentricities which deface its pages. There are passages (such, e.g., as that on p. 63 beginning "emphatically") through which one has to fight one's way as through a tangled thicket, to emerge at last breathless and a-gasp;—and such verbal trifling as "obstructing salutary scope of sale," and "suitable sanitary construction setting aside schisms on style" is surely out of place.

The book is divided into three sections. The first treats of the laws of property,—its rights, duties, and obligations. Although it is dangerous to take an exposition of the law from any one but a lawyer, there is much in this compilation from the works of acknowledged legal authorities with which every professional man should be acquainted.

The second division treats of the value of property of various kinds and the principles on which estimates of value should be based. The remarks on the qualifications which modify such values are judicious and to the point, and the tables with examples of their application will be found useful and trustworthy.

The third section deals with house-building, and here again the author's unfortunate style detracts from the merits of his work. The observations on "quantities" and quantity surveys are smart and caustic, but entirely out of place in a treatise of this sort, and one can but regret that the author should have gone out of his way to discount the worth of his book by presenting it in such a garb.

If he will treat the subject in a plain, intelligible manner,—re-writing it in fact in unaffected, readable English,—he will do the profession a service, and his work will then form a useful addition to the library of every man of business.

Cutting Tools. By ROBERT H. SMITH, M.I.M.E., Assoc. M.I.C.E. London: Cassell, Petter, Galpin, & Co.

THE writer says, "the aim of this work is educational, and is intended as an attempt to elevate the art of tool-making to a more scientific position." It is illustrated with fourteen folding plates, well drawn and engraved, and a great number of woodcuts. The historical side of the question, interesting as that could not fail to be, is not touched upon; but the author addresses himself at once to the physical phenomena, and the principles thence deductible; from the action of the simplest of all cutting tools,—the wedge,—to the exquisite complexities of the lathe and the double-gear drill. A great proportion of the book is devoted to metal-working tools; but the chapter on machine-planers for wood, and that most interesting one on saws, will be generally appreciated. The English use of the saw, viz., a push outwards from the shoulder of the workman, has been perpetuated in the United States, Canada, and the British Colonies to the exclusion of the German and Continental method, in which the cutting stroke is a pull towards the chest. The Englishman, therefore, brings the whole weight of his body to bear upon his work, as of yore his sires threw their whole body into the bending of their 6 ft. bows. The Oriental, however, who sits to his work, contracts with the stroke of his saw all the muscles of his body, and will, it is said, get through an equal amount of work with less fatigue than either the Englishman or the German.

There is much in this book that will both entertain and instruct the reader, and we heartily commend it to notice.

A Practical and Conversational Dictionary of the English, French, and German Languages, in Parallel Columns. By GEORGE F. CHAMBERS, F.R.A.S. London: John Murray.

THIS little volume is dedicated to the Grand Duke of Baden, at whose suggestion it was undertaken. Its object is to provide the tourist, at short notice, with words in which he can accurately express his immediate wants. The arrangement in parallel vertical columns of equivalent words and phrases in English, French, and German, is novel and convenient. By its aid you can find instantly under the head of the known English word its counterpart in the other languages mentioned, and our only regret is that the nowadays almost indispensable Italian is not added. The author says that "it is doubtful whether a dictionary was ever before compiled and revised as this one has been, for every entry as to which any uncertainty existed has been discussed *videlicet* with Frenchmen and Germans respectively." And that the time occupied has been nearly five years. If, therefore, absolute accuracy has not been attained, the approximation thereto should be extremely close. It is needless to say that the work is well printed, in a handy and portable shape. Leave Mr. Murray alone for that.

VARIORUM.

"LAXTON'S Builder's Price-Book" (1883. Kelly & Co.) It is only necessary to announce the appearance of this book, which preserves its well-known features. When a work has reached its sixty-sixth edition it can afford to dispense with eulogy and may defy criticism.—"Spon's Architect's Pocket-Book for 1882" edited by W. Young, architect (E. & F. N. Spon), is familiar to all our readers, and has approved itself a valuable aid to the architect and builder. This is the ninth edition, and does not differ materially from its predecessors. A very good index adds to its usefulness. The author invites contributions for the further improvement of his work.—"Jordan's Particulars of Dry Docks, &c., on the Thames" (E. & F. N. Spon) consists of a diagram map and table of references giving the situation and particulars of the various London docks, and will afford information to many.—"The Metropolitan Building Acts, 1855 to 1882 (with Appendices)," W. Cunningham Glen and R. Cunningham Glen (Shaw & Sons), is a well-arranged and well-printed collection of Acts of Parliament, with the various regulations and circulars issued from the Metropolitan Board of Works, a record of determined cases, and some useful papers on the subject by Professor Donaldson. It comprises the heads of contracts as settled by the Royal Institute of British Architects, and a copy of the Institute rules on professional practice and charges. It is a very complete work.

Miscellaneous.

A Gigantic Statue of the Republic was unveiled in Paris on the 15th inst. It occupies a site in the Place de la République, formerly the Place du Château d'Eau. The statue, which is the gift of the Municipal Council, is of bronze, and about 36 ft. high. The Republic is figured as a woman, with calm and decided features, wearing the Phrygian cap, her head crowned with golden oak, and holding in her right hand an olive branch. This olive, by the way,—and some thought it a bad omen,—is stated to have been broken while the statue was being transferred from the studio of the artist. But it has been restored, and looks very well. It is in harmony with one of the inscriptions on the pedestal of the statue:—"Pax, Labor." In front of the statue is a bronze lion, executed by Cain. Three marble statues, representing Liberty, Equality, and Fraternity, are placed at the foot of the gigantic image. There are scenes in bronze baso-relievo taken from the history of the Republic. The following dates are inscribed on the pedestal:—4th August, 1789; 14th July, 1790; 11th July, 1792; 20th September, 1792; 21st September, 1792; 13 Primal. An 2; 29th July, 1830; 4th March, 1848; 4th September, 1870; 14th July, 1880; 20th June, 1789; and 14th July, 1789. There are also the words "Universal Suffrage." The sculpture of the monument (of which we gave a view nearly three years ago, viz., in the *Builder* for Nov. 27, 1880) is the work of M. Leopold Morice, the architecture of the pedestal being by M. Charles Morice.

Leith: the New Promenade and Carriage-drive.—The formation of a promenade and roadway on the top of the reclamation embankment, to the east of the Edinburgh Dock, has now been commenced, Messrs. John Tait & Co., contractors, Leith, having been entrusted with the work by the Leith Dock Commissioners. A promenade along the entire length of the sea wall was originally included in the plans for the Edinburgh Dock, but as such promenade did not form a necessary portion of the works, it was allowed to remain in abeyance, and was not expected to be proceeded with for at least several years. The Commissioners, however, have decided to complete the first portion of the work, extending between the east quay of the Edinburgh Dock and the railway crossing at Seafeld. As now to be carried out, the plans embrace the construction of a concrete parapet wall, macadamised roadway, and concrete footway. This will, of course, involve the removal of the heavy timber fence which at present shuts out the view of the Firth from the docks. The parapet wall, a portion of which has already been constructed, will be 2,960 ft. long, 4 ft. high, and 3 ft. thick at the top. A bond on the outside of the wall is designed to break the force of any waves that sweep up the embankment, and so prevent the wetting of the promenade. The concrete is formed in wooden moulds, which are not removed for several days, and the specifications provide that the cement used shall be of such strength that bricks made from it, 1½ in. square, shall be able to stand a tensile pressure in water of not less than 500 lb. each. The carriage-way is to be 28 ft. in width, and extends from a point about 400 ft. east of the east quay of the Edinburgh Dock to the North British Railway crossing at Seafeld, a distance of 3,100 ft. On the seaward side of the road, a concrete footway is to be formed, 7 ft. 6 in. in width, while on the landward side a low retaining wall will be built to separate the promenade from the reclaimed ground acquired by the Caledonian Railway Company.

Safety of Egress from Public Buildings and Hotels.—At the meeting of the Metropolitan Board of Works on the 13th inst., the Works and General Purposes Committee reported that they had proceeded on a resolution of the Board of the 19th January last, referring it to them to consider and report upon the desirability of the Board obtaining further powers from Parliament to regulate public buildings and hotels in the interest of the public. At the present time the powers of the Board in this respect were limited to theatres and music halls, but it was obvious that similar dangers from fire or panic might arise in other buildings, and it appeared to the committee very desirable that the jurisdiction of the Board should be extended. With this view the committee submitted the following recommendation:—"That the Board do apply to Parliament in the next Session for power in the interests of the public to regulate the proper means of ingress and egress in respect of all public buildings and hotels to be hereafter constructed. The recommendation of the committee was approved.

The Criterion Theatre, Piccadilly, is to be lighted throughout with about 600 Edison incandescent lamps. The generating plant will comprise two Armstrong & Sims' horizontal high-speed engines, having 13-in. cylinder by 13-in. stroke, running at 275 revolutions, and driving on to countershafting, from which will be run four Edison L dynamos, each capable of sustaining 150 sixteen-candle lamps. The contract for the work, which will be carried out by the Edison Electric Light Company (Limited), stipulates for the completion of the installation by the beginning of September.

Covent Garden Market.—At the meeting of the Metropolitan Board of Works on the 13th inst., the Works and General Purposes Committee reported, with reference to a letter recently received from the Duke of Bedford, inquiring whether it is the wish of the Board to acquire Covent-garden market as part of any general scheme for market extension. The Committee recommended that his Grace be informed in reply that the Board, after carefully considering the matter, have arrived at the conclusion that it is not desirable for them to take any steps with a view to the acquisition of the market. Mr. Selway moved, in accordance with the recommendation of the committee, and, after some remarks from Mr. Richardson and Mr. J. Jones, the motion was agreed to.

Artisan Technical Education.—At a meeting of the members of the Balloon Society of Great Britain, held at the Westminster Aquarium, the Rev. Henry Solly, late principal of the Artisans' Institute, delivered a lecture entitled "Artisan Technical Education." Mr. Solly said technical training was necessary in most professions and trades, but he should confine himself to a few of the most important industries of the country, and especially those carried on in the metropolis,—viz., the building, engineering, metal, cabinet-making, tailoring, and boot-making trades, and so forth. The first point to be considered after deciding upon the system was how it was to be imparted. Children should be prepared for it in the elementary schools, but no attempt should be made to give them a technical education. What he meant was to give them such a preparatory training in the schools as would allow them to absorb a thoroughly technical education with ease and rapidity at a later stage, and the two most important subjects to be taught in the schools were drawing, free-hand and machinery, and the rules of geometry. With regard to apprenticeships, as had been said, the old system had broken down, and in future he thought the system of indentures should be revived and a clause inserted binding the master to see that his apprentice attended a technical class at least twice a week,—if possible in the afternoon. The existing scheme and art classes had done a great amount of good, but they were by no means perfect. In Germany and in France the system was much more complete. Teachers were wanted at South Kensington who were themselves workmen.

School Hygiene.—The eighth lecture of the series at present in course of delivery at the Parkes Museum of Hygiene was given by Dr. C. H. Ralfe, of the London Hospital, on Thursday evening, July 12th, the subject being "Hygiene in School." The Very Rev. the Dean of Llandaff (Master of the Temple) occupied the chair. The lecturer described the best means for the protection of the school from the ill effects of defective drainage and a dangerous water-supply. The construction of the school buildings, and the arrangement of studies and dormitories, were fully considered, together with the question of ventilation and lighting. With regard to the latter attention was drawn to Mr. Brudenell Carter's remarks regarding the prevalence of sightedness and ocular defects among schoolboys.

TENDERS.

For alterations and additions to the Berwick Arms, Castle-street, for Messrs. Combe & Co. Mr. Benjamin Elson, architect:—

Devereux	£1,600 0 0
Foxley	1,485 0 0
Crawley	1,397 0 0
Williams	1,385 0 0
Langmead & Way (accepted)	1,243 0 0
Puzev & Lumley	1,025 0 0

For additional works at the Polytechnic Young Men's Christian Association, Regent-street, for Mr. Quintin Hogg, Mr. Spencer Chisholm, architect:—

Langmead & Way (accepted)	£2,050 0 0
---------------------------------	------------

For rebuilding Nos. 5 & 6, Haymarket, for Messrs. Arthur Tooth & Sons, Messrs. Archer & Green, architects. Messrs. Argent & Woodward, surveyors:—

Deduct if Brick front	
Loratt, Wolverhampton	£10,240
Holland & Hansen	84
Bywaters	89
Perry & Co.	9,531
Langmead & Way	9,949

For iron railing, fixed at the Common, for the Tottenham Board of Health:—

Butler, Holborn	£170 0 0
Cochrane, Borough	157 0 0
Rose, Edmonton	145 0 0
Jukes, Cuslon, & Co., London	143 0 0
Ball, Wood Green	141 0 0
Roger & Co., Stoke Newington	141 0 0
Vernon, Erons, & Co., Westminster	132 0 0
Chapman, Tottenham	127 0 0
Hood & Co., Battersea	102 0 0
Bird & Co., Regent-street	100 0 0
Eye, Sutton	100 0 0
Faulkner & Sons, Walton-on-Thames	99 0 0
Hill & Smith, Brierley Hill	95 0 0
Rosell & Co., Holford	92 0 0
Badham & Co., Holford	87 0 0

For the construction of pipe sewer in Green Lanes, for the Tottenham Board of Health:—

Williamson, Tottenham	£724 0 0
Hawkins, Mile-end	690 0 0
Marshall, Brighton	650 0 0
H. Standen, Chiswick	575 0 0
Hes & Co., Wimbledon	550 0 0
Armstrong, Chiswick	528 0 0
Pell & Sons, Bromley	520 0 0
Ball, Wood Green	440 0 0
Bloomfield, Tottenham	430 0 0
Young & Co., Southampton	315 0 0

For the superstructure of warehouses, Nos. 3, 4, 6, & 7, Dowgate-hill, for Mr. F. E. Warburg, Messrs. N. S. Joseph & Pearson, architects. Quantities supplied by Mr. T. Thornton Green:—

Dove Bros.	£7,490 0 0
Servicor	7,297 0 0
Brass	7,277 0 0
Rider & Son	7,270 0 0
Hall, Beddall, & Co.	7,200 0 0
Patman & Fotheringham	7,185 0 0
Fritchard	7,149 0 0
Bangs	7,120 0 0
Asby Bros.	7,050 0 0
Moulton & Co.	7,032 0 0
Williams & Son	6,987 0 0
Patrick & Son	6,935 0 0
Kilby & Gayford	6,867 0 0
Conder	6,786 0 0
Grover	6,583 0 0

For Truant Schools, Fyfield, Essex, for the West Ham School Board, Mr. J. S. Newman, architect:—

Colt	£13,000 0 0
Robson	12,237 0 0
Hearle & Son	11,382 0 0
White	11,006 0 0
Pack	10,306 0 0
Wells	10,789 0 0
Brown	10,786 0 0
Hoskings	10,673 0 0
Parriell & Hawker	10,468 0 0
Morter	10,567 0 0
Read	9,987 0 0
Oreger	9,833 0 0
Hobbs	9,015 0 0

For the erection of the Beckenham Public-hall, Mr. George Vigers, architect, 4, Frederick's-place, Old Jewry:—

J. Macey & Son	£4,820 0 0
J. W. Sawyer	4,600 0 0
J. Tierman	4,570 0 0
J. & C. Boyer	4,365 0 0
W. Neveling	4,580 0 0
Perry & Co.	4,543 0 0
T. V. Jones	4,330 0 0
J. Barnet	4,268 0 0
D. D. & A. Brown (accepted)	4,270 0 0

For taking down the Old Yorkshire, Philip-lane, and re-building same and warehouses, Mr. J. T. Smith, architect:—

Higgs & Hill	£8,632
Holloway Bros.	8,030
Stephens & Bastow	5,003
Hobbs	7,701
Adamson & Son	7,636
Drass	7,343

For villa residences at Auckland-road, Upper Norwood, for Mr. Mehell, Mr. C. J. C. Pawley, architect. Quantities not supplied:—

Scott	£1,630 0 0
Page	1,400 0 0
Turtle & Appleton	1,325 0 0
Smith & Sons	1,257 0 0
Hollidge & Stuart (accepted)	1,248 0 0

For new stables, coach-house, stores, artist's room, &c., at South London Palace, for Messrs. Poole & Uplh. Mr. Edward Clark, architect:—

Canning & Mullins	£2670 0 0
Parriell & Hawker	655 0 0
Green	621 0 0

For painting and decorative work at 59, Cadogan-place, for Miss Scott, 122, New Bond-street:—

D. D. & A. Brown (accepted)	£2600 0 0
-----------------------------------	-----------

For pulling down and re-building back offices at 10, Hart-street, Mark-lane, for Mr. William J. Johnston:—

D. D. & A. Brown (accepted)	£2800 0 0
-----------------------------------	-----------

For new wing to Amphil House, Amphil. Messrs. Usher & Anthony, architects, Bedford-square:—

Spencer (accepted)	
For alterations at Almond's Hotel, Clifford-street, for Mr. J. B. Roy, Mr. J. F. Wimperis, architect:—	
Hovell & Sons	£7,390 0 0
Perry & Co.	6,843 0 0
H. Les	6,825 0 0
Bird	6,891 0 0
Morter	6,846 0 0
Langmead & Way	6,795 0 0
Varnall & Griffiths	6,625 0 0
Brass	6,574 0 0
Boyes	6,563 0 0
Patrick	6,503 0 0
Servenay	6,465 0 0
Bywaters	6,457 0 0
Fish, Prestige, & Co.	6,340 0 0

For proposed retaining-wall on the Poyle Charity Estate, Charlottetown, Guildford:—

Stone.	Flint.	Concrete.
Martin, Wells, & Co.	£315 0 0	£300 0 0
T. E. Dowling	298 0 0	£220 0 0
Garnett & Mills	330 10	308 9
Edwin Elliott	330 17	—
G. & R. Smith	369 0	—

* Accepted for concrete.

For the erection of mess-room, workshop, coke-store, and extension of running-shed, at Stoke-upon-Trent, for the Directors of the North Staffordshire Steam Tramway Company, Limited, Mr. G. W. Bradford, architect, Hanley:—

Foral & Heath, Stoke	£295 0 0
T. Minks, Fenton	850 0 0
J. Guilmore, Newcastle	845 0 0
N. Barlow, Stoke	841 0 0
J. T. Clark, Hanley	800 0 0
J. Bowden (accepted), Burslem	750 0 0

For new wing to Amphil House, Amphil. Messrs. Usher & Anthony, architects, Bedford-square:—

Cowleshaw & Shore, Etruria	101 0 0
F. Sainsbury & Co., Newcastle	60 12 8
Hartley & Arnoux Bros. (accepted), Stoke	80 0 0

For rebuilding the Salvation and Cat taverns, Newgate-street and Rose-street, for Mr. E. Liebmann, Messrs. Wylton & Long, architects. Quantities by Mr. A. W. Saville:—

Sanders	£7,720 0 0
Dove Bros.	7,673 0 0
Spencer & Co.	7,550 0 0
Royal	7,632 0 0
Holliday & Greenwood	7,099 0 0
Shumour	6,973 0 0
Lamble	6,940 0 0
Anley	6,890 0 0
Fickard	6,847 0 0
Fickersgill	5,998 0 0

For rebuilding the Prince of Wales public-house, Great Barlow-street, for Messrs. Watney & Co. Mr. C. W. Boris, architect:—

Downs	£2,547 0 0
Anley	2,570 0 0
Smith	2,620 0 0
Scharien & Williams	2,467 0 0
Hall, Beddall, & Co.	2,434 0 0
Spencer & Co. (accepted)	2,400 0 0

For sundry repairs to 14 cottages at Thornton Heath, Mr. C. S. Aubrey, architect:—

Morris	£1,064 17 8
Anley	877 0 0
Jarvis & Son	862 0 0
Thompson	687 0 0
Banister	420 0 0

For two houses in Holloway-road, Mr. George Truett, architect:—

Bird	£1,049 0 0
Ball & Wickes	975 0 0
Warms	903 0 0
Stuart (accepted)	858 10 0

For new smoking-room and other works at Lansdowne-road, Blackheath, for Mr. Wm. Martel, Mr. Wm. West, architect. No quantities:—

Giles, Blackheath	£100 0 0
Spencer & Co., London	100 0 0
Atfield, Blackheath	93 0 0

For the erection of villa residences at Cranbrook Park, Ilford, for Mr. George Beazley:—

Howell J. Williams, Bermondsey-street	} 1 pair, £1.
(accepted).....	

Accepted for rebuilding the King William the Fourth public-house, and two shops adjoining Trafalgar-road, Greenwich, for Mr. G. Faray, Mr. Henry Roberts, architect and surveyor, 113, Lewisham-road:—

J. Bright & Co. (brickwork, scaffolding and labour only)	
W. Smith, Deptford (stonework)	
Garrett & Son, Greenwich (plastering, labour only)	
C. C. Featherstone, Deptford (plumbing, gasfittings, &c.)	
T. J. Cracknell, Rotherhithe (glazing and graining)	
J. Macpherson, Deptford (pewtering)	

Accepted for erecting six nine-roomed houses in the Old Woolwich-road, Greenwich, for Mr. George Burley, Mr. Henry Roberts, architect and surveyor, 113, Lewisham-road:—

O. Hulett, Deptford (brickwork, labour only)	
W. Smith, Deptford (stonework)	
Garrett & Son, Greenwich (plastering)	
C. C. Featherstone, Deptford (ironwork, plumbing, &c.)	
T. J. Cracknell, Rotherhithe (glazing)	

For addition and alterations for Mr. Pearson, at his premises, No. 71, Rosemary-road, Peckham:—

G. Brown (accepted). No competition.	
--------------------------------------	--

For alterations to premises at Seymour-street, Bryanston-square, belonging to Mr. G. Carter. Messrs. J. Saville & Son, architects, 1, Argyle-square:—

Lambe	£143 0 0
Schatter	143 0 0
Lamble	138 0 0
Jackson & Todd	118 0 0
Royal	103 15 0
Purkiss	96 0 0
Hawkins	96 0 0

For rebuilding workman's cottage, No. 18, Providence-place, Lissos-street, and repairs to adjoining cottages, for Mr. W. King, Mr. S. Parker, architect, 427, Edgware-road:—

Petchy (accepted)	£290 0 0
-------------------------	----------

For erection of greenhouse for Mr. W. Tunnilliff, Mr. George W. Bradford, architect, Hanley:—

S. Hilmora, Newcastle	£100 0 0
Elms, Hanley	104 0 0
J. T. Clark, Hanley	93 0 0

* Accepted subject to reductions.

For enlargement of chapel, House of Retreat, Lloyd-square, Charlottetown, Mr. E. Newton, architect. Quantities by Messrs. Palmer & Russell:—

Bangs & Co. (accepted)	
------------------------------	--

For Board school, Gorseleton, Great Yarmouth. Messrs. Bottle & Olley, architects, Great Yarmouth:—

Whole Tenders	
T. H. Blyth, Foulsham	£4,950 0 0
Everett, Colchester	4,275 0 0

Contract No. 1.

Excavator's, Bricklayer's, Plasterer's, Mason's, and Suter's Work	
J. Leggett, Yarmouth	£2,975 0 0
E. Howes, Yarmouth	2,630 0 0
T. Howes, Yarmouth	2,789 0 0
Cork & Heach, Yarmouth (accepted)	2,710 0 0
J. Bray, Yarmouth	2,460 0 0

Contract No. 2.

Carpenter's, Joiner's, Plumber's, Glazier's, Painter's, and Gasfitter's Work	
R. Davy, Yarmouth	£1,803 0 0
J. H. Want, Yarmouth	1,635 0 0
J. Harbert, Yarmouth	1,640 0 0
J. Bray, Yarmouth	1,647 0 0
B. Springall (accepted)	1,637 0 0
J. Cooper (withdrawn)	1,621 0 0

For the completion of six houses and two shops, Rangoon-road, Page-green, under the superintendence of Mr. William Eve, 10, Union-court, Old Broad-street:—

Brown	£1,700 0 0
Lidstone	1,520 0 0
Wildinpin	1,484 0 0
White	1,337 17 8
Castle	1,338 0 0
Howard	1,300 0 0
Watkins	1,290 0 0
Porter	1,209 0 0
Burt	1,123 0 0
Still	1,050 0 0
Frankham	1,015 0 0
Chudleigh	978 17 0
Pereira	970 10 0
Willsher	925 0 0
Pierce	873 0 0
Aldridge & Jersey	856 15 7
Coyle & Co.	830 0 0
Woodley	790 0 0
Warr	757 0 0
Smith	630 0 0

For the completion of six houses, Nos. 27, 29, 31, 33, and 35, Herbert-road, Page-green, under the superintendence of Mr. William Eve:—

Lidstone	£290 0 0
Brown	240 0 0
Castle	782 0 0
Watkins	699 0 0
Wildinpin	639 0 0
White	614 0 0
Burt	590 0 0
Still	575 0 0
Howard	540 0 0
Frankham	496 0 0
Chudleigh	438 0 0
Woolley	430 0 0
Pereira	430 0 0
Warr	428 0 0
Willsher	398 10 0
Coyle & Co.	329 0 0
Aldridge & Jersey	414 18 6
Smith	393 0 0
Pierce	318 0 0

For the completion of six houses, Nos. 37, 39, 41, 43, 45, and 47, Herbert-road, Page-green, under the superintendence of Mr. William Eve:—

Lidstone	£290 0 0
Brown	240 0 0
Castle	782 0 0
Watkins	699 0 0
Wildinpin	770 0 0
White	687 0 0
Watkins	674 0 0
Burt	660 0 0
Still	675 0 0
Frankham	655 0 0
Howard	610 0 0
Woolley	490 0 0
Chudleigh	438 12 0
Pereira	430 0 0
Aldridge & Jersey	459 15 0
Coyle & Co.	459 0 0
Willsher	459 0 0
Warr	459 0 0
Smith	440 0 0
Pierce	398 0 0

For the erection of additional stabling, &c., for Messrs. Carter, Paterson, & Co., at Church-street, Stoke Newington, under the superintendence of Mr. William Eve:—

Hubble & Trott	£3,278 0 0
Downs	2,724 0 0
Lawrence	2,778 0 0
Higgs	2,700 0 0
Harris & Wardrop	2,464 0 0
D. D. & A. Brown (accepted)	2,385 0 0

Battersea Park Tabernacle. Mr. Wm. Allen Dixon, architect, 14, Great James-street, Bedford-row. Quantities supplied:—

	With Brick Strings.	Bath Stone
Gregar & Son	£3,772	£3,812
Higgs & Hill	3,374	3,606
Lathey Bros.	3,661	3,606
F. Higgs	3,450	3,600
Holland	3,450	3,450
Niblett	3,375	3,429
Allen & Son	3,320	3,370
Macey & Son	3,318	3,359
Holloway Bros.	3,268	3,323
J. Holloway	3,268	3,312
Turtie & Appleton	3,200	3,245
Howard	3,065	3,129
Steel Bros.	*	3,123

* No price given.

For alterations at the Hatch of Venison, Bell-yard, Fleet-street, for Mr. Stadden:—

Anley	£798 0 0
Stallard & Son	734 0 0
Marr (accepted)	717 0 0

For building three houses, Orb-street, Watworth, for Messrs. Truman, Hainbury, & Huxton. Messrs. W. E. Williams & Sons, architects:—

Marr (accepted)	£1,050 0 0
-----------------	------------

For alterations at Duke of Wellington, Barnsbury, for Mr. E. Snow:—

Marr (accepted)	£1,950 0 0
-----------------	------------

For rebuilding 6 and 7, Philip-lane:—

Marr (accepted)	£1,950 0 0
-----------------	------------

Errata.—By some mistake, the cause of which we are unable to trace, in the tenders which appeared in our last (p. 65), for the following works, viz., Congregational Chapel, Farworth; Unitarian Chapel, Llandysul; ship-chandler's shop, &c., Bull; Primitive Methodist Chapel, Holloway; and alterations to Primitive Methodist Chapel, Milford,—the name of Mr. F. B. Peyton of Bradford, was mentioned as that of the architect of the several works. Mr. John Wills, of Derby, writes to say that he is the architect concerned for all these works.

TO CORRESPONDENTS.

O. T. H. J. I. S. H. G. B. R. S. R. F. M. & Co. W. P. D. & Co. R. A. L. C. S. C. P. P. R. J. J. M. M. C. A. Y. M. B. & C. O. C. J. S. C. M. K. H. H. P. K. S. P. A. R. B. & R. B. & H. S. & K. L. & W. H. & S. J. T. S. H. D. P. T. F. H. (the architect would be liable if he ordered materials without authority. We cannot assist in private disputes and on *ex parte* information.—V. & A. (should have sent lists).

Correspondents should address the Editor, and not the Publisher except in cases of business. All statements of facts, lists of tenders, &c. must be accompanied by the name and address of the sender, not necessarily for publication. We are compelled to decline pointing out books and giving addresses.

Note. The responsibility of signed articles, and papers read at public meetings, rests, of course, with the authors.

NOTICE TO SUBSCRIBERS.

THE INDEX and TITLE PAGE for Volume XLIV. (January to June, 1883) were given as a Supplement with the Number of July 14.

A COLOURED TITLE PAGE may be had, gratis, on personal application at the Office.

CLOTH CASES for Binding the Numbers are now ready, price 2s. 6d. each; also

READING CASES (cloth), with strings, to hold a Month's Numbers price 2s. each; also

THE FORTY-FOURTH VOLUME of "The Builder" (bound), price 2s. 6d.

SUBSCRIBERS' VOLUMES on being sent to the Office, will be bound at a cost of 2s. 6d. each.

NOTICE TO ADVERTISERS.

Persons advertising in the *Builder* may have REPLIES ADDRESSED TO THE OFFICE 46, Catherine-street, Covent-garden, W.C.

FREE OF CHARGE.

Letters will be forwarded if addressed envelopes are sent, together with sufficient stamps to cover the postage.

CHARGES FOR ADVERTISEMENTS.

SITUATIONS VACANT, PARTNERSHIPS, APPRENTICESHIPS, TRADE, AND GENERAL ADVERTISEMENTS. Six lines (about fifty words) or under..... 4s. 6d.

Each additional line (about ten words)..... 4s. 6d.

Terms for Series of Trade Advertisements, also for Special Advertisements on front page, Competitions, Contracts, Sales by Auction, &c. may be obtained on application to the Publisher.

SITUATIONS WANTED. FOUR Lines (about thirty words) or under..... 5s. 6d.

Each additional line (about ten words)..... 5s. 6d.

PREPARATION IS ABSOLUTELY NECESSARY.

* Stamps must not be sent, but all small sums should be remitted by Cash in Registered Letter or by Money Order, payable at the Post-office, Covent-garden, W.C. to

DOUGLAS FORDERLINER, Publisher. Addressed to No. 46, Catherine-street, W.C.

Advertisements for the current week's issue must reach the Office before THREE o'clock p.m. on THURSDAY.

The Publisher cannot be responsible for DRAWINGS, TESTIMONIALS, &c. left at the Office in reply to Advertisements, and strongly recommends that of the latter COPIES ONLY should be sent.

TERMS OF SUBSCRIPTION.

"THE BUILDER" is supplied gratis from the Office to residents in any part of the United Kingdom at the rate of 12s. per annum. Foreign Remittances payable to DOUGLAS FORDERLINER, Publisher, 46, Catherine-street, W.C.

Best Bath Stone.

WESTWOOD GROUND,
Box Ground, Combe Down,
Corsham Down,
And Farleigh Down.
RANDELL, SAUNDERS, & CO., Limited,
Corsham, Wilts. [Adv.]

Bath Stone.

Facilities for selection and quality unequalled, having upwards of

350,000 Feet Cube

In Stock of all known descriptions.

PICTOR & SONS, Box, Wilts. [Adv.]

Doubling Freestone and Ham Hill Stone

of best quality, in blocks, or prepared ready for fixing. An inspection of the Doubling Quarries is respectfully solicited; and Architects and others are CAUTIONED against inferior stone. Prices, delivered to any part of the United Kingdom, given on application to CHARLES TRASK, Norton-sub-Hamdon, Ilminster, Somerset.—Agent, Mr. E. WILLIAMS, 78, Charlotte-street, Portland-place, W. [Adv.]

Doubling Freestone, Of best quality, supplied from their own Quarries and Kilns by SPARS & HARRIS, Stoke, Ilminster.

Agent, Mr. H. MICHAM, 5, Augusta-road, Hamersmith, London, W. [Adv.]

HAM HILL STONE,

BLUE LIAS LIME

(Ground or Lump),

Asphalte.

Seoyssel, Patent Metallic Lava, and

White Asphalte.

M. STODART & CO.

Office:

No. 90, Cannon-street, E.C. [Adv.]

Asphalte.—The Seoyssel and Metallic Lava

Asphalte Company (Mr. H. Glenn), Office, 38, Poultry, E.C.—The best and cheapest materials

for damp courses, railway arches, warehouse floors, flat roofs, stables, cow-sheds and milk-rooms, granaries, tun-rooms and terraces. [Adv.]

Immense quantities of

DRY WAINSCOT,

DRY MAHOAGANY,

DRY WALNUT,

in all thicknesses.

B. J. HUDSON & SONS,

Whitfield-st., W., and Great Peter-st., S.W. London. [Adv.]

J. L. BACON & CO.,

MANUFACTURERS OF IMPROVED

STEAM AND HOT-WATER

APPARATUS,

FOR WARMING AND VENTILATING

Private Houses, Churches, Schools, Hospitals,

Manufactories, Greenhouses, &c.

OFFICES AND SHOW-ROOMS:—

No. 24, UPPER GLOUCESTER PLACE,

DORSET SQUARE, LONDON, N.W.

And at DUBLIN, BELFAST, and NEWCASTLE.

Illustrated Pamphlet on "Heating" post free.

CHAPPUIS' PATENTS FOR REFLECTING LIGHT.

DAYLIGHT REFLECTORS OF EVERY DESCRIPTION,

ARTIFICIAL LIGHT REFLECTORS.

ALSO

WHY BURN GAS?—CHAPPUIS' REFLECTORS DIFFUSE DAYLIGHT.—They are exclusively adopted by and fitted at Buckingham Palace, all H.M. Government Offices, Houses of Parliament, H.M. First Commissioner of Works, the Metropolitan Board of Works, British Museum, South Kensington Museum, Royal Institution, Guildhall Museum, on board H.M. Ships, also Railway Companies' Offices, Hospitals, Institutions, Banks, Insurance Offices, Manufactories, Private Houses and generally from Noblemen's Mansions to Artisans' Work-shops. 30,000 in use in London alone. Patronised by leading Architects, Engineers, Contractors, &c., &c.

N.B.—For Prospectuses and Diagrams, address Stamped Envelope to

P. E. CHAPPUIS, Patentee and Manufacturer, 69, FLEET-STREET, LONDON.

NOTICE.—The POLYGONAL REFLECTOR (Latest Patent) FOR ARTISTIC and PICTURE GALLERIES. Its construction allows of the angle of light being readily altered so as to reflect in any desirable direction.

The Builder.

Vol. XLV. No. 2112.

SATURDAY, JULY 29, 1883.

ILLUSTRATIONS.

The Museum of Comparative Sculpture in the Palace of the Trocadéro, Paris (Double-page Engraving)	114
Lodge, Mount Park Estate, Harrow-on-the-Hill.—Messrs. Higgs & Rudkin, Architects	116
Work of the National Lighthouse Institution: Torquay, South Devon; St. Anne's-on-the-Sea, Lancashire; Fleetwood, Lancashire; Hastings, Sussex; Newcastle (Dunrum Bay), Co. Down; Hornsea, Yorkshire (Double-page Engraving).—Mr. Charles H. Cooke, F.S.A., Architect	118, 119
All Saints' District Church, Ipswich.—Mr. J. M. Brooks, Architect	121

CONTENTS.

The Cholera and the Local Government Board	101	Royal Academy's Cousins Annulants	125	Commissions: Hearne & Keeling	130
"The History of Freemasonry"	102	Building Trades' Exhibition in Manchester	125	Wooden Projections under the Building Act: T. W. Willis & J. Davis	130
Nottingham Municipal Office Competition	104	Non-Completion of Contract within Specified Time: Direct Spanish Telegraph Company's Shepherd	126	St. Bede's (R. C.) College, Manchester	131
Buildings Machinery at the Royal Agricultural Society's Show, York	106	Bristol Master-Builders' Association: The Annual Outing	126	Land Tax	131
Half a Century of Professional Journalism	106	The Paris Industrial Exhibition of 1884	127	Fireproof Floors	131

The Cholera and the Local Government Board.

UNREASONABLE alarm is as much to be deprecated as stolid indifference to danger. And it is not as alarmists, but as those who would prevent danger, that we call attention to the menacing movement westward of the cholera. Among the evils of war, not the least is the uncertainty that follows any actual warfare as to whether its influences may extend, and what may be the next place in which they may unexpectedly appear. Now those who have gone through the Egyptian campaign, and who have paid dearly for the knowledge, thus acquired, that there is something in the life of the soldier not to be paid for by a medal or a decoration, and not to be read of in the boastful language of bulletins or military reports, are well aware that Egypt, as it was left by our forces after Tel-el-Kebir, was in a condition to invite plague and pestilence, if not famine. The bodies of men and of beasts, left to rot on the ground, or flung into the "Sweet Water Canal," poisoned earth, and air, and water. The sanitary notions and regulations of the Fellahs are of a primitive order; but, such as they are, they are better than none. The effect of the war has been to replace them with none. The absence of that noble appreciation on the part of a general which considers one life lost by preventable malady a heavier responsibility than five lives lost in a necessary and hotly-contested engagement, is, perhaps, not sufficiently rare to be a matter of remark. But we may at least be allowed to say that the death rolls sent us from Damietta and other Egyptian towns should lead to the inquiry how far the whole of our troops now in Egypt are quartered in spots as far removed as possible from the influence of malaria, whether natural or arising from negligence,—and notably and urgently how far they are provided with distilled water for drinking.

The importance of this precaution is cardinal. The use of distilled water, where the natural sources of supply are as polluted as is common in the East, means simply the difference between life and death. There are plenty of excellent condensers to be had at a moment's notice. Sufield's condenser, at the price of 74*l.*, delivers 6,000 gallons of pure cold water daily. Kirkaldy's Condenser made 90 gallons of water per hour on board the transport *Adjuvant*, in the Egyptian expedition, to the great satisfaction of all on board. Fraser's "Acme" Condenser has the advantage of the introduction of circular tubes. Normandy's Improved Patent Distilling Machinery has been tested to produce 6,270 gallons, or 28 tons, of pure cold water in

nineteen hours, with 1½ ton of coal, being equal to 4,100 gallons, or 18·3 tons, of water per ton of coal. With facts like these attested by unexceptionable witnesses, the responsibility of allowing the loss of life by fever or cholera spread by infected water is of the most serious magnitude.

Nor should our vigilance be confined to the Army, whether abroad or at home. No safety is attainable in the case of the outbreak of any infectious disease, unless the people at large will concur in the simple precautions necessary for the defence of their homes, their wives, and their little ones, to say nothing of themselves, from an invisible but deadly enemy. In this respect we have to call attention to the memorandum of precautions against the infection of cholera prepared by the Medical Officer of the Local Government Board for transmission to each sanitary authority throughout the kingdom. Those of us who can remember the panic excited by the first outbreak of the cholera in 1831, to say nothing of the three subsequent visitations in 1849, 1853, and 1866, will take some comfort in the view, that we have made a marked progress in our sanitary practice,—at least, since the earliest of these dates. There is a calm scientific certitude in the tone of this document which stamps it with great dignity, and which should inspire the reader with full confidence in the recommendations that it contains. At the same time, it should impose upon all the necessity of attending to those precautions. Former experience of cholera in England justifies the belief, Dr. Buchanan says, that the presence of imported cases of cholera at various spots in the country will not be capable of causing much injury to the population, if proper sanitary measures are adopted, cholera in England is so little contagious, in the sense in which small-pox and scarlet fever are contagious, that there is, with proper care, little risk of the disease spreading to those who nurse the patients. On the other hand, the danger of pollution to water, and possibly to air, from any discharge proceeding from the patient, is exceedingly great. And not only is there this danger of direct infection. The outbreak of cholera seems to be accompanied by climatic or telluric changes that depress the resisting powers of man. Thus, even without any direct cholera poisoning, the old sources of mischief,—neglected sewers, cesspools, and the like,—awaken to a new activity at such times; and cholera, or something like it, may assume an epidemic form, not as the result of infection from abroad, but as that of the abnormal activity: of the spores or germs of disease that are almost everywhere ready to be nursed into activity; and owing at the same time to the depressed condition of those who, under ordinary circumstances, would risk little from infection.

We had rather refer to the warnings contained

in the fifth and sixth paragraph of the memorandum of the Local Government Board than either reproduce them or abstract them. They demand attentive consideration. The case is one in which each man has a double duty to perform: that proper to himself, and his own household; and that due to his position and influence in society. There is no knowing what terrible mischief may be produced by a single case of neglect. It is easier to keep out than to turn out an enemy so formidable as disease arising from neglected impurity. Nor is the duty less incumbent on every household, or each head of a family, to watch over the safety of his home, than it is on local boards, medical officers, architects, engineers, even clergymen, on all those men who, knowing what danger is, know also how alone it is to be averted.

Dr. Buchanan wisely adds that no pains taken and costs incurred in the way of sanitary precaution will be wasted. It may be difficult to say, "By such and such steps you have kept the cholera from your neighbourhood. If you had not taken these, you would have suffered." One is not, perhaps, justified in saying as much as that with certitude. But there have been many cases that look very like it. By all means let us give ourselves the benefit of the doubt; and not seek to test the efficacy of precautions by neglecting them in order to see what will happen then. We have many domestic enemies, little, if any less, destructive than cholera. That form of enteric fever which seems to select the noblest and the most lovely as its victims, is one of them. Any precaution required against imported cholera is none the less requisite against autogenic fever. Measures of prevention are at once cheaper and more effective than can be any measure of cure.

It is certain that the alarm of personal danger, whether to one's self or to those most dear, has an effect on the mind that is special and powerful. It seems to waken all the faculties at once. Such wakening, too often, is too late. That it may not be so in the present case, we think it is the duty of all those whose voices are loud enough to be heard, and authoritative enough to be respected, by their neighbours, to uplift them now. We do not say that there is any immediate danger. The course taken by the epidemic, at the present moment, seems to be southward rather than westward. But it is idle, and worse than idle, to shut our eyes to the fact that danger may be upon us at any moment. To a certain extent danger is always present. Danger from disturbances in the digestive organs is never altogether absent, especially in hot weather. In hot weather, too, every germ of mischief has an abnormal activity. Let us urge all to set their houses in order, hoping that the enemy will not come, but doing our best to render his invasion as ineffective as possible if it actually takes place.

"THE HISTORY OF FREEMASONRY."*

CHAPTER VII., "The Statutes relating to the Freemasons." "The only evidence we possess of the existence of Freemasonry in England before the initiation or admission of Elias Ashmole in 1646, is scattered in the 'Old Charges' or 'Constitutions,' the records of the building trades, and the statutes of the realm." The reason ascribed by Mr. Gould for this chapter is given in a closing paragraph, and it is a very modest conclusion to a very long and laborious study of this branch of the subject. He writes as follows:—"In bringing to a close my review of the early statutes, whilst conscious that I have unfolded very little that may tend to strengthen the opinion entertained of the high antiquity of Freemasonry, I may claim, at least, to have dissipated some few errors, and thereby to have assisted, however slightly and imperfectly, in placing the history of the Masonic craft on a rational basis." We make the following extracts to show the matter under consideration:—"The struggle between the rising craft guilds of London and the body of the citizens, has been carefully narrated by Brentano, 'History and Development of Guilds,' p. 63, by whom the triumph of the former over the latter is stated to have been fully achieved in the reign of Edward III. A large majority of the trades got their ordinances enrolled by the mayor and aldermen. At the same time they adopted a particular livery, and were hence called Livery Companies. Edward III. became a member of the Linen-armourers, and his example found numerous imitators amongst his successors and the nobility of the kingdom." "The erudition of the times, and the tone of manners which prevailed toward the close of the fifteenth century, made it desirable and necessary for great lords to supply the defection in their villenage and land tenants by other expedients. It accordingly had become the custom to retain persons in their service to be at call when their lords' affairs needed their support;—they used to dress them in liveries and hats of a particular make or colour;—they supported each other in all quarrels and crimes, and Fraternities were formed;—these confederacies became a terror to the Government, and were the occasion of the 'Statutes of Liveries,' passed in this and the following reigns," as in 1377 and 1399, which were confirmed 1405-6, and again 1411. During "the visitation of the 'black death,' of the three or four millions who then formed the population of England, more than one-half were swept away. The whole organisation of labour was thrown out of gear. There was a great rise of wages,—the price of labour was fixed by the Parliament of 1350." Foreign conquest and Scottish incursions assisted the depopulation; evasions of the statutes became numerous, so much so that "though in 1340 there were sufficient of proper men in each county to execute every office, owing to the pestilence and wars (up to 1421) there were not even a sufficiency of responsible persons to act as sheriffs, coroners, and escheators."

Mr. Gould prints, and considers "the Ordinances of Labourers, 1349," "the Statute of Labourers, 1350," and "Regulations for the Trade of Masons, 1356," "passed" at a congregation of the mayor and aldermen of the city of London; "the two laws enacted against combinations, congregations, and chapters of workmen, 1360 and 1425"; and the statute of 1427, which gives a clue, according to Kloss, "why the Masons were to appear at the General Assembly at a certain place once a year, to hear the rates of wages," &c., as stated in two high authorities, "Constitutions," which charges and constitutions our author thinks may by some persons be held to refer either partly or wholly to country Masons; but an eminent authority who believes the artificers whom the 25th Edward III., and later statutes, "expects to see from one country to another," to have been workmen employed on the country manors of lords. "Each country manor," says Brentano, "had in the Middle Ages its own artificers, who supplied the common wants of their lords, whilst the latter resorted only for their more refined wants to the craftsmen of the towns." "But were these 'country masons' of the early part of the fifteenth

century, either by education or intelligence, capable of comprehending the Halliwell poem, had it been rehearsed to them?" inquires our author. Why not, say we, if they were likely to understand the M.S. charges? "In 1437 the king and Parliament applied themselves still more vigorously to mitigate the growing abuses of the craft-guilds,—all letters patent and charters were required to be exhibited;—and "this statute of 1360 is remarkable as showing the co-existence of the two masterships,—that of skill and capital; thus, the chief masters of carpenters and masons are to receive 4d. a day, and the others 3d. or 2d., according as they be worth; but every mason and carpenter, 'of whatever condition he be,' is to be compelled by 'his master whom he serves,' to do every work that pertains to him." "Where," continues Mr. Ludlow, "as it seems to me, the guild masters are designated by the former expression, and the capital masters by the latter." But if the term master mason or master carpenter be understood by the former, and the journeyman by the latter, would they not be equally applicable?—and the framers of the statute may even have discovered the distinction between the "free mason" and "free carpenter" of the towns, and the "mason" or "carpenter" of the villages and hamlets above referred to. Even in the petition of 1515, the free masons and rough masons, carpenters, &c., in London, are referred to in classes of trades. "The citizens and freemen of London and Norwich may take, have, and retain apprentices there, in such manner and form as they have previously done." The 11 King Henry VII., 1495, deals with the evils complained of in the preamble of the law of 1487, and speaks of "geyng and receyvyng of lyceuses, signees, and tokens, unlawfully." "These signs and tokens have been regarded as signs of recognition, and grips of salutation!" "The Statute of Apprentices, 1562-3, though requiring, in very unequivocal words, a seven-years' apprenticeship in all trades then followed in England, whosoever they should be carried on, has been held to extend only to cities and market towns, and that a person may exercise as many trades as he pleases in a country village, although he has not served a seven-years' apprenticeship to each; also that a man who had been duly apprenticed, might go anywhere, and was not compelled to practise his trade only where he happened to have been apprenticed." "This statute, in the thirtieth clause, enumerates many varieties or branches of a single trade; yet, although in previous statutes the term *Free-mason* occurs, a solitary definition, *rough mason*, represented the class either of stone workers or cutters, to whom apprentices could be bound. The omission is curious, and perhaps significant", or could not the word have been omitted by accident?"

Chap. VIII., "Early British Freemasonry, Scotland." Under this heading is collected for the first time a *resumé* of the information derived from personal inspections of the records of the first Lodges in Scotland, and from the published histories of some of them by reliable writers. For the benefit of those unacquainted with Masonic history, the names are here given with the numbers as they now stand in the list of Lodges:—Mother Kilwinning, 0; Lodge of Edinburgh, 1; Canongate Kilwinning, 2; Socon and Perth, 3; Glasgow St. John, &c., 3 bis; Canongate and Leith, &c., 5; Old Kilwinning St. John, 6; Hamilton Kilwinning, 7; Journeymen, Edinburgh, 8; Dunblane, 9; Torphichen Kilwinning, 13; Peebles Kilwinning, 24; Aberdeen, 34; Ancient Lodge, Dundee, 49; St. Andrew, Banff, 52; St. John, Kilwinning, Haddington, 57; St. John, Kelso, 58; St. Ninian, Brechin, 66; and the extinct Lodges of Acheson Haven and Haughfoot, with the Lodge of Melrose yet remaining independent. "The oldest Lodges in Scotland possess registers of members and meetings, as well as particulars of their laws and customs, ranging backward nearly 300 years. Many of these bodies were the founders of the Grand Lodge in 1736."—"Not the slightest vestige of authentic evidence has yet been adduced in support of the legends in regard to the time and place of the institution of the first Scottish Masonic Lodge." While the southern Lodges "hold the fraternity to have been organised at York in the time of Athelstan, A.D. 926, Scottish Freemasons are content to hail their descent from the builders of the abbey of Holyrood, Kelso, Melrose, and Kilwinning, the cathedral at Glasgow," &c. But they are not agreed as

to which is the earliest; they rank simply according to the antiquity of the records,—and Melrose still stands aloof! By the "Schaw Statute of 1599," the Lodges then ranked as Edinburgh, Kilwinning, and Stirling, Kilwinning being specially noticed as the "heid and second Lodge of Scotland."

After alluding to the theories which connect the Kilwinning Lodge with the (modern) degrees of "Masonic Knights Templars," and of the "Royal Order of Scotland," Lyon emphatically declares that the Lodge was never more nor less than a society of architects and artisans incorporated for the regulation of the business of the building trade, and the relief of indigent brethren, until the development early in the eighteenth century, of speculative masonry; "so imperceptibly," he adds, "has the purely operative character merged into the condition of a purely speculative one, that the precise date of such change cannot with any certainty be decided upon." "In this opinion I concur," writes Mr. Gould, "though for speculative we should read *Grand Lodge Masonry*." While, quoting from the minutes of the Lodge of Edinburgh he states that the first admission of speculative masons was in 1600. "I use the word *speculative* as an equivalent for *non-operative*." This is a useful memorandum of Mr. Gould's, and we may probably see it reproduced with other references by him in a succeeding volume, when he writes a chapter upon the connexion between the operative masons of old and the present Freemasons. As regards the English Lodges, Ashmole and Dr. Plot both prove that non-operatives were admitted in the seventeenth century, it being the practice of all trade guilds from an early period. To many readers the fact will be new that in Scotland in the seventeenth century the members of masons' lodges were not exclusively operatives, and the admission of members by a member of a Lodge, is noticed at least three times. The "United Incorporation of Mary's Chapel" included wrights and masons (not masons and wrights), and it therefore appears that there existed "two separate and distinct bodies" at the same time; a Lodge of Edinburgh "at least before 1598," is referred to in "the Schaw statutes, 1599, as the first and principal Lodge in Scotland." This circumstance does not appear to be particularly noticed by Mr. Gould; but he states that "it is argued that the prescription of the essay, as well as the final examination and decision, rested with the 'Incorporation of Mary's Chapel' " above noticed. He does, however, concur in the view that "in the seventeenth century the power of raising fellow-crafts to the position or status of masters in operative masonry was invested in the Incorporations and not in the Lodges, the latter simply certifying that the candidates for such positions were duly passed as competent fellow-crafts." A very strong expression of a consensus! A "seal of cause," 1600, at Glasgow, was required to separate the wrights from the masons as an incorporation.

The *St. Clair Charters*, the originals, one probably of 1601-2, the other 1628, are entirely silent as to the Grand Mastership of the Craft being hereditary in the St. Clairs of Roslin, "yet that distinction has been claimed for this family,—it is simply untrue." "The junior document refers to a destructive fire in Roslin Castle, a convenient circumstance, fire or other visitation of Providence is an old method of seeking to turn the edge of criticism." "The laws of December 28, 1598, promulgated by William Schaw, master of work to King James VI., are sufficient to prove this. These laws were compiled in order that they might be sent to all the Lodges in Scotland, having received the unanimous sanction of the masters convened at Edinburgh, and to which William Schaw, the master of work (by royal appointment) and general warden, had duly subscribed his name, and enjoined their due observance by the Scottish craft. Of scarcely less importance are the laws of the following year, signed by the same official, having particular reference to the old Lodges at Edinburgh and Kilwinning, the clauses of which are most extraordinary in character, considering the period of their promulgation, and afford an insight into the usages and customs of the craft, superior to any other documents which have come down to us from remote times." "An authentic copy" was to be made and "sent to all the Lodges in Scotland, the names and number of which unfortunately the record does not disclose." Is not this as sufficient an example of a head lodge or school or

* The History of Freemasonry: Its Antiquities, Symbols, Constitutions, Customs, &c. Derived from Official Sources. By Robert Freke Gould, Barrister-at-law, Past Senior Grand Deacon of England, Vol. ii., 4to, pp. 243 to 604. London: Thos. C. Jack, 45, Ludgate-hill. See *Builder*, p. 37, ante.

consensus as can be expected to be found? Now, from whence did these twenty-two rules emanate? Were they framed in Scotland, and taken up by the English lodges, or were they first framed in England, as has been before suggested? "These regulations of 1599," writes Mr. Gould, "are in many respects most singular,—as applicable to a particular Lodge, and containing an authoritative judgment respecting the relative precedence of the three head Lodges in Scotland: they are absolutely unique." There was a "convention" of Lodges called in January, 1600, at St. Andrew's, apparently by order of the warden-general, the Lodges of Edinburgh, St. Andrew's, Dundee, and Perth,—doubtless attended. Are not these additional proofs of a consensus? "The Lodge of Acheson-Haven, held successively at Musselburgh, Prestonpans, Morrison's Haven, Acheson's Haven, and Pinkie, and in conjunction with the Incorporation," regulated the affairs of the masons' trade within those boundaries until the middle of the last century. In its charter, granted in 1814 by the Grand Lodge of Scotland, it was certified that the Lodge had been in existence from the year 1556." It had a version of the "old charges" of the year 1616, probably a copy of a much older one being replaced in that year.

Another useful memorandum from the Lodge of Edinburgh is that on December 27, 1636, the term *frise masons* is used, and this entry Lyons declares "to be the earliest instance yet discovered of the term being, in Scotland, applied to designate members of the mason craft, and considers that it is used as an abbreviation of the term *freemen masons*. Both Mr. Gould and Mr. Hughan agree in this conclusion, though the former thinks the earliest use may be virtually traced back to 1551, as in Melrose version of the 'Old Charges,' one that does not annul the conclusion which was promulgated in 1862, that in England it was derived from *freestone mason*. In the Lodge at Kelso, the prefix *free* is not used until 1741, when the Lodge was called "The Society of Free and Accepted Masons."

The term "Lodge" is considered to be found first used in 1491 ("the masonwys of the age" [of the kirk work, as I read it] June 27, 1493, is given p. 122, which must be an earlier record, if a clerical error has not occurred), the mention of its use later need not be noticed. It will be remembered that in England it occurs about a century earlier, as seen in the Fabric Rolls of York Minster, and that at both periods "it was understood to mean the covered shed in which the (free) masons assembled to fashion the stones, to which only the regular craft had access, *covens* being especially excluded." "Booths to work in" are mentioned 1600.

Only one instance acknowledging the lawfulness of a female occupying the position of *dame* in place of a "master mason," was traced by Lyon, but Mr. Gould finds an entry of April 17, 1683, in the Lodge of Edinburgh, and writes: "It is not a little curious to note how anxious the members were to guard against the potential rivalry of masonic 'dames,' thus proving that widows of Freemasons were not permitted to join the Lodge, although, to a certain extent, they were made free of the trade." This point of "admission" was adverted to in the previous review.

"The degree of Master-Mason is, for the first time, alluded to in the Kilwinning records of 1736 (June 24), when a by-law was passed that such as are found to be qualified as apprentices and fellow-crafts 'shall be raised to the dignity of a master, gratis.' The laws of the Lodge of Aberdeen, 1670, distinctly show that the *title* or *grade* of master-mason was then unaccompanied by any secret mode of recognition; it specified in those days a duly-passed apprentice, who was competent to undertake work on his own account, and a gentleman (or geometric) mason, upon whom the title was bestowed in an honorary or complimentary sense." Only two classes are noted in the rules of 1670, viz., master-masons and apprentices, the former being sometimes described as fellow-crafts, i.e., those who had served their lawful time as apprentices. A "warden" was first appointed 1759, in the Lodge of Haddington, now extinct. From 1702 this Lodge "had really a greater claim to be deemed a 'speculative' than an 'operative' Lodge. In 1424 each trade, by the 'Laws of the Burghs,' with the officers of the town, was empowered to choose a 'deken or maisterman,' to assay and govern

the works of that craft; but in 1426 their powers were restricted to examining every fifteen days that the workmen are cunning, and their work sufficient." In 1427 the privilege of electing deacons was withdrawn, that they might no longer "hold meetings which are often conspiracies," and the government of all crafts was entrusted to *wardens*, who were to be appointed by the council of the Burgh, or the Baron in landward districts, with other powers.

The Melrose Lodge,—the independent Lodge,—whose records date in almost unbroken succession from the year 1674 down to the present time, by its earliest minute appoints seven years as the term of apprenticeship; 8*l.* Scots to be paid for meat and drink, and 40*s.* Scots "for the use of the box by and allow ym sufficient gloves; when made frie mason, he must pay 4*l.* Scots, to 'be stowet at the pleasour of the Lodge'; apprentices and fellow-crafts to be received only on St. John's day."—records of a custom long past.

In commenting upon the history of the masons of Aberdeen, our author is greatly assisted by the publication called "Extracts from the Burgh Records," comprehending the proceedings of the Council and of the Bailie and Guild Courts from 1398, being most valuable accumulations of historical importance. These were published by the Spalding Club, and by inference it may be presumed that other towns in both countries might supply similar useful and important information. In this instance I do not go with the author that this "lodge of the kirk work" is necessarily the Masons' Lodge of Aberdeen, for the actual records of the Masons' Lodge only date from 1670. An edition of its rules, dated 1670, was printed either in 1680 or 1682, but no copy has yet been traced; the representatives of former members are urgently requested to examine all books and old bundles of paper in their possession in the hope of recovering one of these copies. These "Burgh Records" state that "on Feb. 1, 1484, it was ordered that 'craftsmen' bear their 'tokens' on their breasts on Candlemas Day; and on Jan. 23, 1496, that every craft have its standard. The latter was carried when any procession took place. On May 22, 1531, it was "ordained that the craftsmen in their best array keep and 'decoir' the procession, every craft with their own banner with the arms of the craft thereon; last of all, nearest the Sacrament, passes all hammermen,—that is to say, smythis, wrichtis, masonis, cuparis, sclateris, goldsmithis, and armouraris." The "History of the Blue Blanket, or Craftsmen's Banner,"—written on very doubtful authority,—was published at Edinburgh in 1832; probably our author may have something more to tell us on this matter. On St. John's day, 1745, in the Melrose Lodge, it was proposed "that all the members do attend the Grand Master to walk in procession from their meeting to their general place of rendezvous, with clean aprons and gloves. . . . The members continue to keep the festival of St. John the Evangelist, as did their ancient forefathers, and proceed in procession by torchlight through Melrose to the ruins of the abbey, which they illuminate with coloured fire, and afterwards dine together." Mr. Gould regrets that this Lodge should have a "continued objection to accepting a place and number on the roll of the Grand Lodge of Scotland." As an expression of opinion of an outsider, it may be asked, Why should it agree to be swamped in the number of modern lodges under the Grand Lodge system?

In the laws and statutes of 1670 of the Lodge of Aberdeen, "Each apprentice was required to pay four *rix* dollars at his admission and to present every member of the Lodge with a linen apron and a pair of gloves, though if his means were insufficient to 'clothe the Lodge,' a money payment was substituted for one in kind, and two additional dollars with a dinner and some wine sufficed for his contribution, exclusive of one mark piece for his mason mark and another to the convener of the Lodge. A dinner and a pint of wine also commemorated his attainment of the fellowship." "All apprentices and fellow-crafts were required to pay *twelve shillings Scots* to the master mason." A pretty penalty this for an apprentice operative, the Lodge in 1670, containing more than fifty members! If the difference of money has been observed by Mr. Gould, we could have wished for some explanation of the employment of "*rix* dollars," which are not exactly Scottish money, yet the national money is named later. Has this any connexion

with any influence from foreign masons working in Scotland?

The Schaw statutes of 1599 provide for an annual test of apprentices and craftsmen with regard to their skill as masons. Regular essay masters were appointed at Kilwinning and Edinburgh, whose duty it was to be present at the performance of the task, "and see that the candidate actually did the work as settled on by the house." At the Aberdeen Lodge the setting and execution of the "essays" or "masterpieces" as necessary to obtain full membership are frequently referred to, "the only marvel being that the custom was continued for so many years after the Lodge joined the Grand Lodge of Scotland. Essays or masterpieces were common to all, or nearly all, the trades, though in general,—here differing from the later Freemasons,—demanding a knowledge of operative rather than of speculative science." In the Independent Lodge of Melrose "the rule which required an examination as to the skill of the craftsman was not to be infringed with impunity, for in 1707 three persons, who had absented themselves from the required scrutiny were there and then 'denuded from aine benifite' until due submission was made." These "Essay masters" appear to have been called "intendents" or "intendars." In 1714 the Edinburgh Lodge "prohibited its journey-men from acting as deacons, wardens, or intendents.—This office is a very ancient one." The Lodge of Dunblane in 1720 records that a member, "after the examination, was duly passed from the *square* to the *compass*, and from an entered apprentice to a fellow of craft of this Lodge." In 1729 two apprentices having "a competent knowledge of the *secrets* of the mason *word*," were passed. The Decret Arbitrat of Edinburgh alludes only to the "mason word." The duties of the intender were defined in 1725 to consist of "the perfecting of apprentices so that they might be fit for their future tryalls." They occur in the books of the Lodge of Edinburgh so late as 1714; and, in the Lodge of Peebles, they were "selected at times for such a purpose, extending over a century and a half, a similar office being known at Aberdeen so early as 1670." But this reads more like Speculative or Grand Lodge masonry of later date, as intimated in a later page of the work under review.

"Boycotting" or a similar practice appears in vogue. "The Lodge used every means in its power to prevent '*unfremens*' from engaging in work on their own account; as in 1599, when one 'set the Lodge at defiance by working as a master, and 'even those who had served their apprenticeships were prohibited from obtaining work, until they had secured the consent of the Lodge by taking up their freedom, and of the municipal authorities by the purchase of their tickets as burgesses.'" Mr. Gould records several instances of the "exhibition of spleen and imposition of fines" on the outsiders and others which may have been carried out by other Lodges equally jealous of the privileges. "No master or fellow craft to receive 'any *cowanis*' to work in his society or company, or to send any of his servants to work with them, under a penalty of twenty pounds for each offence." This word occurs in 1598, and again in 1599 (p. 390). The Lodge of Kilwinning in 1705 defines a 'cowan' as "a mason without the word." Can any of the readers of this review assist in discovering the meaning of this old word? The note given in explanation is not satisfactory. Amongst my own notes I find that "the term 'cowan' is given in the Carree of Clackmannanshire, to distinguish from the regular masons the men who are employed in building any stone walls for inclosing fields." If this term be peculiar to that locality, possibly its explanation may there be obtained. The obvious meaning of its introduction into the Lodge rules is, that the regular or educated mason should not work with the uneducated. In 1622 one was "accused of feeling a cowan"; "to work in a Lodge was the privilege of *freemasons*, *cowanis*, or disobedient members being excluded"; and as late as 1697 an agreement of the Haddington Lodge declares that one of the members "shall not work with nor in company nor fellowship of any cowan at any manner of building nor mason work." Were such persons being introduced to assist in works for cheapness, or from some difficulty in obtaining efficient trade assistance? Happening to turn to Chapter II, we find that in the Melrose MS. (19), the term "Loesses" appears to take the place of "cowans"; this MS. is the oldest, virtually, of the four Scottish versions; it is

clearly a transcript of one of A.D. 1581 or earlier.

When referring, some years since, to the Halliwell poem as written by a priest, the difficulty occurred as to how he could have been a Freemason, or connected with a Masons' Company. This is probably now explained by Mr. Gould's researches, who assumes that as it is probable none of the early masons were qualified to keep the minutes of the Lodge, a cleric would be employed; and in the records of the Lodges above named, the clerk "notar publicus" in 1636 was a mason or "ane brother of craft"; other notices occur, 1706 and 1709, which are too late in our inquiry.

So much has been believed by the outside public of the value of the Masonic system as an assistance to members while travelling, that we were scarcely prepared to read the paragraph, "Those intolerable nuisances,—Masonic tramps,—vexed the souls of the Kilwinning brethren in days of yore, as they do the society in these more favoured times. In 1717, a very late period, by the way, 'the members passed a resolution that, as the Lodge have been imposed upon, no charity be given to travelling brethren without an order from the master,' and 'no better regulation has been since made to lessen the evil.'"

In 1652 objection was taken to a Presbyterian clergyman because he was a Freemason. The Presbytery of Kelso replied, "that to their judgment there is neither sinne nor scandale in that word, because in the purest tymes of this kirke, maisons having that word have been ministers; that maisons and men having that word have been and are daylie in our sessions, and many professors having that word are daylie admitted to the ordinances." The "giving 'the mason word,' competent knowledge of the secrets of the mason word," on receiving the mason word, "shall pay for the benefit of the mason word twelve pounds Scots at their entry thereto," there was something in the assembly spoken against the mason word, "such conduct brought all law and order and the mason word to contempt," they then whisper the mason word, "are among the references to its use in the names under review, while Lyon speaks of the mason word as 'constituting the only secret that is ever alluded to in the minutes of Mary's Chapel, Kilwinning, Atecheson's Haven, Dunblane, or any others that he has examined, of earlier date than 1736.' This chapter has taken more consideration than was at first thought necessary, but the information brought before us deserves great attention from its novelty, and from the opportunity it gives to form a comparison with the English Lodges, never before attainable.

Chapter IX.—"Masons' Marks." This chapter commences with stating that Mr. George Godwin, the editor of this journal, in 1841, submitted a communication on the subject of these peculiar marks to the Society of Antiquaries, and another in 1843, and further mentions the other writers who have more or less observed them. Into this subject, interesting as it may be, we need not here enter, for however much it may be dilated upon, we can but refer to our opinion expressed in 1863, and also quote the words of our author:—"Probably nothing would have more astonished the workmen of past ages than the interpretation which has been placed on their ancient signaturos. For any practical purpose, collections of marks are alone valuable in determining whether the same workmen were employed, to any great extent, upon buildings in the same countries."—"They could not have referred to any esoteric doctrines." Mr. Gould brings together a very interesting series of English statutes and other laws relating to the custom or requirement of affixing a mark to goods and manufactures, and gives a plate of "Masons' marks" for the benefit of the unlearned in such matters.

Chapter X.—"The Quatuor Coronati,—the four crowned or four holy martyrs,"—contains "the history, legendary, or otherwise, of the four patron saints of the Mediaeval building trades." The first mention of these martyrs is traced to St. Jerome, who wrote about A.D. 400. "Four officers of the Roman Imperial Court and five sculptors were martyred for their faith in Christianity, in the reign and apparently by the direct order of Diocletian, and were interred in the same spot on the Via Labicana, a little outside Rome, where a church subsists at the present day. The names of the five having, in process of time, become forgotten, it was

ordered that the entire nine should bear the appellation of the four crowned or holy martyrs. The names of the five were subsequently recovered, but the whole nine still retained the original title. Hence has arisen a certain amount of confusion, while it happens strangely enough that the four officers have become the patron saints of the building trades instead of the five sculptors,—and the trade or profession of the five has survived under the name of the four."—"The four crowned ones were Severus, Severianus, Carpophorus, and Victorinus; while those of the other five martyrs were Claudius, Castorius, Nicotratius, Symphorianus, and Simplicianus; these were the sculptors. Their history is given by extracts from various Breviaries; unfortunately the "Acta Sanctorum," though in 1868 it had reached forty-seven volumes folio, stops short at the end of October, and therefore omits the names. "The building trades chose the sculptors as being the nearest approach to men of their own calling. All references to the *ars quadratoria*, their being masons, &c., are clearly the invention of those trades whose patrons they had become." It is curious that a church in England was named after the Four Martyrs, as at Canterbury. Bede mentions, in 619, "that the church was in the place where the fire raged most"; and it is noticed that Heidehoff says that many altars erected by Mediaeval masons were dedicated to the Four. "Where are they?" asks Mr. Gould. The four also appear in the early German ordinances. The earliest Masonic document yet discovered, in which mention is made of the Four, is English, not German; they appear in the Halliwell poem, considered by him to be "not later than the latter part of the fourteenth century."

Chapter XI.—"Apocryphal Manuscripts," containing six documents, viz., the Leland Locke, which cannot be traced before 1763; the Steinmetz Catechism; the Malcolm Canmore Charter; Kraus's MS., or Prince Edwin's Constitution of 926; the Charter of Cologne; and the Larchman Charter, or the Charter of Transmission. Mr. Gould has done great service in clearing away these "ancient landmarks."

In concluding this long series of extracts from this interesting, valuable, and unique collection of notes and records on a subject about which so few facts have hitherto been obtained and published, Mr. Gould suggests plenty of work for the future historians of Masonry. "There are the Fabric Rolls of several cathedrals still in MSS.; possibly, also, many MSS. relating to abbey libraries. Could some one of our great public libraries. Could some one be found who possessed courage and patience sufficient to enable him to go through, even with the help of the indexes, the printed chronicles and documents relating to our Mediaeval England, I will not speak of the materials still existing in MSS., which, I think, amount to between 2,000 and 3,000 volumes, according to Sir Thomas Hardy's catalogue, he would, doubtless, clear up much which is obscure in the history of Gothic architecture."

WYATT PAPWORTH.

NOTTINGHAM MUNICIPAL OFFICES COMPETITION.

THE competition for the proposed new Municipal Offices at Nottingham is one of the few which have been carried out on the principle of having a sketch competition first, and selecting a few from that to compete with finished drawings. The Corporation, or their professional advisers, carried out the idea of a sketch competition rigidly in the first instance, as they refused to allow any elevations to be submitted; the drawings to consist only of plans and a sketch showing the general idea of the building. We did not see the first competition drawings, and, therefore, cannot say how far the competing architects availed themselves of the real advantages of the arrangement, by avoiding unnecessary expenditure of time and labour on the drawings. The objection made to the preliminary competition system by its opponents is that just the same trouble is occasioned in preparing the preliminary drawings as in the ordinary cases of single competitions. All we can say is, that this is the fault of the competitors, who probably think that the judges will be more influenced by the pretty drawing than by the idea of a design, and each one is afraid of being out of the running if his drawings look rougher than the others. But there are signs of a reaction in this respect, and a desire

on the part of public bodies to be exceedingly practical in their ideas about building; and when this is found to be the case, architects who go in for sketch competitions will no doubt find the wisdom of accepting the position and trusting to the real merit of their ideas, instead of to the mechanical work of their draughtsmen, to win the prize. We are, at all events, glad that the Nottingham Corporation have set an example of carrying out competitions on this principle, although we may observe that it would have been still better if the principle, as we have always upheld it, had been more strictly carried out, viz.: that of a very small selection from the first set of competitors, and payment to all selected, for their second and finished set of drawings. That is the only way of being really fair to the architectural profession in the matter. The promoters of the competition may reply, as they perhaps would in this case, "We cannot afford to pay seven or eight people for drawings which may be of no use." Then do not select so many. We have before had occasion to observe that in these cases there are seldom more than two or three designs in the first competition which it is really worth while to see in a more complete form; sometimes it is apparent at once which is the design that must inevitably be selected. In most cases, however, the promoters have bound themselves, either explicitly or by implication, to select a certain number; in the present case they promised to select "not more than eight designs" from the first competition, and by naming this limit they led to an expectation that something like that number would be selected, and they have, in fact, chosen seven. They would have entirely unfettered by any such understanding, chosen only those few of which they could say that one or other of them was really likely to be carried out, and paid them all for their work in the second competition. If they had selected four in the present competition, and paid them all, they would have been in much the same position as now, for the un-premiated designs in the competition are certainly, on the whole, quite inferior to the premiated ones, and must have been seen to be so from the first, and, therefore, it could never have been intended to carry them out. Three or four architects, therefore, have been encouraged to waste their time for nothing, as a mere matter of form. We take as opportunity of calling attention to this as a lesson in future cases. Our advice to competition Committees,—advise in the best interests of architects and of employers alike,—is, Select only those designs from the sketch competition one or other of which you would seriously contemplate carrying out, and remunerate all those competitors for making finished drawings and enabling you to judge of the merits of their schemes in detail. Then no one can complain, and no one's time is wasted in making expensive and elaborate drawings on speculation. That is the only business-like way of doing it, and that is what we hope to see all architectural competitions come to.

In the present competition the instructions were for a building to contain the usual departments required in the municipal offices for a large town, including council-chamber and mayor's apartments and committee-rooms, a sessions court and police court with their necessary surroundings in the way of magistrates', solicitors', and witnesses' rooms, accommodation for the town clerk's department, borough engineer and surveyor, medical department, police department, and offices for business connected with gas, water, and rates; the latter to be, as usual, easily accessible by the public. To these and various minor requirements was to be added accommodation for the School Board. The site is a piece of land about 500 ft. in length by 200 ft. in width, the long side extending along Sherwood-street and partly facing University College, so that this evidently becomes the principal front. A plan of the site, on the scale required for the drawings (sixteen feet to an inch), was furnished to the competitors, without, we may observe, any indication of the points of the compass, which can be approximately derived only from the statement in the body of the "Instructions," describing the site as bounded on the north by Shakespeare-street, on the south by Burton-street, and on the west by Sherwood-street. Perhaps this omission may be a partial excuse for one competitor ("Speedwell") who has carefully contrived drawing-offices for the

borough surveyor with a long range of windows facing south, so as to have the sun on the drawing-boards during the whole of the working hours in summer. At all events, we may suggest to official draughtsmen at Nottingham and elsewhere that aspect is of some importance in a building site, and that the north and south point is one of the first things which an architect with his wits about him looks for when he unfolds the site plan for a competition. The ground falls about 21 ft. from south to north, and is nearly level the other way, a disposition of site not unfavourable for the grouping of departments and the arrangement of entrances. The Corporation made little express stipulation as to the arrangement of the plans, only suggesting that the police department would be best at the Shakespeare-street end, the principal municipal offices at the Burton-street end, and the gas, water, and finance offices facing Sherwood-street; and most of the competitors have adopted this disposition in the main. No special style of architecture was suggested, and stress would be laid on good light, efficient ventilation, simplicity of communication between the various departments, and substantial construction. No limit of cost was fixed, but an approximate estimate was requested. Premiums of 300*l.*, 200*l.*, and 100*l.* were to be given to the designs judged to be respectively first, second, and third in merit. The result so far is that the Corporation are so divided as to the merits of the two sets marked "Wisdom, Strength, and Beauty," and "Queen Bess" that they wish to throw the first two premiums into a lump sum and divide it equally between these two competitors, and had written to the authors of the drawings to get their acquiescence to this arrangement, but with what result we are not informed at the time of writing this. The question which should be actually executed will be for after-consideration. This is not a very satisfactory way of adjudicating. The third premium is awarded to the design marked "Sepia."

There are, broadly speaking, three kinds of plans that one generally meets with in a collection of designs for a large and complicated building. There is the scientific plan, which is grouped around certain main points, so that the internal plan in itself should form a kind of guide to the steps of the explorer; there is the rabbit-warren type of plan, in which rooms and passages are dovetailed into one another with a conscientious desire to utilise space, and which sometimes does not prove so perplexing in actual use as it appears on paper; and there is the "simple" plan, which consists in drawing corridors at right angles across the building, dividing the spaces on each side into so many squares and parallelograms, and labelling them with the names of the rooms required. This last has the one merit of being very easy for the architect, which is not, unfortunately, the object of those who invite competition plans. Among the seven sets exhibited at Nottingham there are specimens of all these styles. The scientific plan is illustrated, on the whole, very well, in the design signed "Wisdom, Strength, and Beauty." As far as plan goes, there is no question that this design is the best; it has some faults of detail, but in its general arrangement it is the best and most conveniently grouped of all, and one in which it would be easy to find the rooms one wants, and in which also the internal communication between departments is sufficiently provided for without mixing them up together. The object to be arrived at is to isolate the principal departments sufficiently without rendering communication between them difficult or tedious when it becomes necessary. The author shows three main entrances and staircase halls; the centre one gives direct access to the gas, rates, and water offices opposite, the portions of these offices to which the public are admitted being drawn together in the centre; a smaller hall near the south end forms the centre of the municipal portion of the building, and a nearly corresponding one at the north end forms the centre and main access to the Courts department. Corridor communication runs from one hall or gallery to the others, so that traffic is not blocked anywhere, only regulated and divided. The courts and

their accessories are conveniently planned, on the whole; the privacy of the magistrates in their rooms and their method of access to the courts is very well cared for; the magistrates' clerks' rooms are a little too far from the magistrates, and the witnesses' rooms are too far away and too public in the access to the court from them. This mistake occurs in nearly all the plans. Witnesses, for the time being, are often very tender and sensitive plants, and when once got into their waiting-rooms, they should have direct access to the court without going through a public corridor, or having occasion to leave their rooms again. The municipal chambers are arranged both conveniently and with a certain regard to dignity and effect; we should have preferred to see the Mayor's private room better placed, in an angle position, if possible, and better lighted. The council-room is in theatre form, which is the best for practical purposes and also for effect. The Town Clerk's offices run through three stories, which is not the most desirable arrangement, but which could, perhaps, hardly have been avoided; the Town Clerk himself is on the Mayor's floor. The Borough Surveyor, who wants plenty of light, would, perhaps, hardly appreciate having his windows recessed under an archway with a column in front of them. In other respects the official part of the building seems satisfactorily arranged. The author has decided, and we think rightly, to regard the School Board as a somewhat different department from the rest in its nature, which may be entirely isolated in a block of its own in the south-east angle of the plan, and with its own staircase from the street. In the upper plans there seems rather a large space expended in caretakers' residences, and on all the floors, especially in the basement, there are a good many water-closets placed among internal walls, and with no apparent external ventilation. We say with *Othello*, "That's not so good now"; but this defect is found in nearly all the plans, if not all, in the collection. The style of the design is based on Francis I. Renaissance. The line of the plan gives an effective outline at the angles of the main front; the front is treated with a centre and wings, with high pyramidal roofs, and a lantern of some elegance on the centre roof; plain walls below (the basement story battered), pilasters in the story under the cornice, and an attic ornamented in the orthodox manner with balustrades, balls, vases, and dormers; the windows mullioned and transomed in early French Renaissance style. The perspective is a beautifully-drawn and tinted view of the building, which is correct in its details according to the adopted style, and not unpleasing; but it wants dignity, and the total impression it gives architecturally is that of being suitable and in good taste, but hardly more. The author estimates the cost at 128,416*l.*

"Queen Bess," on the other hand, has, no doubt, been put in the place it holds mainly on account of its design and drawing. The plan is a good deal of the rabbit-warren type, and, indeed, the ins and outs of the various departments, longitudinally and vertically, make the plans and sections not a little puzzling to follow out, and some part, at least, of this puzzle element would be experienced in traffic in the actual building; and the exterior does not indicate this at all. The School Board offices are here at the north end, squeezed into one story between the police below and the courts above; they have their separate entrance. A sufficient number of entrances and entrance-halls and staircases are provided, in fact, almost an overplus, but some difficulty would be experienced, before adequate acquaintance with the building, in finding their relation to one another; nothing is central and direct, all the communications seem to be side-ways and end-ways; it would be one of those buildings in which "way out" would have to be prominently written up at various corners; a necessity which, in a public building, always shows bad planning. The council-chamber and its accessory rooms seem planned with no regard whatever to effect, and little to convenience. The magistrates' rooms are well grouped and concentrated in relation to the courts; they are kept on the north side and the public corridor on the south side of the two courts, and a little corridor running across between the two courts is adroitly labelled "Magistrates' Corridor," though it gives no access to the courts, and leads the magistrates to the public corridor, where

they would never wish to go. The witnesses' room is very distant, and they have to march the whole length of the public corridor to reach the courts. These, little practical jokes are always to be found in the rabbit-warren style of plan, and many of the groups of rooms show no indication which is the principal point, or which are private rooms and which are public. Water-closets with no obvious external window are frequent here also. The architectural design is in general, force and picturesqueness as superior to the first-named set, as that is superior in plan. The windows are very picturesquely treated, in large groups of projecting "bays," in a style we have been used to see in architectural drawings of late; the tower, at the south-west angle, which is supposed to mark the principal staircase (only that the plan leaves us in doubt which is the principal staircase), is most picturesquely treated in its upper stage, with a series of open arches in the thick walls, and bells hung visibly in them; the whole crowned by a light but not very pretty octagonal timber lantern rising from the tower roof. What is unfortunate is that, with this decided feeling for picturesque grouping, the author is content to copy some of the poorest and weakest features of Elizabethan detail because they are Elizabethan and are the fashion. The lower part of the tower, with its paltry-looking angle quoins and the unmeaning reminiscences of pilasters running up the walls and ending in nothing, is as poor in detail as the upper part is picturesque; the interior of the council-room, a fine room in some respects (a perspective view of it is shown) is decked with that wretched and meaningless strap ornament which is characteristic of the style, and is one of the poorest forms of ornament ever invented. Parts of the design, which is beautifully drawn in pen-and-ink, show that the author is able to realise forcible and original effects in architecture, yet he has been content in other parts to copy slavishly some of the poorest details of a mongrel style, for no better reason than fashion and precedent. That is "the way we live now," architecturally; and a poor way it is. The author's estimate is 118,500*l.* He has sent a complete set of plans and sections showing the processes of warming and ventilation to be adopted, into which we cannot go in detail; it is on the principle of hot-water circulation, which also induces the currents for ventilation, and a good deal of thought seems to have been bestowed upon it.

"Sepia" (third premium), has a plan much better than the last, and not much inferior in some ways to the first, which it a little resembles in general principle, and in the planning of the principal departments. The council-room and suite of rooms in relation to it are well and effectively arranged around a small hall of their own. There are defects of detail, which look rather clumsy,—passages running parallel with each other, one private and one public, and so on,—and some of the corridors would be deficient in light. Internal communication is well kept up, but not so obvious or so clear in its lines as in "Wisdom, Strength, and Beauty," and the School Board staircase is injudiciously placed, so as to be difficult to find and without sufficiently separate access. Still, for plan alone, this should stand second; but the architectural design is not of much interest. It is Renaissance, "freely treated," which means with a good deal of florid carving and some rather eccentric detail, having the merit of originality, but not very refined; and, in spite of the elaboration of the detail, the general impression of the perspective view is somewhat heavy and uninteresting. The elevations present a symmetry at variance with fact; for instance, the School Board-room,—a large square room (a bad shape for a room of that size),—occupies the principal range of windows in one of the side pavilions; but the exactly similar range in the corresponding pavilion only lights some small clerks' offices, and other parts of the design are similarly illogical. The estimated cost is 157,883*l.* 9*l.* 9*d.*, a somewhat absurd exorbitance of pence in an estimate probably only got by cubing.

"Strive to Thrive" (we take the unpremeditated designs in order of hanging) has some very good points in parts of his plan, and is the only competitor who has contrived, in planning his law-courts, to group magistrates, witnesses, and the public, outside the courts, so as to bring each close to their own proper entrance and lead them naturally to it; the courts are placed at

* Since this was written we learn that the names of the successful competitors are as follow: "Wisdom, Strength, and Beauty," Messrs. Verity & Hunt, London; "Queen Bess," Mr. F. H. Oldham, Manchester; and "Sepia," Mr. George Cresson, Leeds. The first two are, we learn from the Town Clerk, bracketed for the first place, and the latter receives the third premium.

right angles, so as to bring the public entrance of each on to the public hall which forms the common vestibule to the two. The municipal portion is not so well planned. The gas, rates, and water offices are very well and very effectively placed in regard to public access, but the author seems to have been so bent on making grand rooms of these that he has cut himself short of room in the smaller offices. The internal communication is generally well arranged and sufficiently simple. The design is Renaissance, decorated with pilasters, and with round-arched windows; it is cold in effect, and the octagonal cupola on the north-west angle is an absolutely unnecessary addition, put there to "look pretty," and having no relation to anything in the plan. The perspective interiors of some of the rooms show them as sumptuous and effectively designed. The estimated cost is 131,900.

"Speedwell" is well planned in the council-room portion, but in some other parts not at all so. The curious position of the surveyor's drawing-office, with the south light, we have before mentioned. The author says in his report—"Ventilation has been duly considered and ventilation-shafts provided," a sentence which we quote as an amusing type of the vague assurances frequently to be met with in competition "reports." If the placing of ventilation-shafts were all that was necessary to ensure ventilation we might soon be a happy and ventilated people. Would it surprise "Speedwell" to hear that air will not go up ventilation-shafts unless it is impelled to do so by force of circumstances, either natural or artificial; indeed, that it has been known immorally to come down ventilation-shafts when it ought to go up? The design shows a rather low, symmetrical, quiet-looking building, with Gothic details, more decidedly Gothic than we usually meet with now in competition designs, but exceedingly tame and feeble in treatment. It is due to the author to say that his estimate of cost, 121,225, seems more like reality, in relation to the scale of the design, than most of the others.

"Fiat" is a somewhat bold and effective design, but, for the most part, very faulty in plan. He has a rather over-large council-chamber in the south-west angle, coming up to the main front; the mayor's retiring-room is a small octagon, branching out from the angle, and balanced by a similar octagon-room for one of the magistrates at the other end of the building, the two serving as excuses for octagonal towers at each end of the principal front, which form picturesque incidents in the architectural design. So far, well; but the law-courts department is planned just any how; the gas, water, and rates are far apart; the School Board department is central, and appears to have no entrance separate from the main central staircase. The design is of Early English Gothic type; the elevations look decidedly pretty and picturesque; the perspective view not quite so well, as it looks too much cut up and irregular in its roof lines and grouping, without a larger predominating feature to keep it in order. There are some fine detail drawings of parts of the design (the drawings altogether are a fine set), but the feeling for Gothic detail displayed in them is not very good. The estimated cost of this design is 115,968.

"Espérance" is, as far as plan is concerned, a nearly pure example of the "simple" plan before alluded to. It looks beautifully straight and square and symmetrical on paper; so many parallel spaces neatly labelled; but the result is that we find magistrates on one floor and magistrates' clerks on another, and the School Board rooms are ranged along parts of two public corridors at right angles to each other, with a room of the same size as the others, marked "coals," intervening; apparently a marked because the author did not know what else to call it. The design is pure Italian, such as might be sent in for the "Tite Prize," and is treated with knowledge of the style and with some dignity; but it must be admitted that the notion of this sort of architecture, for this climate, is out of date. We say this not as attacking the notion of the Italian style by any means, for, in fact, it has been the foundation of most of the best modern architecture, and still has, perhaps, more possibilities for development, as a modern style, than any other; but it must have new life in its detail; we cannot any longer be content with the orthodox balustrades and window architraves and their

pediment headings: there is a dignity about the style still, and it escapes vulgarity, whenever even moderately well treated; but it is lifeless. If we are to do anything with it, it must be not merely revived, but re-vivified. Such a style of building, too, would be quite unsuited to the genius-loci of Nottingham, with its long, irregular, picturesque, Medieval-looking market-place. The author's estimate is 120,000, which is far too low; for "your Italian," with heavy ashlar work and massive columns, is a most expensive style.

As we have hinted, we regard nearly all the estimates as below the mark, "Espérance" the most so, but nearly all more or less. That is the impression the designs convey, and one or two of the competitors state that they have cubed at 8d. a foot, which is certainly low for a first-class building. As to the choice, the Corporation, whether on their own responsibility or by advice, have certainly premised the two best plans and the most effective architectural drawings that have been sent in, and, on the whole, we can find no fault with their decision except that we should have been disposed to give the first premium to "Wisdom, Strength, and Beauty" outright, in consideration of the admirable qualities of his plan, though without being stirred to great enthusiasm by his architectural design. There will, no doubt, be a feeling on the part of many that Nottingham would like to have an architectural design so picturesque in general effect as that signed "Queen Bess," and we should have a certain sympathy with those. We may, however, enter a caution to the effect that a design of that type does not always look so well in execution as it does in a brilliant pen-drawing; and that revived Elizabethan and Jacobean details will not always be so much admired as it is the fashion to admire them just now.

BUILDERS' MACHINERY AT THE ROYAL AGRICULTURAL SOCIETY'S SHOW, YORK.

OWING to the excessive and ever-increasing competition in the building and kindred trades, the adaptation of machinery to common uses becomes increasingly necessary to promote the commercial prosperity and progress of these crafts and, as we have before remarked, the builder or manufacturer who judiciously, by mechanical means, lessens in the smallest degree the cost of production, improves the quality, or increases the range of the work performed, does not usually wait long for his reward. Although machinery, as an aid to building construction, is of comparatively modern introduction; its progress has been great, and it has without doubt done much to prevent the cost of modern house-building rising to ruinous proportions, and a very few builders can afford to be without it in a greater or less degree. This fact appears to be recognised in all parts of the country, and although the show held last week in York does not exhibit any startling novelties, it contains a number of machines and labour-saving appliances of material interest to builders. The number of exhibits, however, has of late years been greatly restricted, from the almost prohibitory tariff now charged for space for this class of machinery by the Royal Agricultural Society.

The largest exhibit of machinery especially adapted to the requirements of builders and contractors was that of Homptest & Co., of Grantham, at whose stand we noticed a combined circular and band-sawing machine, fitted with boring-table; and although we are, as a rule, not in favour of combination machines, this exhibited some improvement over others of the same class. It was capable of cutting tenons at one operation; this was done by means of saws instead of cutters as usually employed. The wood to be tenoned was cramped vertically in a travelling-slide working on a long fence, and passed through the circular saws mounted on the saw-spindle; these cut the sides of the tenon; the wood is then traversed further, and the shoulders are out by means of two other circular saws mounted on vertical spindles. These spindles are made adjustable transversely to suit varying thicknesses of tenons. The use of saws for cutting tenons, in lieu of cutters, has an advantage of low first cost; and we believe some users prefer a saw tenon to planed one on the score that it holds the glue better when put together; this advantage, however,

we should say is problematical. A combination machine, adapted for estate purposes, was also on show here; it was arranged for sawing, tenoning, grooving, robbing, slot-mortising, &c.; but it did not possess any special feature of novelty. Several well-arranged combined vertical engines and boilers suitable for small establishments were also exhibited here.

Mr. E. S. Hindley, of Bourton, Dorset, exhibited several machines suitable for contractors &c., including a circular saw-bench, fitted with self-acting feed-gear, the speed of which can be varied at pleasure or instantly stopped. This bench is well designed, but for this heavy work we should have preferred to see the main framing cast in one piece, instead of being put together in segments, as no matter how well this may be done, it is always more or less liable to disarrangement. We also noticed a small portable engine, fitted with a diagonal boiler and mounted on two high wheels; this has been specially designed for use in hilly countries and for travelling over rough roads, and is so arranged that, although the whole of the engine and boiler are above the axle, the whole balances evenly and with little weight on the horse's back. For working, the shafts are let down on the ground, and the engine and boiler then assumes a slanting position, but the tubes are so arranged that they are always covered with water. Various other vertical engines and boilers completed Mr. Hindley's exhibit.

The Reading Ironworks Co. showed a number of their wrought-iron "Universal" split pulleys. These are well adapted for driving joiner's machinery, as they combine in a considerable degree lightness with rigidity, points of considerable importance where a large number of pulleys are mounted on one shaft, as in saw-mills. We liked the general design of most of the engines exhibited here, but cannot say the same of the band-sawing machine, which was rather a crude specimen. A 6-hp. vertical engine was combined with a patent "Nozzle" boiler, for which is claimed a rapid and economical production of steam.

Messrs. John G. Rollins & Co., Limited, London, had on show several sets of American cross-cut saws for one or two men, made by Diston, of Philadelphia. These are an improvement on many of the cross-cut saws in use in this country, as they are rapid in action and clean cutting, with little drag on the saw. The teeth are formed in the shape of the letter M, and the bevel of the middle tooth regulates the extent of the cut; the more this tooth is bevelled, the faster the saw cuts, but the more power it requires to drive it. The squarer the bevel of the tooth is made the slower the saw cuts, and less power is required in proportion to work it. The outer teeth of each section are sharpened and cut after the manner of a rip saw.

Messrs. Verity Bros., of Leeds, exhibited several mortising and band-sawing machines, but of no special novelty; and Messrs. Bateman & Co. (Limited), of East Greenwich, a saw-bench and band-saw sharpening machine, and several well-designed emery grinding-machines.

Circular saw benches were exhibited by Messrs. Ruston, Proctor, & Co., Robey & Co., Hornsby & Co., and others. The saw-bench shown by Messrs. Hornsby contains some improvements in general details, but, like all the saw-benches exhibited by the agricultural houses, it is put together in sections, in favour of which system little can be said, and it is, to say the least, remarkable that it should be persisted in year after year.

Mr. R. V. Taylor, of Bury St. Edmund's, exhibited several of his automatic safety shields for preventing accidents to workmen whilst operating circular saws; the guard consists briefly of a steel shield formed as the arc of a circle, and suspended from a curved bracket attached to the back of the bench. The shield is held concentric with the saw by a stud, and balanced by a counterpoise. It is made adjustable both vertically and transversely, and is held true over the saw by means of small guide rollers. As the wood to be sawn is pressed against the saw the shield rises before it, and rests on the top of it till the cut is completed, when the counterpoise brings it back to its original position. As the Employers' Liability Act is now in force we can recommend the above apparatus to the attention of circular saw users.

Amongst miscellaneous exhibits the portable railways and rolling stock exhibited by Messrs. John Fowler & Co. and Decauville Aind are deserving of attention, and with slight modi-

fications would be well suited for brickfields and similar work. Some neat drainage fittings and drain-cleaning rods were shown by Messrs. Murray & Co., of Banff; B. Reid & Co., of Aberdeen; Barford & Perkins, of Peterborough; and others.

A large number of traction, portable, and vertical engines were shown. It is impossible, however, to give more than a passing notice to some of those in which novelties or improvements in construction are to be found. Amongst the traction engines Messrs. Aveling & Porter exhibit one fitted with springs or elastic wheels, which should be an advance over the older forms. Springs are also employed by Messrs. Fowler & Co. in their engines. Messrs. Foster & Co., of Lincoln, exhibit a portable engine fitted with Stark's Patent Automatic Expansion Gear, which appeared to work well, and should be useful in driving machinery when the load is very variable. A number of compound engines were shown by Messrs. John Fowler & Co., Ruston, Proctor, & Co., Garrett & Co., Messrs. Hornsby & Sons, Limited, and others. Messrs. Garrett, who were, we believe, the original introducers of compound portable engines, show an engine with a new patent boiler, in which the fire-box is fitted at the back end with folding doors of fire tiles, especially adapted for straw burning, the top of the doors being used as the fire-bridge. To promote combustion a current of air is introduced from the smoke-box end of the boiler, and the inventors claim for this system a large saving over the older plans of straw-burning in use. If it is desired to employ coal as fuel in the ordinary manner the fire tiles doors are opened and rest against the side of the fire-box. A small but useful improvement in portable engines has been introduced by Mr. J. Coultas, of Grantham. It consists in the use of an endless screw and windlass, by which he raises the chimney into a vertical position, obviating the somewhat dangerous practice of a man mounting on the top of the engine.

A large number of gas and hot-air engines were exhibited, and some of these would be found useful in small builders' and joiners' establishments. Messrs. Dowson & Holt, of Leeds, showed an "Otto" gas engine, driven by gas generated on the field. The gas is stated to be a mixture of carbonic acid with hydrogen and nitrogen. It is claimed for it by the inventors that this gas can be produced at a much less cost than that made from coal, and that it is equally efficient.

A new and extremely simple gas engine, working without a slide-valve, was shown by Messrs. Cobham & Co., of Stevenage, Herts. Amongst hot-air engines we noticed a large array of the "Buckett Caloric." This engine appears to work easily and well, and, for small powers, should be useful.

Although, taken altogether, there were not many absolute novelties amongst the machinery exhibited at York, there were many fine examples of engineering construction, and much both to interest and instruct.

HALF A CENTURY OF PROFESSIONAL JOURNALISM.

IN the most delightful of all Leigh Hunt's delightful essays, wherein he reviews the London shops and all their alluring contents, he does, to our thinking, but scant justice to the most interesting class of all, to wit, the second-hand bookshops.

No wayfarer through the metropolis and its suburbs can have failed to notice these, and few there be who do not owe them some gratitude for discovered treasures, or, at least, for the dissipation of some moments of tedium. Every profession has a special *quartier* devoted to its wants. Law books, medical books, school books, the initiated know where to find them each and all. The dear little dusty musty shops and their tempting trays are familiar to every pedestrian, and form pleasant breaks in his otherwise monotonous walks between his business and his home. For ourselves, we are quite unable to resist their mute appeal. There is a well-known shop in the Brompton-road which it is simply impossible to pass, for there do old works on art and architecture abound. Like the smile of the worldly-wise miller in Tennyson's poem, it "strides across the footway and reappears on the outer edge thereof, offering us treasures on either hand, and perplexing our choice by this double attack upon our one in-

curable weakness. We admit our frailty in this particular, and do not care to amend. We agree with Hazlitt that the older the books are the newer they are to us, and, like him, we think none the worse of them for having delighted our great-grandfathers before us. As we enter the shop we are at once in dreamland. The old volumes in their infinite variety of shape, size, and condition are to us in themselves of engrossing interest apart from their contents. What a field for speculation each one presents! How often have they been knocked down to the lowest bidder, and roughly handled by illiterate churls! The dust lies thick upon their edges, and damp and mildew have stained and spotted their "sere and yellow leaves." Their backs, once smart with binder's bravery, peel off at our touch. There is a tragedy unconsciously written in the fly-sheets of many of them, eloquent of the hopes of youth and the needs of age. We can read into the names inscribed and reinscribed, the book-plates, the armorial devices,—stories of life's vicissitudes.

This one was given to a youth at his entering upon the serious business of life. It is only partly cut, and has not been much used. This one, gorgeous in morocco and gold, was a presentation copy, "with the author's compliments." We see the learned author with carefully nibbed quill complacently caligraphing, and we can enter into the satisfaction with which he appended to the dedication those swirls and flourishes,—those graceful gambols of his happy pen. Could we but find within the covers of the old volume the formal acknowledgment of its safe receipt, and all the courtly civilities the occasion called forth! This is a reviewer's copy,—the little string of mystic marks on the cover is no mystery to the initiated. They point to the weak places; a slip about an unimportant date, or the misreading of some complicated historical occurrence of no consequence now to anybody. The censor knows all about it, however, and brings the whole of his learned weight to bear upon the poor scribe. We have, perhaps, improved upon our predecessors in this as in some other matters, and modern criticism has gained in acumen what it has lost in acerbity.

Much may be learned from the prices pencilled and oft revised in these old books. Poor and shabby as they are, they have still their ups and downs; their values fluctuate, and there is no knowing whose turn may come next. These few volumes of an old magazine could, until recently, have been bought "for an old song." The trifle at which they were assessed has been obliterated, and 2l. 10s. is substituted in a bold confident hand; for a distinguished author lately avowed the parentage of some articles therein, and what was almost valueless became valuable at once. From an examination of these modest little volumes we learn that fifty years ago the architectural profession had no exclusively representative journal. London's excellent *Encyclopædia* treated of farm and cottage building, and was instrumental in diffusing sound views on architecture in some of its humbler forms. But it was not until 1834, when the first number of the *Architectural Magazine* made its appearance, that the profession was furnished with a special medium for its wants, and an advocate of its peculiar interests.

The magazine was published monthly, and consisted of forty-eight pages of small octavo, well printed on good paper. Its contributors were men of practical knowledge, and of approved literary skill; and it is superfluous to add that, being conducted by Mr. London, the editorial department was unexceptionable. It was copiously illustrated, and the illustrations were for the most part creditably drawn and engraved,—in some instances they were really excellent. The matter was varied and appropriate, comprising original communications on the principles of design, on the history of art, on the condition and prospects of the architectural profession. It contained reviews of art books in all the European languages. Intelligence interesting to all engaged in building was gathered from every available source, and queries on every conceivable subject found a place and almost always a reply.

Many well-known names, and many still at work on the literature of the profession, are appended to the articles. The editor's hand is continually seen, and a no less renowned writer than Mr. Ruskin enlivened the pages with peculiar charm from almost the commencement of the enterprise until the very end,

the last number of all containing an unusually long and interesting contribution from his pen. Notwithstanding all these assurances of success, the experiment appears to have failed for want of due encouragement, and the last issue was in January, 1839.* In 1842 the first number of the *Builder* appeared, and, as our readers know, achieved a success which is steadily increasing "even as the years do grow."

It is needless to dwell upon the development of professional journalism in our day,—upon the number of periodicals now exclusively devoted to the building interest,—their extended scope and the vast mass of information on matters sanitary, social, practical, artistic, which now comes within the purview of the conductors of such a journal as this. But if, as Mr. Bright says, the best guidance for the future is to be sought in a study of the past, it may be not amiss if we glance again through the pages of the first periodical which dealt with the art, with which we are more immediately concerned.

The first thing which strikes us is the part which women were then invited to play in the improvement of the art of architecture. From the opening address to the close of the work references are found to the influence of female taste on the encouragement of art. The preface states that one of the objects of the magazine is to recommend architecture as a fit study for ladies; and in another place it is boldly urged that the art will "never flourish" until it is made a "branch of female education." Now that we have lady-doctors and the Americans have lady-lawyers,—and even lady civil-engineers,—the lady architect may make her appearance amongst us. She has already attacked the out-works and taken up with the decorative side of the art, and, if the citadel at last fall, we may console ourselves with the reflection that such a result was not unforeseen fifty years ago.

Another striking fact disclosed by the magazine in question is the similarity of the complaints against the profession and its professors to those occasionally heard at the present day. The profession had lost caste. The members of it were neither so competent nor so honest as in the good old days. One point upon which the writers of the time were in agreement is the immorality of surveyors who gave evidence in the Law Courts on professional subjects. They are said to have become a laughing-stock and a reproach: that if A and B swore a thing was black, C and D, of equal eminence, could easily be brought forward to swear that it was white,—that the judges split the difference and decided that it was grey, and that justice was in consequence rarely or never done. The density of the legal mind when dealing with building affairs, and the astounding discrepancies between the views of experts are as common, and yet as strange now, as they were fifty years ago.

Another point which then vexed and still exercises the professional mind is the employment and payment of quantity surveyors. It was held that these useful agents in all building transactions of any importance were obnoxious to employers, and that they were consequently introduced into the business by stealth. Complaints were rife that the measuring surveyor of the period was little better than an empiric, that his decisions were arbitrary and irrational, and were often to the hardship and sometimes to the ruin of the honest builder. It is at least gratifying to be able to write that some other charges adduced against the profession at large would not nowadays be seriously advanced, or if expressed at all, would not be allowed to suffer judgment by default.

One characteristic of the first architectural journal is the little encomiums appended to some of the articles by the conductor holding up to public admiration the talents of the contributor, and in other cases expressing dissent from the views put forth. In all cases it is quite evident that the conductor was far ahead of the main body of his contributors in the views he held upon the principles of the art. The designs with which the pages are garnished prove to be, as might have been supposed, the weak points of the whole. Some of them are, indeed, wonderful compositions, and especially those in the "Gothic taste." It is scarcely conceivable that the suggestions for furniture,—"*Norman*"

* In a less slight sketch, the part played by the *Civil Engineers' Journal* would be touched on. This was established in 1837, and ceased its career in 1842.

pianofortes and the rest,—could have been seriously intended. We have certainly improved in a number of things in the last half-century, but in others we are apparently just where we were. Problems which puzzled the architect puzzle him still. Difficulties which were thought to have been set at rest for ever have still to be encountered. There is something at once sad and humorous in the failure of projects which were ushered in with so much pomp and circumstance, and which have been swept into the limbo of failures. As we follow the calculations of the promoters and peruse their glowing anticipations, we can but see in them the counterpart of projects of our own time not less eagerly pursued and firmly believed in. To take an instance which has reference to a question of the moment. The old Hungerford market cost £210,000. It was built, amongst other things, to secure cheap and wholesome fish for the public, and to "break down the monopoly in that trade." The market is a thing of the past, and not a vestige of it remains; but fish is not cheap, and the monopoly has still to be "broken down." History repeats itself. Readers who look back through our own old array of volumes will be surprised to find how many now flourishing projects are therein suggested and initiated, and how many changes advocated have become accepted.

CROYDON.*

Few parishes in England can show so long, clear, and continuous a history as Croydon, the very name of which has come down to us unaltered through a thousand years. Long before the Norman Conquest it appears in written documents as Crodene, and the Anglo-Saxon "g" had the force of our modern "y." Its etymology suggests "the crooked or winding valley," and its topography supports the derivation.

The fact that the archbishops of Canterbury were lords of the manor, that one of the archiepiscopal residences was at Croydon, that its pleasant woods and clear streams made it a favourite resort from the cares of State,—all conspire to bring its history into prominence, and to fix the stages in its varied career with exceptional accuracy.

Turning our eyes upon the past, we can clearly trace the long line of events which have made up the record of this interesting town. Within living memory, the "Dart," the "Vivid," and the fifty other stage-coaches daily rattled through its streets, waking the valley echoes with the music of their horns, and filling the whole place with bustle. George IV., passing through on the way to his favourite Brighton, when a great scandal was hanging over his reign, is rudely asked, "Why don't you bring your wife, George?" and is seen on that road no more. We catch glimpses of George III., "Farmer George," attended by a single groom, spurring on to Lord Liverpool's seat at Aidscombe. The Civil Wars have left their mark. Dragoons were quartered here in waiting for the Kentish "rebels," and cannon shot, which are from time to time unearthed, show that this was one of the many scenes of that long unhappy conflict. Queen Elizabeth loved Croydon, and was a frequent visitor. In 1539 she held a Great Council in the Palace, and found the streets "deep hollow ways, and very dirty, the houses generally with wooden steps to them, and darkened by large trees growing before them, and the inhabitants generally smiths or colliers," i.e., charcoal-burners, a numerous race who found here ample employment in the vast enrolling woods. The collier of Croydon was a familiar personage in the poems and plays of that day, and was credited with a degree of acumen proportioned to his assumed relationship with another notorious personage reported to be of the same colour. These royal visits put the place in a flatter, and it was with sore difficulty that the monstrous retinue of the Queen could be suitably lodged in chambers "with chymneys" for the ladies of the court being in great request, and not easily found. We see the prominent figure of Archbishop Whitgift,—a name ever dear to Croydon,—a prelate who took the prudent course of dispensing his benefactions in his lifetime "as the safer way," building and endowing almshouses, and foremost in all charitable works. "A man of milde and moderate dispo-

sition, of a free minde, and a bountifull hand towards his poore neighbours, but especially towards schollers and strangers." May his tribe increase! He knew well how to maintain the dignity of his high office, and would, upon occasion, enter his cathedral city with an escort of 1,000 horsemen; but, for himself he was never so happy as when visiting the poor whom his hospital sheltered, and with whom he would many a time find occasion to dine. Still further down the lengthening perspective we see the burly figure of King Henry VIII., who complained that Croydon was "low and rheumatick, where he could never be without sickness," from which we may infer that he had put it to the proof. Through the connexion of the town with the long list of English Princes we keep touch with incidents in Mediæval history. Trials for witchcraft, trials by combat, the slaughter in 1264 of fugitives from the Battle of Lewes, and so on up the stream of time until we reach the first Archbishop Laud, whose name still stands in Domesday Book as Lord of the Manor of Croydon. A Saxon document refers to a "church and a mill" there. In the year 980 the witness to a will is "Elfie, the Priest of Croydon," and the presence of the Saxon is attested by the names which are rife in the locality. Waddon is no other than Woden or Odin, and in *ham, hurst*, and similar terminations of the local nomenclature we have the surest proof of Saxon occupation. The ubiquitous Roman has left the trace of his dominion in sumptuous villas,—in coins and pottery,—and at least one Roman road traversed the town, and is still known as Stane-street,—the stone or paved street. There are indeed antiquaries who contend that Woodcote, close by, is the real and only genuine Norwomagus, the site of which has long been one of the cruces of that learned fraternity.

Bronze implements dug up in plenty carry us back to British times, and more ancient still, we find flint implements and other relics of a tribe of fellow-mortals whose personal history is a blank, and whose existence is only revealed to us by these evidences of human needs met by patient human skill.

"Antiquity appears to have begun
Long after their primal race was run."

Shadowy and remote as this period may be, it is but modern in comparison with the duration of Time disclosed by the geological record of this district. Ages of incalculable length stretch out before us,—when the restless sea pulsed over these hills and valleys, depositing the sediment which has given us the chalk downs and those beds of clay and sand deep down in which lie buried the remnants of a teeming life, a time when the climate was of tropical heat, alternating with glacial cold; when the turtle and the crocodile were man's companions, and palm-trees waved where now the ash and the oak abound.

There is not in this district much of man's work above ground that is really ancient. The old church* which, from its Saxon foundation to the work of Whitgift, showed example of every phase of our native styles, was burned down in 1867, and nothing of it now remains but a few old monuments. The palace, which was on a scale of unusual splendour, has been degraded piecemeal until the chapel has become an industrial school, and the hall a place for bleaching linen. In underground cellars, and built casually into modern walls, a few Mediæval fragments may still be found, and that is almost all that can be said. The old inns for which the town was famous have disappeared, or, like Bottom, have been, alas! "translated." The old river courses, which, until our day, had scarcely varied since the Saxons had their mill at Waddon, are diverted or dried up, and Croydon, with all its undoubted antiquity, is practically a modern town.

The author of this chronicle says, with a naïveté bordering upon the humorous, "During that long period in which proceeded the landing of the Romans in Britain, the aspect of Croydon was very different to what it is now." Very likely.

For, without going quite so far back, it is sufficiently startling to find that exactly one hundred years ago Croydon contained only 700 or 800 houses, and a population of 4,000 souls, while the census of 1881 gives the population at 79,000, and the successive editions of the Ordnance maps show that the town is rapidly extending in every direction, hanging on to the very skirts of the metropolis, which was but lately ten miles away.

Croydon was one of the fifteen towns included in the first provisional order issued under the Public Health Act of 1849. Previously to that date the sanitary, or rather insanitary, state of the town and neighbourhood was simply shocking. The houses and streets were subject to periodical flooding by the rising of the Bourne, which washed the very coffins out of the graves. Stagnant ditches, charged with animal and vegetable matter, poisoned the air with their noxious exhalations. Filthy ponds received the refuse of slaughter-houses, and the sewage from cesspools polluted the wells and springs. One half of the houses had no water supply of any sort, and the inhabitants were compelled to buy beer at the public-houses for leave to use the pumps in their yards; the consequence of all which was that Croydon was proverbially unhealthy, and had the undesirable distinction of the highest death-rate of any town in the kingdom.

The town is now supplied with water, both abundant and pure, from artesian wells bored deep down into the water-bearing strata.

The sewage question was grappled with in a determined spirit, and gave much trouble at first. The local Act of 1858, however, enabled the authorities to extend the field of their operations, and by large irrigation farms and works to separate the solid matter for purposes of manure, and to turn the innoxious effluent water into the Wandle. The result is said to be not a financial success; but that is not the proper test. The death-rate has been lowered from 28.16 to 16.13 per 1,000. Uncounted human lives have been prolonged, and the load of mental depression has been lifted from off perhaps millions of souls. Other works, such as lighting and road-making, have gone hand-in-hand with sanitary progress. Churches, schools, and institutions of all sorts have been built; both the moral and material wants of an enormous population have been cared for, and public spirit and energy, aided by science, have converted the Croydon of the Tudors, with its miry ways, into one of the driest, cleanest, and healthiest towns in England. The poet says that "God gives a various gift to each," to some the patient care which accumulates the materials which another order of mind so patiently assort and arrange.

The writer of the book before us has been diligent in collecting a vast amount of information concerning Croydon; and we thank him for his pains, but—and we hope he will take it as kindly meant,—he lacks—

"The faculty divine
To penetrate, resolve, combine."

And another hand must give it due order and coherence before Croydon can be said to have a satisfactory chronicle.

SOME POINTS IN TOWN GOVERNMENT.

MR. H. PERCY BOUNLOIS, Borough Engineer of Portsmouth, has written a very useful book, "The Municipal and Sanitary Engineer's Handbook." The author recites how all the Acts of Parliament concerning this subject give the title of surveyor to this important office, but that "although this title may have well suited the office up to the year 1847, when it was made the legal title, the prodigious growth of municipal work during the last thirty-five years has made it necessary that some change should be made, and the title altered to that of 'engineer,' or some other similar suitable name"; and that "there can be little doubt that it is absolutely necessary for the town surveyor of the present day to be a competent civil engineer of great knowledge and varied experience," with which latter remark we fully agree.

But, just as the Town Clerk must be, or, at least almost always is, a qualified lawyer and not merely a clerk, so the name Town Surveyor should imply, equally, that the office is that of a civil engineer. It no more follows that because he is called the Town Surveyor he is a surveyor merely, than, in the other office, the Town Clerk is a clerk merely. At present, according to the locality, the town surveyor is either the Town Surveyor proper, the Borough Engineer, the Borough Surveyor, the City Surveyor, or the Surveyor to the Local Board, all of which offices are essentially and identically the same in nature and requirements, although the larger the town the larger the experience of the Town Surveyor in works of civil engineering ought to be, if it is not. Certainly it would require, at

* "A Short Chronicle concerning the Parish of Croydon," by J. Corbett Anderson, Boares & Turner, 199, Strand, London, 1882.

* For description of the old Parish Church of Croydon, see the Builder, vol. xlv., p. 722.

* London: E. R. N. Spence, 1883.

the first somewhat of courage in the civil engineer of great knowledge and varied experience to take the office under the name of the Town Surveyor, but the name would soon become equally honourable with that of Town Clerk. If it were thought that a surveyor merely might be good enough for small towns, but that for large towns the name should be that of engineer because of the largeness of the town, that would be a mistake, for a civil engineer is necessary for the office in either town; and, if it were intended by the name "engineer" to signify that it meant the surveyor of a large town, the object would not be accomplished. It is not the surveyors of all large towns who assume, or have assigned to them, the name of "engineer"; in some of the largest towns the engineer remains in name the borough surveyor; and it needs but one step, viz., that his office should be that of Town Surveyor, in order to place local custom in accordance with the wording of the Acts of Parliament.

Much may be done in the right direction by a proper examination and certificate, in course of time; but there are many highly-qualified civil engineers holding the virtual office of town surveyor,—the ostensible office of borough engineer, borough surveyor, or city surveyor,—who would not like to submit to an examination of any newly-constituted body or institute, whether sanitary or otherwise in its designation. Still, there does want some little inquiry into the subject; for, although these highly-qualified civil engineers may very properly stand upon their dignity in the matter of examination and certificate, some of them pay less regard to the proper sanitary requirements of the town than to works of civil engineering usually so called. They cannot overcome the desire for a display of magnificence. It is very proper, and highly to be commended, that when a town council or a local board desire to erect any structure which demands great knowledge of civil engineering in its design and construction, they should go no further than to their own engineer for all that is needed, and, as a matter of fact, there are probably few cases in which it would be necessary to do so; but nevertheless, desire of display in this direction is not a trait which can be much admired in the borough engineer, city surveyor, or surveyor to the local board, or, as we should prefer to see generally adopted, the generic term, "Town Surveyor."

It is because Mr. Boulnois has constituted himself,—very worthily,—an authority on this subject, that we make these remarks in this connexion. With the book as a whole we are greatly pleased; the remarks are concise and judicious, and nothing which properly bears upon the subject seems to be omitted.

On the new question of lighting streets by electricity, the author condenses a good deal of information into a small compass, remarking, however, that electric lighting will not be easily adopted in old cities and towns, where, in addition to the main streets being narrow and crooked, there are few large open spaces suitable for intense lights, and where there are numerous small courts and alleys which require lighting, and which must, for a long time to come, probably be lighted with gas. Each gas lamp-post should be legibly numbered, and the town surveyor should keep a register in his office of all public lamps in his town. In order, says the author, to determine the distance apart of public lamps in a street, it must be remembered that the intensity of light is directly proportional to the illuminating power of the light and inversely proportional to the square of the distance of the light, if unreflected. For instance, the illumination of any point between lamps may be arrived at by adding all the quotients obtained by dividing the illuminating power in standard sperm candles of each lamp by the square of its distance in yards from the point; thus, a point midway between two lamps of fifteen candles each, 20 yards apart, would be reckoned thus:—

$$X = \frac{15}{100} + \frac{15}{100} = .30.$$

In this country the rule has generally been adopted that public street lamps burning 5 cubic feet per hour of 15-candle gas should not be placed at a greater distance than 60 yards apart, the average distance in most English towns being about 40 yards. In lighting by electricity the lamps may be of the "arc" form, or the "incandescent." The former is produced by the electric current passing between carbon points, and requires

considerable electrical pressure; they give a light of from 1,500 to 4,000 candle power; the mechanism of arc lamps has to be of the most delicate kind to insure the proper distances of the carbon points being maintained. The lamps should be guarded by globes of frosted glass, not only to prevent incandescent pieces of carbon from falling, but to lessen the glare of the light. "Incandescent" lamps are of small size, giving a light of from 8 to 50 candle power, which is produced by the heating of a filament of carbon in a vacuum owing to the resistance caused to the electric current by this contraction of the conductor. It has been stated, without contradiction, that arc lights can be produced of about 2,000-candle power with 1-h.p., at a cost of from 3d. to 6d. per candle per annum of 4,000 hours, gas costing from 1s. 9d. to 3s. 6d. per candle, according to the price of the gas. Incandescent lamps cost 3s. to 4s. per candle per annum, as their life is short, and only 200-candle power can be got from 1-h.p. The latest investigations into the comparative cost of lighting by gas and electricity are those made by Sir Joseph Bazalgette on the Thames Embankment, which are quoted.

On the subject of breaking up streets over gas and water mains, the author says it is well known that a trench cut longitudinally through a street takes a long time to heal. Asphaltic shows it the least if there is a good backing of concrete, but all other pavements suffer considerably in the process, as it is almost impossible to maintain their strict contour, and with macadamised roadways the result is simply disastrous. It is unfortunately the practice generally for the men in the employ of a gas or water company, after laying a pipe, to try and ram into the trench all the material they have removed, without allowing for the cubical contents taken up by the pipe, or if they do condescend to cart anything away, it is generally the metal, which they think will come in nicely for the repairs of the trench during their liability for the repairs. What ought to be done is that no filling of ordinary earth should be allowed to come within at least 6 in. of the top of the trench, which should then be filled in with good road metal, and as this wears down it should be brought up with more metal. With regard to the breaking up of streets for the purpose of repairing existing house-drains, there is uncertainty in the interpretation of the clauses of the Public Health Act which bear upon this point, and the result is that a great many towns have inserted clauses in their improvement Acts requiring notice from persons intending to break up streets for this purpose, and specifying the manner in which the work shall be done; but a better method, the author states, is to insert in any private improvement Act a clause giving powers to the Urban Authority to execute all drain work themselves, thus ensuring that any interference with the street shall be done in a proper manner by men accustomed to the work, and also that the drain itself shall be of perfect workmanship.

With regard to the putting in of new house-drains by the owners or occupiers of houses, and connecting them with the sewers, which they may do under the provisions of the Public Health Act, 1875, subject to the control of some person to be appointed by the Local Authority to superintend the work, the first thing is to frame the regulations and appoint the person, the regulations requiring notice to be left at the office of the town surveyor, particularly naming the point where it is desired to make the connexion; that the ground shall be excavated to the required depth with all possible expedition, the work to proceed night and day, and the excavation to be properly fenced, lighted, and watched; the sides to be properly supported; all surplus earth to be carted away as speedily as possible; the road metalling to be kept separate and replaced, and other necessary provisions which the author sets forth, all of which are highly necessary both for public safety and economy. But, says the author, notwithstanding these regulations, it is very difficult to ensure that the whole of the new drain is properly executed by the person who is carrying out the work, for if he wishes to deceive the surveyor's department it is not very difficult to do so in works of this description. It would be far better if all drains of dwelling-houses could be constructed solely by the staff of the Local Authority. All such work could be done better and cheaper, both for the ratepayers and the owners of property, if carried out by the trained

staff of the Local Authority; nothing would be gained by scamping the work, and one of the worst stumbling-blocks in the interests of sanitation would be removed by this simple and effective measure.

If a gas or water main or house service leaks through defective work it is quickly detected and remedied; not so with a drain, for the deadly gases may be oozing through defective joints or the foul liquid may be poisoning the soil under adjacent dwelling-houses, and many victims may suffer before the cause is ascertained, and even then laborious legal machinery has to be put in force before it can be rectified.

With regard to new buildings, the author has drawn up a number of regulations for the deposit of plans with the local authority, but remarks that this is of but little practical good unless it can be insured that the buildings are erected in conformity with them. It is quite impossible for any single person in a large town to perform this duty, but if the sanitary authority really wish their by-laws to be enforced it can be done, of course, by employing a sufficient number of persons. This simple reference to whether the sanitary authority really wish to enforce their own by-laws, opens, although, perhaps, unintentionally on the author's part, a question the solution of which would make plain many things in the management of towns which are very mysterious to people in general; they cannot understand why the rates should be so high, and yet so many complaints made, which are made evidently not without reason; why there should so frequently be a rage of illness in different parts of the town, so many people in the workhouse, and so many begging, while many more are but half living at "home"; nor can they understand why, paying so high a rent as they do for their own houses, they themselves have so much sickness in the house, such dirty roads, except in a few of the "best streets"; these things they cannot understand, in a town where the rates are so high. And yet the choice of town councillors rests with them, and it is these who constitute the committees, with whom lies the initiative of every order under which the ratepayers' money is spent,—misspent upon some things and not spent at all upon others, or so sparingly as to be insufficient and almost useless. Well, shortly, the chosen representatives of the people do, and order to be done, according to the light that is in them; they can do no more.

Butchers, bakers, tailors, who, during an industrious and honourable life, have saved money and invested it in small houses, called "cottage property" to give it a pretty name; builders and jerry builders, and men with large sums of money which they do not know how to invest safely, and who can find a profitable use for it if only they can "get into the Council"; these are they who deal out with a niggard's hand, from a store which is not their own, what is for the health of the town and the general benefit and convenience of the people. But so long as votes can be obtained on the most flimsy pretext, and people will suffer themselves to be gulled by candidates whose only recommendation is that they promise to "keep down the rates,"—a promise, however, which they do not perform,—so long will heavily-rated towns continue to show a fair outside and be foul within, dirty, unhealthy, and degrading to the inhabitants.

New Hotel and Shops, Birmingham.

Mr. C. Ede, of this town (whose Gothic shops were recently noticed in this journal), has in course of erection several shops and an hotel, situated in Hampton-street and Summer-lane. The buildings will be of an early type of English Gothic. The shops will be three and the hotel four stories in height, with stone and terra-cotta enrichments varied with carving, ornamental gables, parapets, &c. The front of the hotel is circular on plan, and arising from the ground-floor cornice is contemplated a large and elaborate bay window with carving and open arading, terminating with an enriched pinnacle. The tympana of the remaining windows of the first floor will be filled in with Minton's tiles to various designs. The front roof will be tiled and the back slated with ornamental tile crestring. The finishings of the hotel are intended to be in harmony with the style, and tinted glass in lead lights will be introduced. Mr. John Statham Davis is the architect, and Mr. Evans the builder, both of Birmingham.

THE NEW SUEZ CANAL.

A GREAT deal of time, and it is to be feared a great deal of bad blood, would have been saved, if those persons who have spoken so confidently as to the exclusive right of the "Universal Company of the Suez Canal" to a passage across the Isthmus, had taken the trouble to read the documents on the subject which were laid before Parliament in 1876. Among others, they would have found the following, which we translate from the original French:—"Convention between his Highness the Khedive of Egypt and M. Ferdinand de Lesseps, President-Director of the Universal Company of the Maritime Canal of Suez, acting in the name and on account of the said Company, in virtue of the full powers which are delegated to him. . . . Art. 3. By consent of the two parties, it is understood that the Company has no other object than the working, the maintenance, and the augmentation of the Canal. It re-enters, in consequence, into the common right, and renounces every exception, faculty, or special privilege. Thus, the Government will in future exercise exclusively the service of the post, and of the telegraph, for the Company, as for the public. The Company will, however, keep the faculty of its special telegraph for the service of the works, and of the transit of ships in the Maritime Canal. . . . Art. 6. The advantages resulting to the Government from the preceding articles are valued by common accord at 20,000,000 francs."

The payment of this valuable consideration, and of a further sum of 10,000,000 francs for the hospitals and other establishments made over to the Government, was made by the detachment of the coupons from the 176,602 shares belonging to the Khedive, which were afterwards purchased by the English Government.

Thus the inconvenience to which the purchaser (the Government) has been subjected by the disqualification imposed on 44 per cent. of the shares in the Canal, for which it has paid 4,000,000l., by the detachment of the coupons, has been a direct effect of the consideration which the company have received for abandoning "every exception, faculty, or special priority" to which it might otherwise have claimed that it was entitled.

THE ABATEMENT OF NUISANCES.
SANITARY AUTHORITIES.

It is always well when the hand of the law is successfully invoked to compel public authorities to perform their duties, and not the least satisfactory of such occasions are those where the duty neglected is in relation to the health of the community, and is connected with sanitary matters. From this point of view, the recent case of *Charles v. The Finchley Local Board* (52 *Law Journal Reports*, Chancery Division, 554) is of considerable interest, but it has also much value as pointing out what is the duty of local boards in circumstances similar to those which were proved in this case. If read together with the previous but still recent decision of the Court of Appeal in the case of the *Attorney-General v. The Guardians of the Poor of the Union of Dorking* (Law Reports, 20 Chancery Division, 595), which in its turn confirms the somewhat earlier case of *Glossop v. The Heston and Isleworth Local Board* (Law Reports, 12 Chancery Division, 102), we get the general duty of local sanitary authorities, in somewhat difficult circumstances, clearly explained. These cases also throw some light upon the 21st section of the Public Health Act of 1875. In the latest, which for brevity may be called the *Finchley case*, there was a nuisance caused by a single individual, which was capable of being stopped by physical means. In the *Isleworth case* and the *Dorking case* the nuisance was caused by several individuals, and the result of the action, if successful, would have been the issue of an injunction by the Chancery Division to compel the local authorities to obtain an injunction to make the offending persons cease from committing a nuisance. In both the *Isleworth* and the *Dorking case* the application involved changes in the general system of the drainage of the place, which it was clearly shown the sanitary authorities were anxious to make. In both these cases, the Court refused to grant an injunction, but in the *Finchley case* it was issued.

The principles which must guide local sanitary authorities in these matters will be more clearly apparent by some more detailed notice of those cases, of which the main result has just been given. In the *Finchley case*, to state the facts shortly, there was a ditch which ran through the plaintiff's property and near to his house. At no great distance two new houses were erected by a builder named Cooper, and close to these houses was a ditch which was ultimately covered in, and which, by agreement between Mr. Charles and Cooper, was to carry off the surface water from the building land, and convey it into Mr. Charles's ditch. The new houses already mentioned were drained into cesspools, which it was intended should, when necessary, be emptied by hand. After some time had elapsed, Cooper constructed an overflow-pipe from the cesspool of one house to his, and thence to the plaintiff's, or rather the Local Board's, ditch, the consequence of which was that it was filled, not simply with surface-water, but with sewage, which, as more houses were erected, would become more abundant. As it was, however, the sewage of the single house was sufficient to cause an actionable nuisance. The consequence was a complaint to the Local Board, who, it is worthy of notice, employed Cooper as their builder, so that he should have been the last person to do anything in the way of transgressing sanitary principles. The Board then took proceedings in the police-court against Cooper, and the occupier of the particular house, to compel the abatement of the nuisance; but the first summons was dismissed by reason of the lapse of time, and the second on the ground that the owner of the house was not liable for Cooper's act. The Board took no further steps, and Mr. Charles then applied to the High Court for an injunction. This, as we have already stated, was granted. The grounds upon which this decision rested were that Cooper was exceeding his right. All that the plaintiff had stipulated that he should do was to discharge surface-water into his ditch. Further, the Local Board could physically stop the flow of sewage, since it had long been laid down that a person who has a limited right only, and exceeds that right so as to produce a nuisance, may have his limited right entirely stopped. "If a man," says Baron Alderson, "has a right to send clean water through my drain, and chooses to send dirty water, every particle of the water may be stopped, because it is dirty." Therefore, as the Local Board were the sanitary authority, they could stop the entire flow from Cooper's drain. Further, the judge was of opinion that the drain from the house to the cesspool, and from the cesspool to the pipe which communicated with the Board's channel through the plaintiff's land, was a drain within the meaning of the 21st section of the Public Health Act of 1875. It was held, in fact, to be a drain, which empties into the sewer of a local authority, and the mere fact that the cesspool disconnected the drain in its entirety from the house did not prevent it from being one in connexion with premises. Nor, again, did the fact that the drain communicated with Cooper's own pipe, which in its turn communicated with the channel, prevent it from being a drain which in reality communicated with the channel under the jurisdiction of the Local Board.

So much for the *Finchley case*; let us now see in what manner it differed from the *Dorking* and the *Isleworth cases*. This latter is clearly summarised in the judgment of Mr. Justice Pearson, and his statement of it cannot be improved. In this case he says, "There was an old system of drainage under which a certain river called the river Crane had been for a long time polluted, and was being polluted and there was no doubt that that system of drainage then in existence was a nuisance to the plaintiff in that action. Shortly after the *Isleworth Board* came into power the plaintiff complained to them of the nuisance he suffered from the existing system of drainage. They admitted the nuisance, and said they would take steps to remedy it. The plaintiff thought they were slow in proceeding, and he thereupon brought an action against them for the abatement of the nuisance of which he complained. The Court held that the Board had done nothing; that they had merely come into existence and found a system of drainage there which was bad; that it was therefore within their powers, and would be within their duty, to remedy it by devising a new scheme of drainage." Then the Court

further held that they could not grant an injunction, and that a "mandamus," as it is called in law, which would be the proper remedy, they certainly would not have granted, because "the Board had not been in existence a sufficient time to enable them to perfect a new system of drainage." This, it will be observed, was thus a case in which there existed a perfect willingness to make a new system, but in which there had not been sufficient time for the purpose, and where a single drain could not be stopped up. Again, in the *Dorking case*, it is doubtful if the Board had a right, in order to abate a particular nuisance, to stop up a large sewer, and "thereby to cause a most frightful nuisance to the inhabitants of the district whose drainage it is their business to protect and perfect." Moreover, the persons who claimed a prescriptive right to drain into the sewer would have had to be stopped from so doing, by an application for an injunction; and again, as in the *Isleworth case*, the Board were willing and anxious to improve the drainage of the whole district, and had, indeed, applied to the Local Government Board on the subject, which, as is very often the case, did not, to quote from Sir George Jessel's judgment, "seem to have hurried itself." Therefore, in the *Finchley case*, we have power but an unwillingness to stop up a drain, that drain a single drain, the nuisance arising from an individual act, so to say. In the other cases we have a new system required, willingness and efforts to complete it, and the impossibility of abating the nuisance without detriment to many people. The distinction between them seems, therefore, quite clear.

SOMETHING ABOUT MADAGASCAR AND ITS ART.

THE events of recent years have hurried the conscientious newspaper reader to many very distant and widely separated parts of the world. He is whirled from Ireland and the backwoods of America to Japan and Afghanistan, from Cyprus to the Cape, from Tunis to Egypt, and from Egypt now to Madagascar. Africa in fact, what with a previous Ashantee war and Mr. Stanley's praiseworthy efforts, promises to become before long anything but the "Dark Continent" it seemed even to the contemporaries of poor Livingstone. A singular interest, however, seems to have been roused by the recent action of our French neighbours in Madagascar. Their troubles with the Great Land, as the natives term it,—and it certainly is the third largest island in the world,—by no means date from yesterday. For two hundred years and more it has been one of the pet colonial projects of the French, to render themselves masters of Madagascar, and even now that its strategic importance, in relation to the occupation of India, in which our neighbours were long our rivals, has ceased to exist, such is the force of tradition that probably no step would satisfy more successfully the national pride than a complete conquest of the island.

Its history, in connexion with our European efforts at colonisation, may be sketched in a few lines. Known to the Arabs and Moors, who have left their mark on the island, and mentioned under the name of *Magasta* by Marco Polo, Madagascar cannot, however, be said to have been discovered till the early years of the sixteenth century, when Lorenzo Almeida, the Portuguese viceroy of India, was driven on its coast in 1506. The Portuguese made little attempt to colonise the island. Fever foiled the efforts of the Dutch in this direction. It was not till the middle of the seventeenth century that a European colony of any importance succeeded in settling. In the same year (1642) the French and English appear in the island, the former occupying for many years a military post at Port Dauphin. The effort on our part to develop our influence is clearly shown by the several books, all of an encyclopaedic nature, which appeared in the seventeenth century, and among which Boothby's "Briefs Discovery of the most famous Island of Madagascar" (1646) may be mentioned as characteristic. Missionary influence, in reality, has been the chief active colonial agent. The Jesuits had settled long before us; indeed, it was not till 1818 that our English missionaries appeared on the scene, four years after Sir Robert Farquhar, Governor of Mauritius,—till then a

* Madagascar is about three times the area of England and Wales.

French colony, formally took possession of Madagascar as a dependence of that island; since when, however, the French have made several attempts to assert their supremacy, the present promising to be at last successful.

The information respecting Madagascar cannot be said to be abundant. Little beyond the coast has, till late, been really visited by those travellers who have left us any accounts of the island, accounts which in many cases are startling in their incorrectness. There still remains, indeed, much scientific information to be gathered respecting the people, their language, their art, the flora, and the fauna, all of which offer many strange peculiarities. The Malagasy are not of African origin, near as the island is situated to Africa, but of Malay origin, as both their language and their art testify, notwithstanding that 3,000 miles of ocean separate them from their original home. There exist in the island none of the lions, tigers, bears, hyenas, leopards, hippopotami, rhinoceros, or monkeys of the African continent, the animals and birds offering a singular interest not alone from their highly specialised character, but from their evident connexion with the birds and animals found in countries thousands of miles distant.

Coming, however, to the point which more nearly connects the subject with the interests represented in these pages, it may at once be stated that Malagasy art can scarcely be said to offer a vast field of inquiry. That it has been far from properly studied is clear, the information to be gathered is but scant; sufficient, however, to show that it presents little of any particular interest. Its original connexion with the art of the Polynesian tribes is a point almost beyond dispute, so similar are the two in style, thus affording a further confirmation of the ethnographical proofs which connect the Malagasy with the inhabitants of the Malay peninsula and Polynesia generally.

The most trustworthy source of reference on the unwritten chapter of the art of Madagascar may undoubtedly, especially for English readers, be said to be Mr. James Sibree's excellent work, "The Great African Island" (London, 1880). Mr. Sibree is not alone one of that earnest band of missionaries to whom, far more than to our singularly inert Consular body, we owe so much information respecting the wide expanse of the tropics, but he was possessed of sufficient professional ability to take upon himself the design and building of the first Protestant church erected in the island, the adventures and difficulties connected with which,—the spire and tower rise to a height of 80 ft.,—form by no means one of the least entertaining chapters of his book.

Though eminently a nation of an advanced position in the scale of civilisation, the undeveloped state of the Malagasy arts is certainly not a little singular. Ornamentation generally, particularly of an elaborate character, is rare. As for an architectural style, it can scarcely be said to exist, there being throughout the island no buildings of any size except the royal palaces. The purely native house in use among the Hovas,—the tribe which at present holds the chief power,—possesses, it is true, a marked character, with its very high-pitched roof and "horns" formed of the extension beyond the ridge of the crossing timbers; but this style of dwelling, though it still exists, is rapidly being driven out, especially in the capital, by European architectural influences, which the natives have very rapidly assimilated. Within ten years the capital has been almost entirely rebuilt, and the mud and timber huts of the past replaced by buildings formed of sun-dried bricks. Stone is scarcely used in the island, being in most parts difficult to obtain, though Mr. Sibree speaks of having met with a curious series of semicircular monuments, very similar in many features to certain buildings in the Punjab and north-western provinces of India. In the decoration even of their timber houses, the Hovas would appear to display no power except in the occasional use of a notched zigzag. Internally, some of the better houses are painted in a style not unlike, so we are told, the Assyrian wall-paintings,—the natural earths, buff, brown, chocolate, and black prevailing, with a very sparing use of the primitive colours. It is chiefly in the royal palaces, somewhat difficult of access, that these paintings, mostly composed of geometrical patterns, are to be seen.

In general plan the native house is very simple, generally consisting of one large room; among the wealthier classes this disposition

being more or less retained in the large central hall with sleeping rooms at each end. In this large room, sleep, cook, and live the entire family, often, as in rural Irish fashion, in company with the friendly pig and fowls. The bed, it may be mentioned, is, however, invariably screened off. In some parts of the island the bed is described as being a most formidable article of furniture, panelled all round, and reaching from floor to ceiling. Previously to the introduction of Christianity one end of the room was invariably regarded as a sacred enclosure, and within this was placed the bed. The floor is strewn with mats. A mortar in which the rice is pounded, a few water-pots, and a primitive fire-place, with a small selection of simple cooking utensils, constitute the chief contents of the ordinary Malagasy's house. In the central provinces, where a hard red clay abounds, most of the houses are built of that material; the clay is laid in courses of about 2 ft. deep, each course being allowed to dry before the next is laid; three upright poles or posts support the high-pitched roof,—the walls, though stout and very durable, not being depended upon for this purpose; the broad tough leaves of the traveller's tree,* with laths of split bamboos, forming the roof itself. In the southern provinces the houses would appear to be of a ridiculously small size, Mr. Sibree speaking of his 11 ft. tent being positively larger than any house in some of the villages he visited.

In the central provinces the villages are often found surrounded by a formidable series of fosses, some 30 ft. deep and 20 ft. wide, not filled with water, but planted chiefly with fruit-trees. In the southern provinces the villages are situated almost invariably on a considerable height, often in very inaccessible spots; in the present more settled state of the island these natural steps against attack are, however, never taken in the formation of new villages. From a rule observed undeviatingly in laying the plan of the house in strict accordance with the points of the compass, it has become the native custom to speak of "north" and "south," "east" and "west," in the same sense as we should use the expressions "right" and "left," "behind" and "before," and Mr. Sibree relates an amusing anecdote of a friend at dinner being told by his host of a grain of rice which had adhered to his beard, "on the north side."

Some curious customs would appear to prevail in the building of a Malagasy house. When the late sovereign's palace was erected all the measurements, we are told, were regulated by the Queen's own *refy*, or fathom, the distance, when the arms were extended, between the tips of her fingers, the smaller dimensions being regulated by her span, a somewhat awkward scale to work by according to European notions.† A further difficulty would appear to have presented itself in the necessity of avoiding in the dimensions all such unlucky numbers as 6 and 8, which, from their sound resembling words signifying "regret" and "enemy," are tabooed. Such superstitions as these are common. The use of level, plumb-bob, and cord are unknown to the Malagasy, and when Mr. Sibree was building his simple Norman Church at Ambatonakanga, he tells us that he had actually to superintend the laying of almost every stone. Each workman quarried, dressed, and laid his own block, the portion upon which he would be engaged being regarded sacredly as his monopoly, an understanding which, on a lengthened absence, led to serious difficulties in the erection of Mr. Sibree's church.

European influences have, however, been received very readily by the natives, and are singularly shown in the direction in which, more than any other, the Malagasy have at all times expended their highest artistic efforts, their tombs; for, though possessing but an imperfect religious belief, the natives, it would seem, have always paid a marked respect to the dead. The memorial stones to be found in the southern portions of the island are finished and elaborate specimens of carving, singularly resembling, so we are told, the Runic crosses to be met with in our northern provinces.

In the various other branches of the industrial arts, the stuffs which the Hova women weave and dye are worthy of mention, the wealthier classes wearing silks and cottons, the slaves linen. The patterns of the native *lanoha*, or tunic, worn by all classes, being of the simplest and most tasteful description. As

* *Urania speciosa*, or *Ravinala Madagascarensis*: in appearance not unlike a palm.

† See p. 257, Sibree's "Great Island," above quoted.

silversmiths and metal workers generally, the native workmen are reported as being very ingenious, with the most primitive tools producing beautiful filigree and delicate chains. The native mats, used for covering the floors and sometimes the walls, are often of very elaborate patterns. Malagasy pottery is, however, primitive both in make and in decoration, a few zigzags, as in the earliest specimens of European art, constituting all the ornament.

In the southern provinces of Betsileo, a slightly more advanced form of art,—always, however, of the same marked Polynesian type,—is to be met with; chiefly displayed in the larger use of carving for decorative purposes, both in the woodwork of the houses and in the utensils of every-day use; gourds, fives, and tobacco-boxes being largely ornamented with an incised pattern, always geometrical, and filled in with black.

The art of Madagascar, it will be seen, offers, as we have already remarked, only a very restricted field of observation, with apparently few or no features that are not to be found in the art of the Malays and Polynesians. Research may reveal, of course, to the future explorer, some points as yet unremarked, and which may prove of interest to the ethnographical student and the archaeologist; but Malagasy art has no lesson to read us, such as each stone of the Parthenon, or a cathedral like that of Amiens, is capable of affording. It is merely interesting as showing us the existence, in the midst of our nineteenth century, of one of the stages passed away thousands of years ago with us, in the development of the art which in Europe has already more than once blossomed forth in the utmost perfection of beauty, to slowly fade away again like a dream at dawn.

ON RECENT IMPROVEMENTS IN ARTIFICIAL LIGHTING,

AND THEIR BEARING ON THE PURITY OF AIR IN ROOMS.*

THE vast improvements which have taken place in the production of artificial light in recent years,—improvements which bear, to a considerable extent, upon the hygienic aspect of the question,—make it especially desirable to bring the subject before the public. The introduction of the electric light has had the result of stimulating invention in gas lighting, and there have been recently introduced new methods of gas lighting which bid fair to retard the universal introduction of the electric light for domestic use.

Every form of matter when sufficiently heated has the power of emitting rays of light, and thus becomes self-luminous. This condition is termed incandescence, and the self-luminous worlds, as the sun and fixed stars, are, doubtless, in a condition of intense incandescence.

All artificial sources of light depend upon the development of light during incandescence. For the illumination of our streets and houses at night we have hitherto chiefly made use of a combustible gaseous combination of carbon and hydrogen, which forms the chief constituent of ordinary coal gas. When this hydro-carbon burns, that is to say when its elements unite with the oxygen of the air, it undergoes partial decomposition and evolves heat. Carbon is separated in the solid state, and floats, in a finely divided and incandescent state, in the interior of the burning vapour, and this constitutes the flame. The presence of these particles of carbon may be easily shown by holding any non-combustible body in the flame, when the carbon in fine powder will be deposited upon it, forming a layer of soot. The combustion of the particles of carbon takes place at the border of the flame, where they are first brought into contact with the oxygen of the air; but if the supply of oxygen to them be insufficient in quantity they escape in a partially unburnt condition in the form of a dark cloud, and the flame is said to smoke. The brightness of the flame is owing to these solid incandescent particles, for the burning gas itself possesses only a feeble illuminating power. It would, moreover, appear that the luminosity of a flame is due to the heat of the flame; and Dr. Frankland has shown us that hydrogen or carbon monoxide, when burned with oxygen under a pressure of from 15 to 20 atmospheres, yields a luminous flame.

No doubt the Bunsen burner gives a smoke-

* A paper by Captain Douglas Galton, C.B., read at the Parkes Museum on the 19th inst.

less and non-luminous flame; although it cannot be said that the flame of the Bunsen burner is in any sense less hot than a luminous gas flame. In the Bunsen burner ordinary gas conducted through india-rubber tubing streams into the tube of the burner. Air enters, however, through an opening as well as through a second opening opposite to it, and mixes itself with the gas in the interior of the tube. If the mixture issuing from the tube be ignited, it burns with an extremely feeble flame, which deposits no soot on bodies held in it. For now oxygen is admitted not only to the border of the flame, but throughout its whole mass, and the carbon is accordingly burnt into carbonic acid before it can separate in the solid form, so that the flame is composed of incandescent gases alone. Its illuminating power is very feeble. The feeble luminosity of the Bunsen flame appears to be due to a number of causes: we have, first, a rapid oxidation of luminiferous material to gases of feeble illuminating power by the oxygen in the admixed air; in the second place, we have the presence of diluting gases, which of themselves reduce the illuminating power; and, thirdly, we have heat withdrawn by the indifferent gases, as nitrogen, and the products of combustion, carbon dioxide and water. We cannot say that the loss of luminosity is due to any one of these causes acting singly. On the other hand, in consequence of the more perfect combustion that takes place, it is used as a heat-producing flame, and its temperature can be still further raised by a short conical chimney supported on six metal arms arranged in the form of a star. If a solid body be introduced into this feeble luminous flame, such, for instance, as a piece of platinum wire, the incandescent metal glows with a brilliant light; and, inasmuch as it is smokeless, it will not destructively act on the platinum in the manner a smoky gas flame will do. The luminosity of a Bunsen's burner can be restored by shutting off the entry of air, either by closing the holes with the finger or by the rotation of a slide which covers them. The light then becomes much more brilliant, with abundant formation of smoke.

The flames of candles and lamps, whether the substance burned be tallow or wax, rape oil or petroleum, do not differ essentially from that of an ordinary gas-burner. The same hydro-carbon gas which is the essential constituent of common gas is the source of light in them. The hot wick which draws up the fluid material about to be burned plays the part of a small gas factory, the produce of which is used on the spot; the only difference being that coal-gas is always purified before it is consumed, whereas the extemporaneous gas of a candle or lamp is consumed without being purified at all. On the other hand, the tallow, wax, and oil contain the carbon and hydrogen in a purer and more concentrated form than the coal from which ordinary coal-gas is made. The flames of candles and of lamps all owe their luminosity to the incandescence of particles of carbon floating in them; and the reason why one description of candle or lamp is more smoky than another is because the supply of air in the smoky one is not sufficient to produce adequate combustion. A petroleum lamp burns, in the first instance, with a dull, murky flame, giving off a large quantity of smoke, but it acquires a high degree of luminosity when the glass chimney is applied, for the presence of the chimney causes a strong draught, supplying the air requisite for the thorough combustion of the gas with which it was previously insufficiently intermingled. The brilliancy of a petroleum flame is thus materially exalted by an increased supply of air, whilst that of a Bunsen's burner, as has just been seen, is almost abolished by the same means. The contrary effects observed in these two cases admit of easy explanation. In the latter instance, the amount of air supplied is so great that scarcely any of that separation of the particles of carbon takes place, which is so necessary in order that a bright light should be produced. But in a petroleum lamp, the introduction of a moderate quantity of air, by effecting the combustion of the superfluous particles of carbon, causes a higher degree of heat, and consequently a more lively incandescence and illumination of the still remaining particles. From this it is obvious that in order to obtain the highest illuminating power of a flame in which hydro-carbonaceous compounds are undergoing combustion, the regulation of the supply of air is essential. This more perfect combustion is also essential to the maintenance of the purity of the air of

the room. In a hygienic aspect it is also essential that the compounds used to produce light should be as pure as possible, and during the last twenty years vast improvements have taken place in the methods of purifying gas, so that now the London gas is almost entirely free from sulphur and its compounds.

We will now proceed to consider in what way candles, oil-lamps, and gas, as sources of artificial light, affect the air of a room. The effect caused on the air of a room by combustion is firstly to diminish the oxygen; and secondly to increase the carbonic acid and produce water and ammonia. If the combustion is imperfect, the effect is also to create carbonic oxide and soot, as well as to disperse into the room any impurities which the material which is used for illumination contains, besides the carbon and hydrogen which is necessary for purposes of illumination.

If we look back at the gradations of improvement which have taken place in artificial lighting, we find that each successive step has been of advantage to the purity of air. Probably the earliest known means of lighting was the torch, cut from the pitch-pine, and sticky with exuded resin.

It gave a large red flame, and volumes of smoke which condensed into small particles of soot, colloquially termed "blacks," which adhere to faces and clothes with surprising determination, and may give some idea of the eminent discomfort experienced in a hall lighted, like the Walhalla, with pine splinters. Substituting a rope for a splinter, and saturating this with pitch or resin, we have the *link* that still, in foggy weather, connects us with the past.

The lamp of the type found in Pompeii probably succeeded these cruder means of lighting. The wick of osakum, or flax, or cotton, dipped in oil or bitumen, gave a smoky flame because no effort was made to bring a sufficient current of air to the wick to assist the combustion. These lamps were often fed with scented oils, which are said to have rendered the air heavy with their perfumes, which shows that they gave out a considerable amount of impurity. You may imagine the state of a room the morning after a symposium, when, perhaps, a dozen lamps had been burning for six hours, smoking fearfully, without the least appliance for the escape of the heavy carbonaceous fumes. Indeed, it was one slave's recognised duty to go round in the morning wiping the sooty pictures and statues.

The Argand burner with its chimney, and the air brought so as to increase the combustion of oil lamps, was a great step in advance, and effected a most marked improvement in the purity of the air of a room.

Candles with a wick made of the pith of rushes and covered with wax or tallow, are mentioned by Martial and Juvenal. These must have resembled the smoky rush-light of our more immediate ancestors; and the tallow candles which many of us remember as of yesterday diffused impurities in the air far greater in proportion to the light they afforded than any modern form of light. The last fifty years have witnessed vast improvements in the wicks and in the materials of candles, so that their smokiness has been gradually much reduced. Indeed, as regards the contamination of the air of a room, it may be accepted as an axiom that the more imperfect the combustion in any source of artificial light, the more deleterious the effect on the air of the room. We complain of gas, but if we were satisfied with the same amount of light in the case of gas which we obtain with candles or lamps, we should not find the vitiation of the air more inconvenient with one than with the other.

An experiment mentioned by Mr. Clegg in his treatise on the manufacture of gas may be mentioned here in illustration of this. The flame of coal-gas, and the flames of several combustible bodies that gave an amount of light equal to it, were burned separately in given quantities of atmospheric air, and the times were noted at which the flames were extinguished by the contamination of the air. The following were the results:—

	Minutes.
Colza oil was extinguished in	71
Olive oil	72
Russian tallow	75
Sperm oil	76
Stearic acid	77
Wax candles	79
Spermaceti candles	83
Coal-gas (13 candles) ..	98
Cannel gas (23 candles) ..	152

The preceding numbers may be taken to indicate the comparative salubrity of the several illuminating materials, from which it appears that the atmosphere of a confined room, lighted by cannel gas, would support life twice as long as the atmosphere of the same room lighted equally by tallow candles. Nor does the complaint that is frequently made of the heat of rooms lighted by gas afford a much better foundation for an objection to gas lighting than its assumed insalubrity. The fact may be true that a room lighted by gas is hotter than when lighted by candles, but the cause is to be attributed, not to the greater heat-giving power of the gas, but to the greater illumination when gas is employed. If persons would be satisfied with the same dim light to which they are accustomed when burning candles, or if they would increase the number of the latter so as to equal the light of the gas flame, the heat given out would be found to be less when burning gas than when burning lamps or candles. It has, indeed, been proved by experiment that the combustion of colza oil produces nearly twice as much heat as the flame of cannel gas of the same standard of luminosity, and that in comparison with ordinary thirteen-sperm-candle gas the proportionate amounts of heat are as 78 to 68. A room lighted by a large moderator lamp burning colza oil is perceptibly heated quite as much as by a gas flame that gives a larger amount of light.

The conditions which affect the purity of the air of a room are, however, not all the same in the case of lamps or candles as those which prevail when gas is used. In the case of the lamp or candle, the wick either draws up the hydrocarbon on which it depends for its light by capillary attraction, or else this hydrocarbon is forced up the wick at a uniform rate by an equable pressure. In the case of gas it is usually different. The gas comes from a street main, in which the pressure is constantly varying, partly in consequence of the continual variation which takes place in the number of lights in use. For instance, if a large shop suddenly lights up its establishment, a sudden decrease of pressure would occur in the neighbouring houses. In order to obtain sufficient light in a neighbouring house, it might be necessary to turn the cock of the burners full on. When the lights in the shop were extinguished, the pressure would be suddenly increased, and the gas would be forced through the burners more rapidly than it could be consumed; consequently much impurity might be forced into the house, in the shape of unconsumed gas. It is therefore necessary to regulate the pressure at which the gas reaches the burners, and many of the complaints of the impurity of the air of a room, caused by gas, arise from this want of regulation of pressure. The pressure can be regulated by the use of a governor, placed either at the meter or in proximity to the light itself.

From these various considerations it is apparent that the more perfect the combustion is in artificial light the less will it affect the purity of air in a room; but, so long as the light is burned in contact with the air of a room, the air will be more or less affected.*

DISCOVERY OF FRESCOES AT ROME.

In the Capitol at Rome two Gothic rooms containing fine frescoes of the Umbrian school towards the end of the fifteenth century have been discovered. An inscription indicates the painter to have been "Pietro Spagnolo di Micciello," probably the father of "Giovanni Spagna," whom Vasari mentions as a pupil of Perugino, and as envied even by Raffaele.

New Town-hall for Westminster.—On the 19th inst., the new Town-hall for Westminster was opened by the Duke of Northumberland. The building, which is a costly one, has been erected to serve the needs of the parishes of St. Margaret and St. John, Westminster, from the designs of Messrs. Lee & Smith, architects, to whose design the first premium was awarded in competition. The accommodation provided includes a large hall capable of seating 1,000 persons. A view of the building, accompanied by a plan of the principal floor, was published in the *Builder* nearly three years ago (see vol. xxix., pp. 449, 451: Oct. 9, 1880).

* To be continued.

For the purpose of the
the following is a list of
the names of the persons

who have been appointed
to the various positions

of the committee.

The following is a list of

the names of the persons
who have been appointed

to the various positions

of the committee.

The following is a list of
the names of the persons

who have been appointed

to the various positions

of the committee.

The following is a list of

the names of the persons

who have been appointed

to the various positions

of the committee.

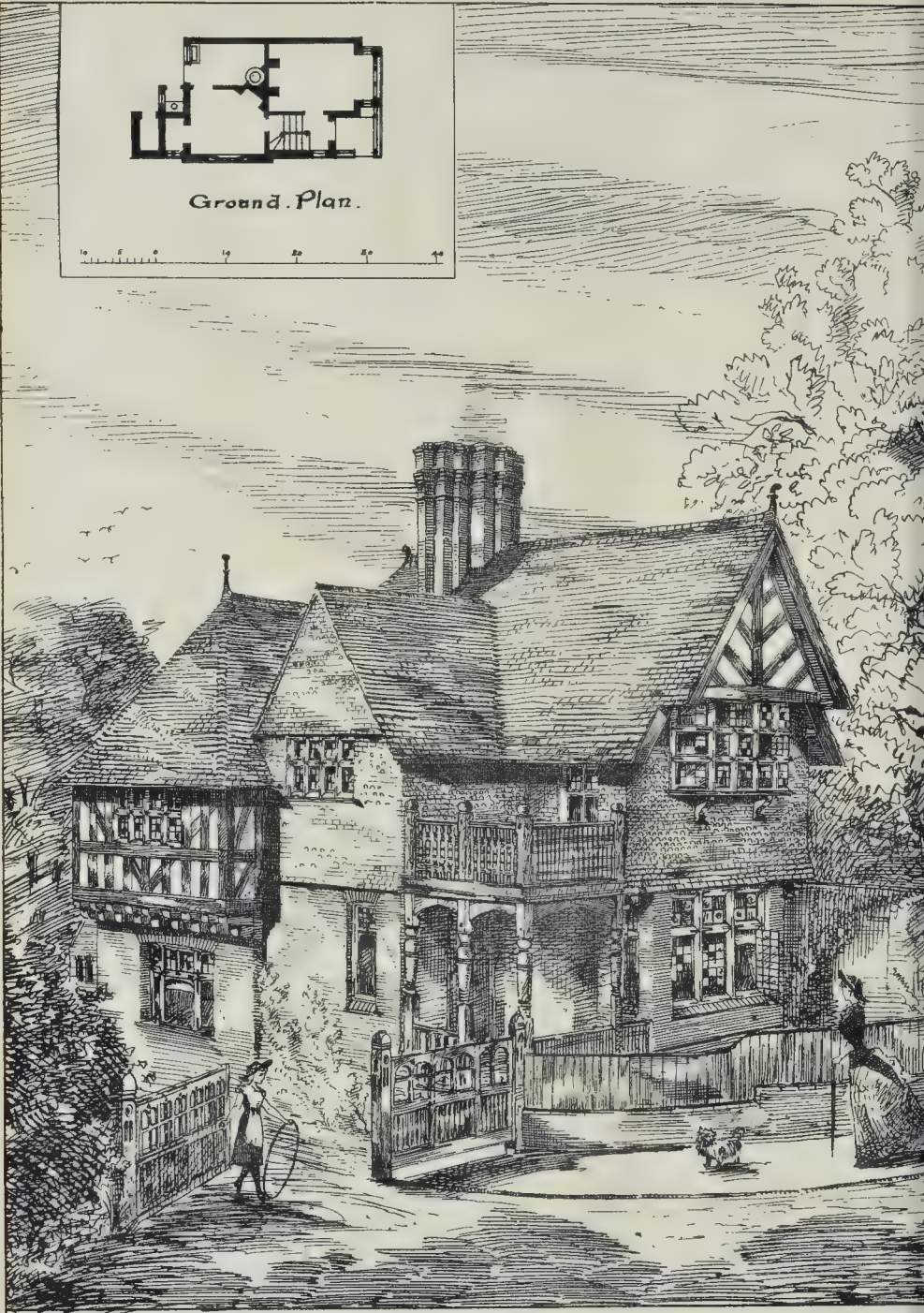
For the purpose of the
the following is a list of
the names of the persons

who have been appointed
to the various positions
of the committee.



Ground Plan.

10 20 30 40 50 60

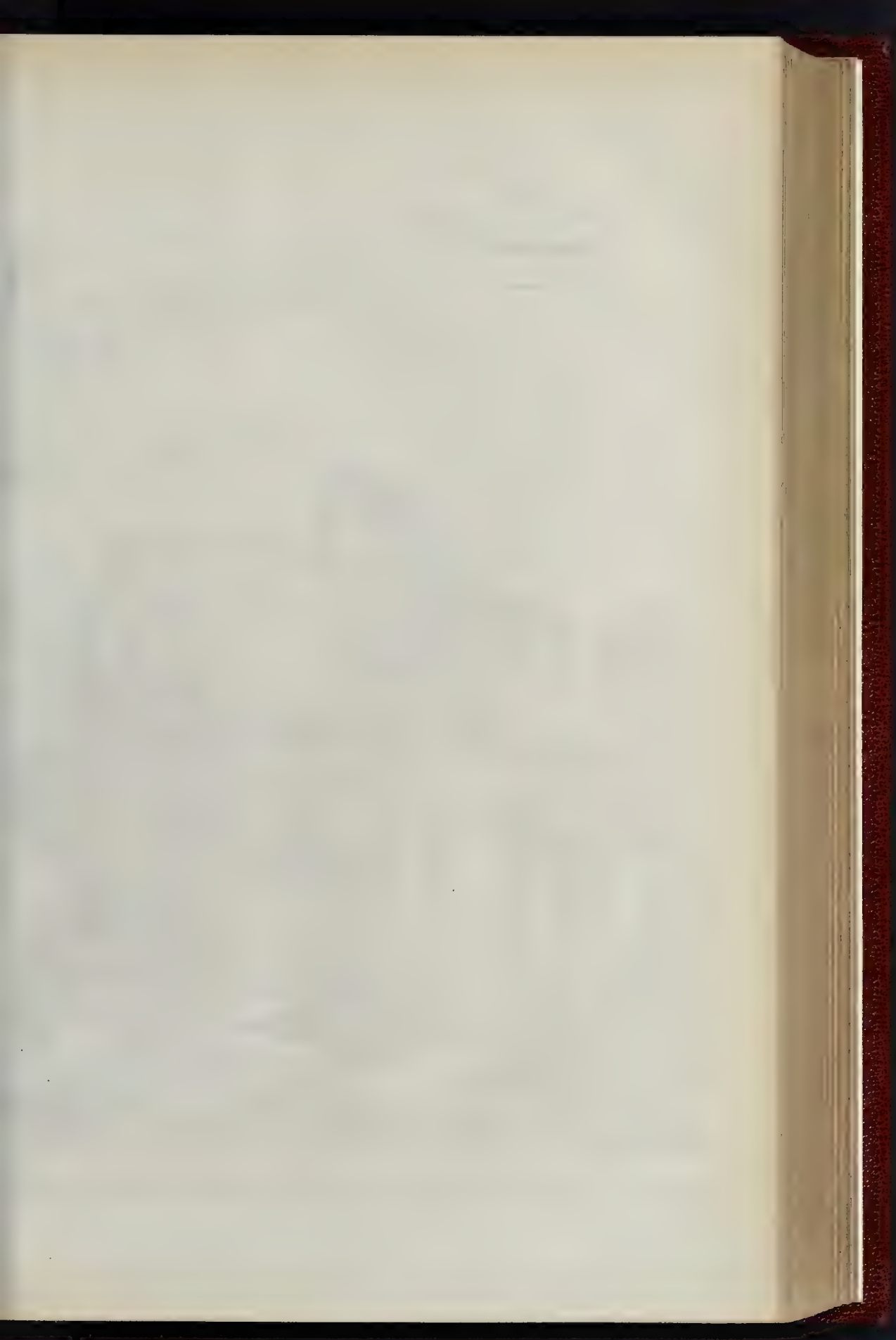


Lodge: Mount Park Estate: Harrow-on-the-Hill

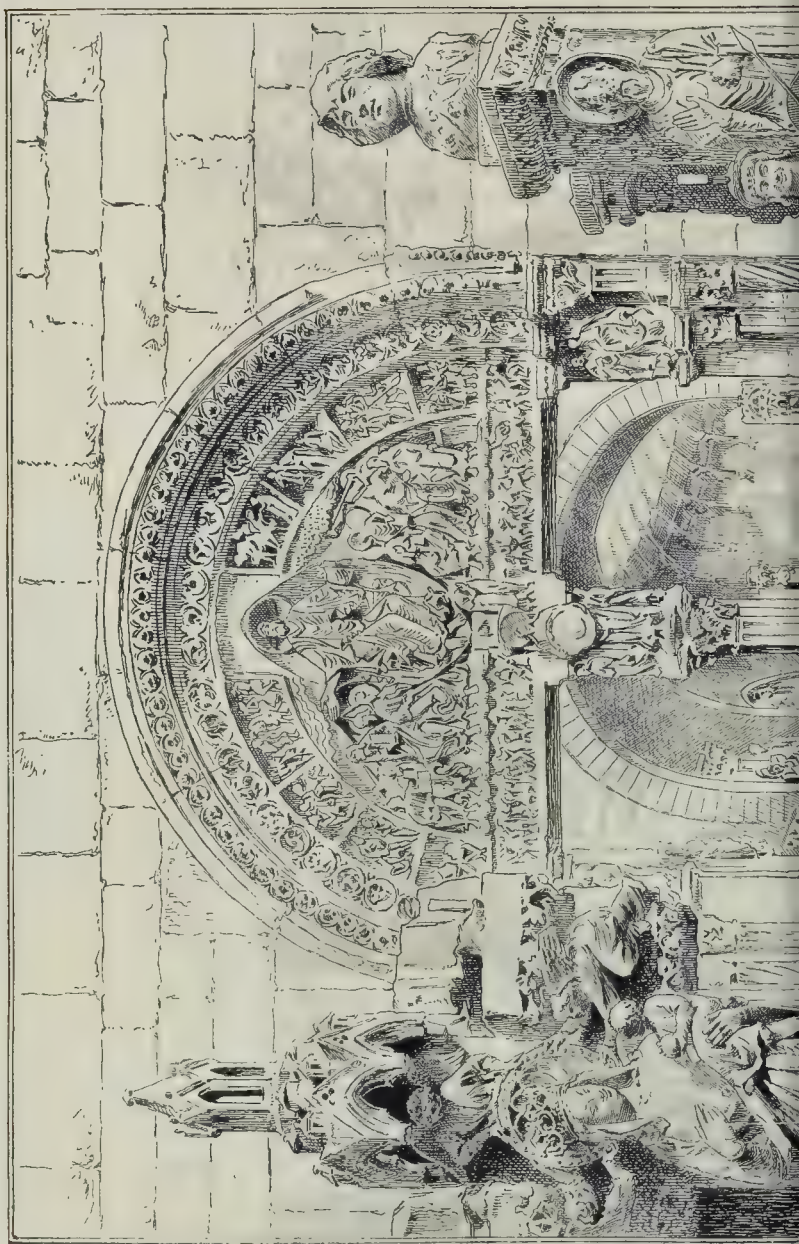
Whitman & Bass Photo Litho 236 High Holborn

MESSRS. HIGGS & RUDKIN, ARCHITECTS.

Wyman & Sons Printers O'Connell



THE BUILDER, JULY 28, 1883.





The Gilded Virgin of Amiens.
The Archer from the Temple of Aegina.

Renaissance Corbel.

Doorway from the Cathedral of Vézelay.
Tomb of Francis II. and of Margaret de Foix.

Fragments of the Cathedral of Arles.
Minerva, from the Temple of Aegina.

THE MUSEUM OF COMPARATIVE SCULPTURE, IN THE PALACE OF THE TROCADERO, PARIS.

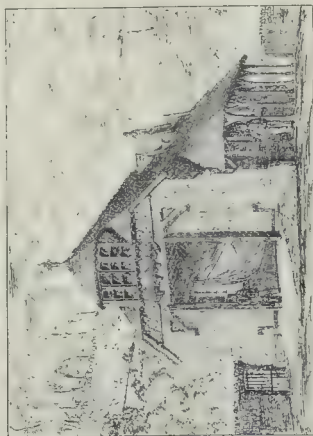


THE BUILDER, JULY 28, 1883.

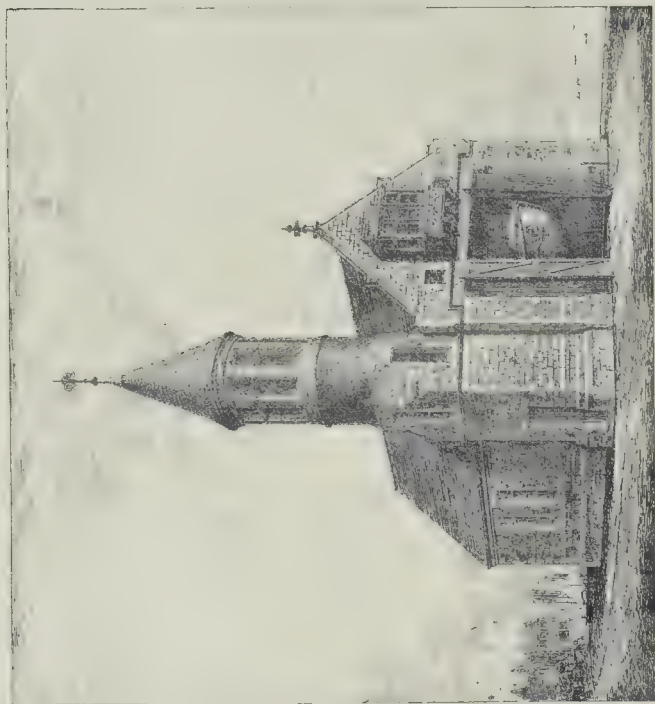
WORK OF

The Royal National Lifeboat Institution.

MR. CHARLES H. COOKE F.S.A., ARCHITECT.



TORQUAY, SOUTH DEVON.



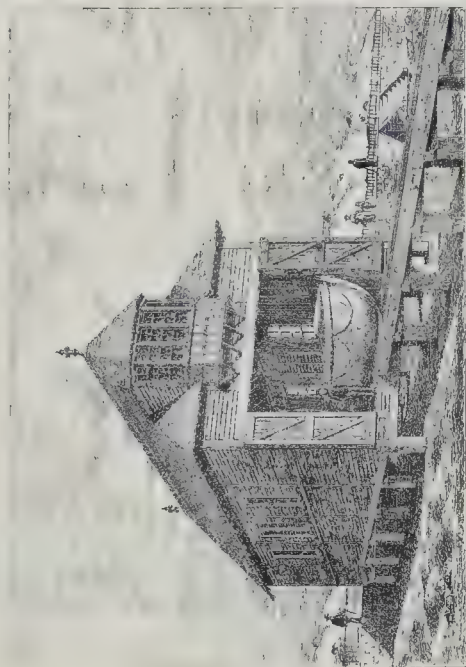
HASTINGS, SUSSEX.



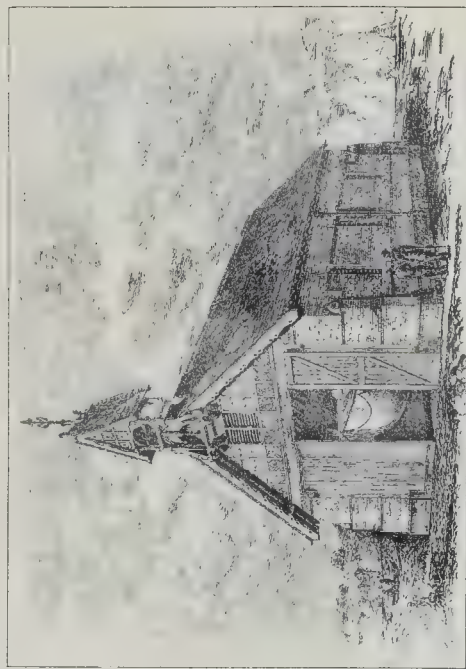
ST. ANNE'S ON-THE-SEA, LANCASHIRE.



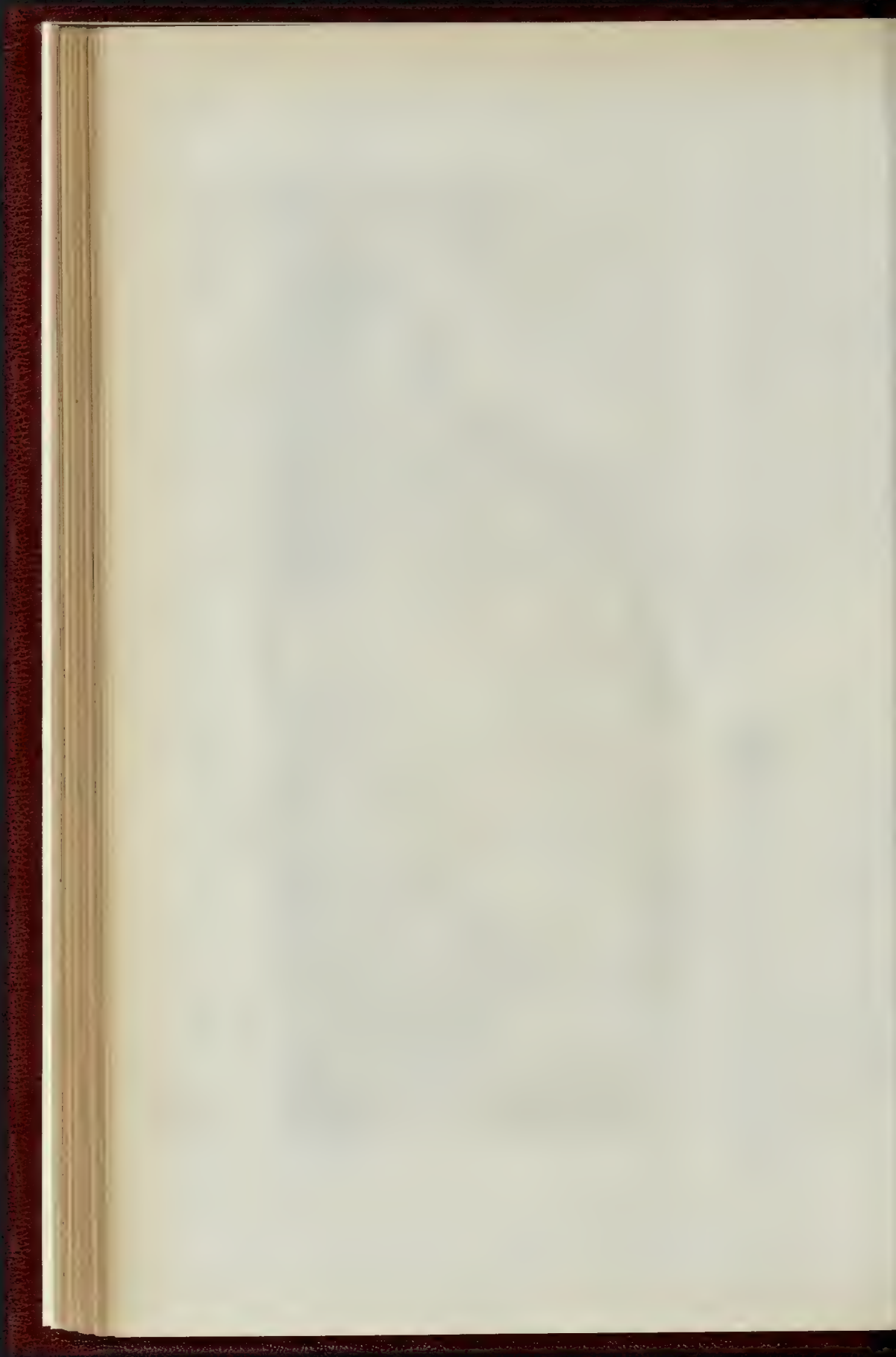
NEWCASTLE (DUN DRUM BAY), CO. DOWN.

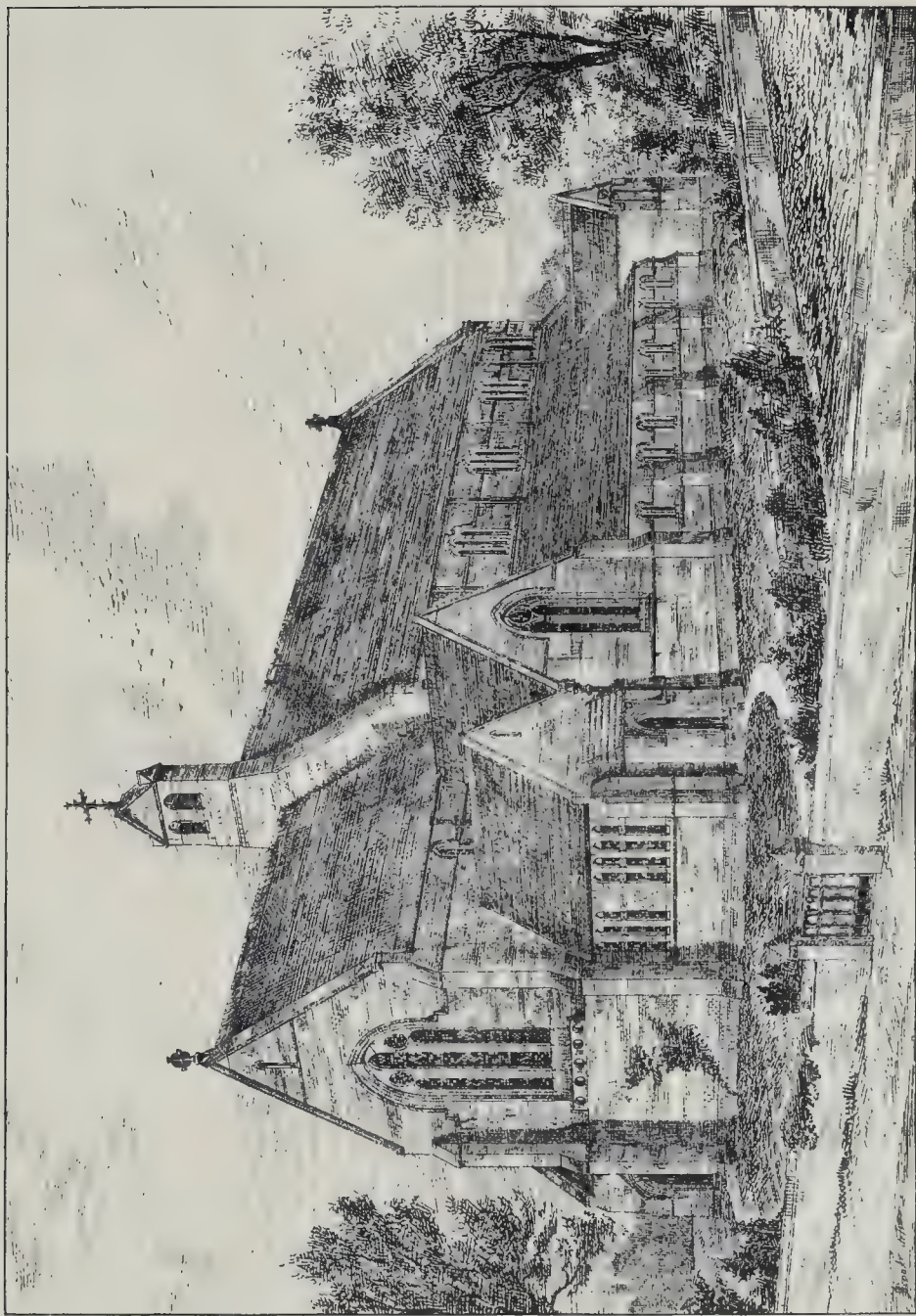


FLEETWOOD, LANCASHIRE.



HORNSEA, YORKSHIRE.





HLH + HIVes: Distances: Cba, Bcl + P8, WIC11 + Absst of Glomerulopathy: Grace + 1883

MR. J. M. BROOKS, ARCHITECT.

Wyman & Sons Printers "Queen."

Wbl:eman & Bass Photo Lach 236 Herb Holborn

1871

1871

1871

1871

1871

1871

1871

1871

1871

1871

1871

1871

1871

1871

1871

1871

ROYAL NATIONAL LIFEBOAT INSTITUTION. LIFEBOAT HOUSES.

In the early days of this Institution, when expense was a primary consideration, the houses in which its lifeboats were kept were, for the most part, little better than sheds, contracted in size, incomplete in interior fittings, and as inexpensive as possible in construction. As the popularity and means of the Institution, however, increased, and its stations multiplied, many of them being at watering-places and important sea-coast towns, it was felt desirable not only to provide lifeboat-houses of larger size, and of a more complete and tenable character, well ventilated, and with every convenience for the stowage and care of the many valuable articles comprising a lifeboat's complete equipment, but also, when situated in the neighbourhood of towns and places of public resort, to give them a more or less ornamental, or at least seemly, exterior appearance, more especially in cases where legacies or donations of large amounts had been specially left or given to the Institution to provide a complete lifeboat establishment.

It is difficult, and scarcely necessary, to create much variety in these houses for so simple and practical a use, requiring large doorways for the ingress and egress of the lifeboat at one or both ends; but in some cases a projecting "look-out" window is placed in the loft, giving a slight variety to the gable-end. Convenience, durability, and ample ventilation are the chief desiderata, and the average size of the boat-houses is 42 ft. by 20 ft., but in some places much larger. In many cases, owing to the peculiar position of the site on which the house has to be placed, it is necessary to construct a "slipway" from the house to the sand or beach, frequently as far as low-water. These slipways are sometimes of wood on piles, as at Fleetwood, and others are of stone. At Great Grimsby, in the outer harbour, the house itself is placed on the slipway, the fall being about 20 ft., and a length of about 200 ft., built upon piles, the upper ones between 40 ft. and 50 ft. long. The slipway at Fleetwood, shown on the illustration, is about 170 ft. long, and that at Penmon, in Anglesea, 300 ft. long. We give illustrations and brief descriptions of a few of these unpretending but useful edifices:—

Hornsea, Yorkshire.—This house is built of brick, and has a bell-turret, with a bell, to call the crew together. This station was formed mainly through the exertion of Mr. Christopher Brown, the honorary secretary of the Settle branch.

Newcastle (Dundrum Bay), Co. Down.—This house, which was erected for the reception of the Farnley life-boat, the gift of Mr. E. Armitage, R.A., is built of Whin stone.

Fleetwood, Lancashire.—This house, which is built of wood, with the boat, is the gift of a gentleman, a native of Lancashire.

St. Anne's-on-the-Sea, Lancashire.—This is built of red brick, with red tiled roof. The whole expense of this station was borne by Mr. James Chadwick, of Prestwich.

Torquay, South Devon.—The material used for the walls of this house is limestone. The boat provided for this station has been furnished with a transporting-carriage, so as to make it available for Babbacombe Bay on the east side of Torquay, as well as for Paignton, on the west side. The cost of this new life-boat establishment was defrayed by Mrs. Brundret, of Manchester.

Hastings, Sussex.—This house is built near the Fish-market, upon the extended esplanade made by the Corporation for that purpose, and is exposed at times to very heavy sea. The house is built of native stone, with Doubling stone dressings, and the turret is to be used by the Corporation for a light for fishermen, to guide them as to landing. The cost of this station has been generously defrayed by Mr. Charles Arkoll, of Chatham, in memory of his late father.

The various lifeboat houses erected from the designs of Mr. Charles H. Cooke, F.S.A., of Burlington-chambers, 180, New Bond-street, the architect to the Institution, now number nearly 700, the cost of each house varying from 350l. upwards of 700l.

In the year 1865 a vote of thanks, on vellum, was presented to Mr. Cooke, the honorary architect to the Institution, for his long and valuable co-operation; and in August of last

year, after twenty-five years of service had been completed, it was resolved "That the best thanks of the Royal National Lifeboat Institution be presented to Charles H. Cooke, esq., F.S.A., in acknowledgment of his valuable services during the past twenty-five years, in building no less than 265 lifeboat-houses on various parts of the coasts of the United Kingdom."

Last year 741 lives were rescued by lifeboats, in addition to twenty-three vessels saved by them, giving a total of 29,608 lives saved by the lifeboats of the Society or by its help since its formation.

THE MUSEUM OF COMPARATIVE SCULPTURE IN THE TROCADERO, PARIS.

In accordance with promise in our last number, we give a view of another part of the Museum of Comparative Sculpture, which has been formed with so much success in the Palace of the Trocadéro in Paris. As in our first view, some of the subjects are named on the print.

VILLA: MOUNT PARK ESTATE, HARROW.

In our present number we give a perspective view of a villa now in course of erection on the highest part of the Mount Park Estate, Harrow. The nature of the site suggested placing the principal rooms at the back, where they command extensive views southwards for from fifteen to twenty miles. The walls are built of red brick, relieved by half-timber work, part of which is filled in with concrete and rendered, and part covered with hanging tiles, the roof being covered with Broseley tiles. The house contains, besides the usual offices and cellars, three large reception-rooms and a billiard-room. There is a spacious and well-lighted hall, with a broad staircase of pitch-pine, leading to the upper floors, which contain eight good bedrooms besides bath and dressing rooms. The house will be fitted throughout with electric bells. The work is being carried out under the superintendence of the architects, Messrs. Higgs & Rudkin, of 68, Lincoln's Inn-Fields.

ALL SAINTS' DISTRICT CHURCH, IPSWICH.

The view of the above church, which we illustrate, was submitted in a competition, the professional referee being Mr. Ewan Christian. It was proposed to build it of red brick, with Bath stone dressings, the roof to be covered with sea-green slates. The accommodation was for 838, the cost not to exceed 6,000l. The object was to design a plain and dignified building, as the funds at disposal were very small. A tower and spire was an impossibility. The church stands on a piece of ground bounded on three sides with roads: so therefore it was desirous of obtaining not only entrances at the north and south porches, but also at the east end of the transept. The architect is Mr. J. Martin Brooks, 35, Wellington-street, Strand.

THE ROYAL ACADEMY. COUSINS ANNUITANTS.

Notice is given that the President and Council of the Royal Academy will proceed to elect, on Tuesday, August 7th, one or more Cousins Annuitants. Applicants for the annuities, which are of the value of not more than 80l., must be deserving artists, painters in oil or water-colours, sculptors, architects, or engravers, in need of aid through unavoidable failure of professional employment or other causes. Forms of application can be obtained by letter addressed to the Secretary, Royal Academy of Arts, Piccadilly, W. They must be filled in and returned on or before Saturday, August 4th.

Carlsle Plaster.—It is a very constant complaint in the building trade that a good reliable plaster is rarely to be met with. Some plaster will set so quickly that there is no time to shape it as required before it has hardened again. The plaster commonly sold will often soften once or even twice after once "set," spoiling, consequently, the shape of the mouldings it is used for. To obviate these serious disadvantages, Messrs. E. & C. Braby have prepared a plaster which they guarantee to possess neither of the above defects. They give the names of many large firms who use this plaster. It certainly seems to us a superior material.

BUILDING TRADES EXHIBITION IN MANCHESTER.

THE first of an intended series of annual building trades' exhibitions for Manchester was opened on the 19th inst. in St. James's Hall in that city. The exhibition, which appears to be of a thoroughly representative character, has been organised under the direction of an executive committee of sixteen members, of whom one-half are architects, Mr. Alfred Darbyshire acting as Consulting Architect and Director to the Committee. The spacious area of the hall is crowded in every part, and much credit is assigned to Mr. Darbyshire, and also to Mr. W. Ogden, the secretary, for the arrangements they have made. There are seven avenues, each distinguished by a letter of the alphabet. On Stand I in Avenue A, Mr. Malcolm Macleod, of Barton House, Deansgate, shows some samples of granite, mastic cement, mosaic concrete, and hand-painted tiles. Messrs. Burke & Co., of Newman-street, London, and Rue St. Luc, Paris, exhibit some fine specimens of marble mosaic for pavements, and wall decoration. In this avenue, Messrs. Frederick Walton & Co. have on view specimens of their Lincrusta-Walton,—the "Sunbury wall decoration,"—for which they have been awarded nine prize medals. This material is damp-proof and water-proof, and can be washed as often as may be necessary. It can be painted and decorated in any style or colours, and can be re-painted or re-decorated as required to suit alterations of furniture or hangings. An interesting show is made by Messrs. B. Barningham & Co., Pendleton Ironworks, Manchester, of sections of wrought-iron beams, girders, joists, for constructive building work, railway rails, points, tramway metals, and turn-tables. Mr. J. Hilton, of Oxford-street, Manchester, exhibits some specimens of green, red, and grey polished granite. On the next stand,—No. 11,—the Besbrook Granite Company, Limited, show some specimens of blue granite, and also samples of Scotch, Irish, and Shap granite. Messrs. Carter, Johnson, & Co., St. George's Works, Worcester, have on view some church pavements of Medieval tiles; and close by Mrs. S. Davies, of Princess-street, exhibits specimens of different kinds of rock asphaltes, polished marble mosaic concrete for floors, hearths, and fenders. At Stand 20, Mr. J. W. Hindshaw, of Gartside-street, shows a number of specimens of panelled ceilings and cornices in fibrous plaster; also a model of a chimney-piece. In Avenue B, Messrs. W. H. Bailey & Co., of Salford, show a modern turret clock in motion, and they also exhibit, amongst other things, a number of cement testers and other instruments for testing the strength of building materials. Mr. D. D. Penning, Booth-street, Manchester, has on view specimens of granite, and Mr. W. Campbell, Cannon-street, shows samples of ropes, sash-cords, and similar goods used by builders. Messrs. Wilcock & Company, Leeds, have a capital display of terra-cotta and faience panels for wall-decoration. At Stand 36, Messrs. J. & H. Patteson, of Oxford-street, Manchester, have on view some marble chimney-pieces and examples of marble mosaic concrete for wall and floor decoration, enamelled and painted tiles, German encaustic tiles and other things. One of the most interesting stands in Avenue C is that of Messrs. Doulton & Co., of Lambeth, who show a large oak mantelpiece, inlaid with panels illustrated with hand-painted scenes from Shakespeare, and fitted with a tile-hearth and glazed terra-cotta fender. They also exhibit a number of radiating tile-stoves, and various mural and stove decorations in tile work. Near the centre of the hall Messrs. Elkington & Co. have a display of silver and electro-plate, including *fac-simile* reproductions from the British and South Kensington Museums. On the adjoining stand (No. 41), Messrs. A. Kenrick & Sons, ironfounders, West Bromwich, exhibit a variety of ironwork for building purposes. The next stand is occupied by Mr. A. Newman, of Maddox-street, London, who shows a remarkable assortment of wrought ironwork, including many specimens of flowers, and ornamental scroll-work. A novelty in the way of house-building stands at one end of this avenue. It is a small house consisting entirely of paper, excepting a few strips of wood. The paper is perfectly waterproof. The largest, and certainly one of the most interesting collections in the exhibition, is that of Messrs. Holme & Co., East India,

China, and Japan merchants, and wholesale importers of Oriental art-work, London. A "pavilion and Oriental court" for this firm have been erected at one end of the building. It is arranged as an Eastern bazaar, and divided into sections, each of which is named after an Eastern town in which the goods shown are for the most part made or collected, or from which they have been exported. The goods shown include Japanese furniture, embroidery, and old pieces of pottery, Chinese furniture, richly carved, and old Chinese pottery and bronzes; Indian, Arabian, and Turkish furniture, and ornaments in endless variety. Above the pavilion is a small Caïrène room, partly constructed of woodwork from an old house recently taken down in Cairo, and furnished entirely in Arabian style. Messrs. Elliott, Alston, & Olney, of Deansgate, Manchester, exhibit a large collection of marble and other chimney-pieces, with tiled hearths. Another notable exhibit is that of Messrs. John Statham & Sons, of Pendleton, and Messrs. Earp, Son, & Hobbs, of Lower Mosley-street, consisting of the new choir-stalls which have been made for St. Mark's Church, Worsley, from designs furnished by Mr. R. Knill Freeman. The stalls are of solid oak and are beautifully carved, and finished generally in a highly artistic manner. The Papier-Mâché Company, of Wellington-street, Strand, London, have a good show of chimney-pieces in wood and papier-mâché, samples of dados, bas-reliefs, fluted pilasters in fibrous plaster, mouldings, and other details. They also have samples of Adam, Jacobean, and Gothic ceilings. Messrs. Leech Brothers & Hoyle, ironmongers, of Old Millgate, Manchester, exhibit marble mantel-pieces, lavatories, and kitchen ranges. There are also many exhibits of articles for cooling, heating, and for sanitary purposes. Not the least interesting exhibit is that of Mr. J. Reilly, the proprietor of the hall, who shows a valuable collection of medallions and panels in repoussé brasswork, with heads in relief of dramatists, painters, poets, and warriors. Some of the medallions are 20 in. in diameter. There is an interesting series of some 250 photographs sent by Mr. Harry Hems. Mr. Hems contents himself by exhibiting samples of recent works only, and nothing represented by him at this exhibition dates back more than two years. The collection embraces views of public buildings in all parts of the country, and numerous designs for churches, town-halls, schools, and mansions.

A conversation was held in the building in the evening, during which the Mayor of Manchester (Alderman Hopkinson) opened the Exhibition. His worship congratulated Alderman Heywood and the executive committee on the result of their earnest and persistent labours, which had brought together such an interesting exhibition. They would all be struck with the usefulness of the productions. Human ingenuity seemed to find for itself so many paths of invention. Our mature civilisation was expressing itself in new wants year by year, and those wants were met by a display of ingenuity and resource such as was unknown in former times. Especially would they be struck with the facility with which many beautiful objects were reproduced, so as to bring them within the reach of a class of society who, years ago, never dreamed of having the enjoyment of such beautiful objects. It was pleasant for them to see that while true art remained as it did in former times, that was to say, if no more than came up to the level of the individual work of past ages or classical times, we had side by side with it the reproduction of objects in cheap materials or by a mechanical process, so as to bring them within the compass of a very large number of people. He thought they had an educating effect in that.

Alderman Heywood, in moving a vote of thanks to the mayor, said much credit had been given to him and the committee for the getting together of that exhibition, but he must say that the credit belonged to Mr. Darbyshire, for it was owing to the energy and great ability he had displayed that they secured such an interesting collection.

Sandgate and its Convalescent Home. The secretary of the Home is very much obliged to us for our mention of it [p. 39, ante], but, we have not said quite enough; we have not stated that the offices of the Institution are at 98, High-street, Homerton. Whenever we receive a letter of thanks it is usually to induce us to say something more.

NON-COMPLETION OF CONTRACT WITHIN SPECIFIED TIME.

THE DIRECT SPANISH TELEGRAPH CO. V. SHEPHERD.

This action was tried on July 20th before Mr. Justice Williams and a common jury, at the Royal Courts of Justice, and was important to contractors as an instance of the measure of damages in case of the non-completion of a contract by a fixed date. Mr. Kemp, Q.C., and Mr. B. S. Roscoe were the counsel for the Company, and Mr. Upjohn for the contractor.

The action was brought in respect of offices at Leadenhall-street buildings, the third floor of which was to be ready and entirely completed by the 14th October, 1882. The plaintiff's witnesses stated that it was in fact the middle of November before it was entirely completed. They gave as instances of the unfinished state of the building on 14th October, that the tiles in the passages were only partially laid; that there were only temporary balusters on the staircases; that the latter in places were covered with planks; and that there was no gas in the offices. For damages they claimed the extra rent paid for temporary premises, expenses of double removal, extra charges of the contractor who fitted up their new offices owing to length of time in taking in the fittings through the unfinished state of the building, and similar items.

The defence was that the building was substantially completed, and, if not, that the damages claimed were excessive and unreasonable.

Mr. Justice Williams, in the course of the case, pointed out that small and structural details would not be ground for such an action, but that the matters relied on were substantial items. The jury at once found a verdict for the plaintiffs for the full amount claimed.

BRISTOL MASTER-BUILDERS' ASSOCIATION.

THE ANNUAL OUTING.

The members and friends of the Bristol Master-Builders' Association held their annual outing last week. It was declared one of the most enjoyable trips the Association have yet taken. The party, numbering about sixty, left Bristol by the 7.30 a.m. train for Chepstow, and reached the latter place just after nine. From Chepstow they started in brakes for the ruins of Raglan Castle, which were reached after a delightful drive of some fourteen miles. A lunch was laid in a portion of the ruins, and then Mr. John Curzon (custodian of the castle) conducted the excursionists over the ruins, and, in an interesting manner, gave a short résumé of the history of the castle. On returning to Chepstow the company sat down to an excellent dinner at the Beaufort Arms. The chair was taken by Mr. A. Krauss (the president of the Association), and the vice-chair was occupied by Mr. Humphries.

The usual loyal and patriotic toasts having been honoured, Mr. Jones gave "Success to the Master-Builders' Association."

The Chairman, in replying, said that their trade was one of the most prominent in the country, and he did not think they had been worse off than other tradesmen. Let them be of good cheer for the future: after a season of lean years there would return a season of fat years, and they would reap the benefit of trade being more successful than at present. He hoped that next year the president would be able to give a better report of trade than at present. He believed that within the next twelve months there would appear a better scheme for a new railway than the last one.

Mr. W. H. Cowlin also briefly acknowledged the toast, and in eulogistic terms proposed the health of the President, who returned thanks.

Mr. Benson proposed "The Trade and Commerce of Bristol." He could not congratulate them on the state of trade, but they must all hope that it would improve and that they would have better times in the future. There had been several schemes for improving the city of Bristol, and they had heard a good deal of the "dockisation" of the River Avon, and the members of the Bristol Corporation appointed a committee for the purpose of inquiring into the practicability and desirability of "dockisation." The committee was composed of earnest and able men, and they had issued a report, and if its value was measured in comparison with the length of time it had taken to consider the

subject, it must be very valuable indeed. The result of the report was that "dockisation" was not only practicable, but that it was desirable. The question, however, had for the present to be effectually shelved. While Bristol people had been devising a scheme for the benefit of the city, the people on the other side of the river had taken away the trade from them.

THE PARIS INDUSTRIAL EXHIBITION OF 1884.

FOLLOWING out the idea which has already found an expression in 1880 and 1882 by the special exhibitions of metals, tissues, movable woodwork, and paper, the Union Centrale des Arts Décoratifs has arranged for next year a display of stone, building wood, plastic products, and glass.

It will thus be seen that the general principle to be adopted is the illustration of all that concerns the building of a house, from the bricks to the ornamentation in the decorated frieze work, and from a simple pane of glass to brilliant stained glass windows and mosaic ensembles. Wood had already figured at the Exhibition of 1882, but it was then considered only with respect to its uses in furniture, while in next year's display it will be logically grouped with stone and the other fundamental substances chosen for illustration. Thus, for the first time (as the official programme remarks), there will be represented in an instructive ensemble nearly all the industries with which an architect is brought into connexion. Metal work is, however, omitted, as this subject was fully dealt with in 1880.

It is proposed to invest the exhibition of architectural models, &c. with such features of interest as will allow of the general public appreciating the illustrations put before them. The remark is made by the executive committee that this art (which is the key of all others) is presented at the Salon every year in a cold and unattractive form. The initiated can understand the plans, elevations, and sections placed before them, but the bulk of the visitors pass by unheedingly. It is argued that employing, as it does, all kinds of decorative processes, architecture can very well furnish the elements of a new and special exhibition.

As it is impossible to transport edifices and walls, it is contemplated to join to the views and drawings such mouldings, reduced models, specimens of stone and wood, sculptured marbles, plaster casts, specimens of carpentry, joinery, and wood carving, &c., as may serve to fully illustrate each subject. In addition to these aids to representation, photography will be employed to reproduce the main features or various special details of architectural masterpieces.

As a sequel to the exhibition of wood and stone, an important space will be devoted to the exhibition of tools and machinery, as well as to the illustration of the various industrial processes connected with building. Motive power will be freely applied in order to facilitate to the utmost the demonstration of this important adjunct of constructive art.

A technical library will form a leading feature of the exhibition, and the Society is even now prepared to receive contributions, which will be duly classified. A request has been addressed to all connected with architecture, &c., to send descriptions and full titles of any curious or old works relating to the art or to the kindred arts of pottery, glass, enamelling, and mosaic work. Publishers will also be allowed to exhibit works of interest, by conforming to the general regulations of the Exhibition.

The system of classification will be as complete as possible, and the executive committee expresses the hope that it may be found possible out of the ample elements which are expected to be grouped together to form a museum for the purpose of assisting in a permanent manner the researches of the architect and contractor in matters bearing on their respective branches.

In concluding their preliminary remarks the committee invite attention to the fact that the exhibition is of an international character, and that its doors are open to the foreign artist and manufacturer as well as to native talent and industry. The hope is expressed that the important manufactures which compete with those of France will be represented, stress being laid on the ultimate advantages of such friendly rivalry between nations.

THE BERLIN MUSEUM.

THE Prussian Government has at length resolved upon carrying out a scheme which has for some time been contemplated for erecting upon the Museum Island, a piece of land so called from its position, surrounded by the river Spree, close to the Berlin Museum,—a new edifice, which is intended to form an annex or new wing of the existing Museum building. The invitation to the competition for designs for the structure has already been issued by the Prussian Minister of Education, and is addressed exclusively to German architects. General sketches are required, and are to be accompanied by written explanations as to details. The plans of site are to be on the scale of 1 to 1,000, the ground-plans 1 to 500, and the necessary views and sections 1 to 250. Competitors may give their names or compete anonymously. The competition closes on the 1st of February, 1884. Intending competitors who desire more information than is contained in the programme may obtain it by communicating, before the end of August, with the Museum authorities. The jury which will adjudicate on the designs sent in will consist of five of the leading officials of the Museum, and six architects. The four best designs will be rewarded with four equal premiums of 5,000 marks, or 250*l.*, each; and the Government further reserves to itself the right to purchase any of the other projects which it may deem desirable, at 1,500 marks each. It is understood that this is intended only to be a preliminary competition, and that it will be followed by a second and final contest for the definitive designs, unless some one of the first series of projects should satisfy the jury. A German professional organ remarks, with great satisfaction, that this forms an entirely new departure in the history of architectural competitions in Germany, and recommends the example of the Prussian Government in this matter as one worthy of general imitation. Great praise is also bestowed on the authorities for inviting intending competitors to a conference with the Museum officials for the purpose of enabling the latter to supply any details not contained in the published programme descriptive of the character of the architecture and interior accommodation required in the new buildings. Owing to the generally defective nature of these preliminary descriptions, competitors have constantly been misled or left in the dark as to some of the most essential points of the problem they have had to deal with. The detailed programme of the new competition has not yet appeared, but the preliminary announcement has created a high degree of interest in architectural circles in Germany, and there is little doubt that the competition will prove amongst the most important and best-contested of recent years.

FOREIGN NOTES.

Roman Arena, Paris.—In the course of carrying out certain excavations on a piece of land belonging to the Omnibus Company in Paris, an arena dating from Roman times was brought to light. The Company is prepared to sell to the Municipality the plot of 8,000 square metres covered by the arena for the sum of 1,400,000 francs, but the Council hesitates to conclude the bargain unless the Government should decide to bear half the cost of the purchase. M. Duruy, formerly Minister of Education, has warmly espoused the project to purchase the plot for the nation, and has published an appeal to the public to secure one of the oldest monuments of civilisation in France from destruction, and preserve it for posterity.

Copenhagen.—The Exhibition of Northern Art, opened at Copenhagen on the 2nd inst., is one of the most extensive and interesting ever held in the Danish capital. Unlike the exhibition of 1872, which attempted to present an historical review of the development of painting and sculpture in the different portions of Scandinavia, the present collection limits itself to the more important works produced within the past ten years. It contains altogether 750 works of art, of which 439 are by Danish, 153 by Swedish, 90 by Norwegian, and 68 by Finnish artists.

Munich.—In illustration of the estimation in which the works of native artists are held in Germany, the Munich papers state that De-treggor's "Waldschmiede," in the International

Exhibition, has been purchased by the Saxon Government for the Dresden Gallery for the sum of 50,000 marks or 2,500*l.* sterling.

King Humbert.—In a recent conversation between King Humbert and Mr. F. Story, the American sculptor, who resides at Naples, the latter complained how difficult it was in Italy to find a really well-shaped horse as a model. He added casually that one of the finest specimens of the equine race he had seen of late years was a full-blood race-horse, named Damascus, the property of Mr. Wm. Harret, of Baltimore, an animal worth probably 5,000*l.* The king thereupon requested Mr. Story to communicate with his American friend, and to inquire whether he would sell Damascus, King Humbert being willing to give as much as 6,000*l.* for it, if necessary. In reply, Mr. Harret telegraphed asking to be permitted to make the king a present of the animal, a request to which his Majesty graciously assented. Damascus is accordingly being conveyed from Baltimore on board the *Birmanto* to Italy, where it will be added to the royal stud, and serve the American sculptor as a model for an important equestrian statue, which he has been engaged to execute.

The Salon of 1883.—The pecuniary results of the present year's Salon have now been published, and though showing a slight decline as compared with last year, are deemed generally satisfactory. The exhibition was visited altogether by 614,083 persons, of whom 285,000 had free admittance. The receipts for admission amounted altogether to 297,909 fr., paid by 229,183 persons. There were 11,230 five-franc cards, producing 56,150 fr.; 23,906 two-franc admissions, producing 47,812 fr., and 193,947 admissions at 1 fr. each. In addition to the 297,909 fr. thus produced, 31,000 fr. were received from the sale of the catalogue; 14,000 fr. profit from the refreshment department; and 8,000 fr. from miscellaneous sources. The gross receipts were thus 350,909 fr. as against 386,266 fr. in the previous year. The expenses were about 185,000 fr., so that the net amount cleared in 1883 was 165,000 fr. or 6,600*l.*

Dumas.—The unveiling of the statue of the great French novelist, Alexandre Dumas (*père*), took place on the 24th of July, being the anniversary of his birthday. The monument (which is by the late Gustave Doré) is erected on the Place Malesherbes, Paris. We published a view of it in our number for April 7 last.

University Museum, Berlin.—The new and splendid building which has for some time been projected as a museum in connexion with the University of Berlin has at length been commenced. It is intended to contain the three extensive collections belonging to the institution in question, namely, those of zoology and mineralogy, and the celebrated collection of skulls made by Professor Virchow. The site of the University Museum is the extensive plot between the two new Academies of Mines and of Agriculture in the Invaliden Strasse. Architecturally, these two edifices will form respectively right and left wings to the new structure, which will be erected in a style in harmony with that of the two Academies. The time which it is estimated will be required to complete the new Museum is six years.

FOREIGN COMPETITIONS.

THE international competition for the Northern Museum, Stockholm, to which reference was made in the *Builder* of April 14, has now been decided. There were fifteen competitors, who submitted, together, 109 sets of drawings. Plans were sent in by architects from Stockholm (6), Berlin (2), Göteborg, London, Mannheim, Prague, Vienna, and Düsseldorf (one from each city); there was one anonymous design. The estimates ranged from 31,000*l.* (from Stockholm), to 312,000*l.* (Berlin). The jury have made the following awards:—First premium (84*l.*), to W. Manchot, Mannheim; second (34*l.*), to W. Mahrenholz, Berlin; third (17*l.*), and an extra premium of 11*l.*, to Karlson, Stockholm; fourth (17*l.*), and an extra one of 6*l.*, to Wallentin, Stockholm; fifth (17*l.*), to Benischek, Prague. The jury have distributed the following additional prizes:—5*l.* to Bruno Schmitz, Aachen, whose design was sent in too late (after June 1); and 17*l.* to J. H. Petersen, Stockholm.

The competition for a model theatre at the Berlin Hygienic Exhibition has, according to the report of the jury, resulted in comparative

failure, not one of the designs submitted having satisfied them. But they have nevertheless distributed the 400*l.* placed at their disposal, as follows:—200*l.* has been awarded to Herren Schmidt and Neckelmann, Hamburg, for their joint design, which they consider the best; and 67*l.* each to Herr W. Kind, of Berlin, Herren A. Höpfer and A. Roessike (jointly), and Herr L. Arnitz. The premiated designs are to be exhibited.

Designs have been invited for building on the Museum Island of Berlin, as mentioned in detail elsewhere. The collections of the Berlin museums are assuming such magnitude that additional buildings are required. The competition being confined to German architects, it loses in interest to the English profession; but it may be stated that four premiums of 250*l.* each are offered.

VENICE.

PILES and puddle to cut off a small section, such as in other cities would be called a street, and pumping out the enclosed area, thoroughly draining each row of houses, enclosing the drains so that the future action of steamers should not disturb them, careful removal of the deposited sludge, and the substitution of puddle and concrete next exposed piles, and clean gravel for the remainder. Then pond No. 1 would be in a tolerably sanitary condition; and if clean sea-water could be introduced it would form the first instalment of a system of sanitary purification. I think pond No. 2 should adjoin it; and that when it is ready the barrier should be removed, and so on, section by section, steamers, if necessary, plying within the improved sections or enlarged pond.

The idea of steamers in Venice is about as horrible as an omnibus running to Jerusalem, or a tunnel penetrating the Channel; but the people who faint at such thoughts would go to Canterbury by train, or use knives and forks and many appliances unknown to the saints and ancients. We cannot be consistent in the matter of ideas, taken all round. But that is no reason why the thoroughfares of dear (stinking) Venice should be filled in, and the place robbed of its very characteristic waterways, when there are so many ways of lifting sewage by pushing or pulling pumps, and so many flat districts which the town's focal matter would benefit either with wet or dry application: I wish the Society for the Preservation of Ancient Monuments would have an eye to drains, and study sanitary problems generally. I mean no insult to a possibly useful body. Sanitation is taking a line, and if the members awaken some day to find it sweeping on like a torrent, they may find themselves opposed to it, from lack of the patience which a little preliminary study would have enabled them to command. They would regret the filling up of the water-ways of Venice (tidal cesspools they are also), so would we all.

Supposing this be done, some sectional process for removing the present deposit of sludge would be necessary, and a system of drainage and lifting of sewage too, or the place would be dangerously unhealthy with its roadways instead of waterways, and, minus drains, the last state would be worse than the present, recalling Irish towns, where all sorts of odd things are pitched into the gutter close to the front door, and stay there until they deodorise, making the street a prolonged cesspool.

It may not be pleasant to think that Venice is a tidal cesspool, but the harbour of Portsmouth may be so described, and the unpleasantness is a small matter if it be true, and if unseasonable storm clouds do not wash away epidemics.

Having no capital I do not float companies, but, in this instance, I think you may go out of your way by allowing me to suggest a joint-stock society for reclaiming marsh land and irrigating it with Venetian sewage. The city to be drained and purified at the same time that its watery conditions are not altered permanently. Ordinary rainfall "as per usual." In most other places this needs special treatment. It is time that those who would give anything to keep up the peculiar beauties of Venice combined to remove the crying cause for their abandonment in favour of drains.

"Who will bell the cat?" and how to set about it may follow if the right number of the right people can be induced to care whether or not it be done, and the *Builder* is the key to

them. The Venetians are the most concerned, but they like the "status quo," and are all too happy and contented apparently. Some inhabitants do not know that their towns are unsavoury. HAL. J. WEBBER.

THE OLD CITY OF LONDON SCHOOL.

LAST week Messrs. Norton, Trist, & Watney offered for sale at the Auction Mart the freehold property in Honey-lane Market, off Cheapside, known as the City of London Old School, now disused owing to the erection of the new school on the Victoria Embankment. The site has an interesting history. It is intersected by the divisional boundary of the parishes of St. Mary Magdalene and Allhallows, and on the western part, before the fire, stood the Church of St. Mary Magdalene, Milk-street; and on the eastern part the Church of Allhallows, with Honey-lane to the south. City records state that the site was purchased by the Corporation in 1687 for 400*l.*, and the amount applied for the making of chimneys and a dial-plate for the steeple of Bow Church, to which Allhallows, Honey-lane, and St. Pancras, Soper-lane (now Queen-street), became united, under the Fire Act of 1672, whilst St. Mary Magdalene was affiliated to St. Lawrence Jewry. The sites of the two destroyed churches were appropriated to the purposes of a public market until the year 1835, when the City of London School was erected thereon. Mr. Trist, the auctioneer, in introducing the property, adverted to its great value as being immediately contiguous to Cheapside and to the neighbourhood of the Manchester trade. He observed that it contained an area of 11,300 superficial feet, with frontages of 75 ft. to Milk-street, 228 ft. to Honey-lane Market, and 151 ft. to Russia-row. The building itself was described as erected from the designs of the late Mr. J. B. Bunning, in the Elizabethan style of architecture. Referring to the value of property in the locality, the auctioneer said he was able, from his own experience, to state that Messrs. Dent & Co.'s premises adjoining were sold in 1881 at the rate of 10*l.* per foot, while another property near was sold for 14*l.* per foot, and in Milk-street he had sold property containing an area of 750 ft., for 6,000*l.*, or at the rate of 8*l.* per foot. Taking the school site at 8*l.* per foot, it amounted to 90,400*l.*, while, with the cost of the building, which might be used for the ordinary purposes of trade, the property was worth 110,000*l.* The first offer made was 40,000*l.*, on which an advance of 5,000*l.* was at once made, and by further advances of 1,000*l.* at each bid 64,000*l.* was reached, when the bidding stopped, on which the auctioneer observed that it was much below the reserve, and the property was withdrawn. It transpired in the room that the reserve was about 100,000*l.*

BUILDING OVER THE DEAD.

SIR,—I noticed in some of the daily papers last week a statement to the effect that it was proposed to build over the Peol Grove Burial Ground, Bethnal-green, near Victoria Park. The statement is confirmed by a paragraph which appears in last Saturday's *Metropolitan*, which runs:—

"The Peol Grove Burial Ground figured before the Bethnal-green Vestry the other day, and not by any means for the first time. A step long fore-shadowed has now been taken, and the Vestry were called upon to deal with an application for permission to build a number of houses, and to form a new street across Peol Grove. According to the statement of Mr. Ewin, the representative of the district at the Metropolitan Board of Works, there are not less than 20,000 human bodies in this old burial-ground, and numbers of these are not entirely decomposed. Mr. Ewin recalled to mind that when the subject was first broached, it was objected that the foundations of any roads or buildings might subside as the coffins decayed and the graves fell in. Usually desirous of giving every reasonable facility for building operations, the Metropolitan Board have, very justly, felt the necessity for dealing with this application, for which there are few precedents, but which will soon be succeeded by others of a similar nature, with special caution; and it may be anticipated that the projected house accommodation in Peol Grove for 40 families will not be sanctioned if the statements freely made in the locality are substantiated. Meantime, the Bethnal-green Vestry have expressed the opinion, by resolution, that 'it is extremely objectionable that any house should be erected on the disused burial-ground in Peol Grove, unless the bodies therein interred have been previously removed.'"

"We should think so, too!" will, no doubt, be your comment on this resolution. But in these days of talk about sanitary progress, when people are rediscovering and beginning to apply sanitary rules laid down thirty years ago, is it possible that there can be any doubt as to the power of the Metropolitan Board of Works and the Vestries to peremptorily veto the running-up of dwelling-houses on a modern and not-long-ago-closed burial-ground,—before removing the remains of the dead? I know not what "precedents" there may be for such doings; no doubt some could be found amongst the many bad precedents in building and sanitation to which you, Sir, long ago called attention. The irony of the sentence in which solicitude is expressed, not as to the consequences to the poor people who are to be housed on a substratum of partially-decomposed human remains, but as to the danger of the sinking of roads or buildings, though evidently unintentional, is full of grim significance for those who can read "between the lines." The one thought of all concerned seems to be with the safety of property in bricks and mortar. But those who are proposing to build over this cemetery may "take heart of grace" if they get the "reasonable facilities" which are so glibly talked of, for, as a suburban resident, I am able to affirm most distinctly from personal knowledge that it is quite within the power of the speculating builder to build his walls so thin and generally so to eliminate the element of solidity (and, therefore, of weight) from his erections as to render their sinking into the ground a very remote contingency. (They are some of them, far more likely to be blown away.)

In all seriousness, it is positively staggering to be gravely told that "other projects of a similar nature" are likely to come up for decision by our not always immaculate local authorities. If the law be not strong enough or clear enough to prevent the carrying out of such proposals as that now made, it is high time that it should be reinforced or elucidated. If, by any "fluke" or act of jobbery such misdeeds are to be permitted, they will "fore-shadow" pestilence of some kind, if not cholera.

Perhaps, Sir, you will allow this communication a place in your columns, if only to stimulate the Metropolitan Board to continue to regard such projects with "special caution," although the phrase seems to indicate a desire to parody as to proposals which should be at once indignantly scouted.

Is this "Peol Grove Burial Ground" identical with what was once known as the "Victoria Park Cemetery"? If so, I distinctly recollect complaints being made a few years ago as to the overcrowding of the ground with coffins; and these complaints, if I mistake not, led to the closing of the burial place.

DELTA.

DWELLINGS IN THE SUBURBS.

WILLIAM HOWITT, in his able and exhaustive work on "The Northern Heights of London," points out that the deterioration of the prosperity and integrity of a nation inverts even the art of building. Of this law the Roman Empire furnishes a notable example; and truly, under these conditions, the prospects of our own beloved country are anything but cheerful. Yet so surely has the feeling of sturdy independence and national superiority which animated the bosoms of our forefathers grown upon us, that we can hardly conceive of the often-predicted downfall of England as an actual contingency. If we could but persuade ourselves that the degeneracy of our building is not a fact, or that it is only a temporary phenomenon in the progress of civilisation, we might rest quietly for another century or two. But can we do so?

If the two great intellectual principles of our time,—those of scientific inquiry and æsthetic feeling,—have taught us anything, it is this, that our houses should be *healthy*, and that they should be *beautiful*. It needs but little reflection to remind us how woefully these two principles are at variance with the actual facts. Do we not hear of the houses of the aristocracy,—even of royalty itself,—being found totally unfit from a sanitary point of view for human habitation? Can we doubt that these revelations are but the signs of a vast mass of facts that might be revealed, seeing how architects and builders have proved themselves totally ignorant of the first principles of sanitary

science? Then as to their beauty,—we know the awkward construction, the gloomy and lugubrious furniture and effects, of the houses of many of the rich. It is true that in many cases there has been a great improvement of late years, but we wish that all would understand that it is no more expensive to build and inhabit a beautiful house than an ugly one, and often less so. We give a hearty hand to the champions of scientific principles, and claim that those principles should be properly carried out; nay, though unprepared to go all lengths with our æsthetic friends, we confess to no little sympathy with them, and a cordial agreement with their main principles.

We have spoken of the houses of the rich; but what shall we say to the houses of the poor? Can it be said that in them the laws of health and taste are obeyed? We will not repeat the shameful story of our fellow-creatures stiding to death in the crowded courts of the metropolis; but we can point to places elsewhere in which the spirit which creates or allows such horrors is again triumphant. We will not enter into long descriptions of the manner in which houses are constructed at this day in many outlying suburbs, which we may all see for ourselves; but we can think upon the degradation of such a state of things existing at all, and curse the selfish and Mammonite spirit which has brought us to this pass.

The speculating builder is no truly a product of the nineteenth century that no one seems to know how to deal with him. Before him the local dignitaries quail; and he proceeds unmolested with his erections in a confident and business-like manner. His eye is entirely upon the main chance; and why not? He but obeys the impulse of his time. We, however, may be pardoned for giving a thought to the fate of the unhappy inmates of these ill-fated dwellings; and even if personally unable to remedy the evils of this deplorable system, may insist, in the name of honesty and humanity, that those whose special business it is shall do so.

To lay stress on the cultivation of art in the houses of the poor seems almost ridiculous in the face of present difficulties; although, we believe, it to have, nevertheless, an important influence on health and morality. But let us be sure that if the national standard of integrity is to be maintained among the poorer population, proper dwelling accommodation, at least, they must have; and let us resolve that they shall have it.

REGINALD ARTHUR BRETHER.

THE LAW COURTS.

SIR,—In consequence of further complaints from the Bench this week, I beg leave to mention a few slight changes which I lately suggested in the interior construction:—

1. The public entrance into each of the court-rooms should be by one door in the middle, at the back.
2. In front of it, on the inside, a partition on screen from end to end, whereby
- a. The attention of the court would not be distracted by the continual opening of this door.
- b. The sound would be deadened.
- c. The draughts would be intercepted.
- d. Persons rushing in could recover themselves before advancing into the body of the court.
- e. One man could guard it.
3. A separate entrance at the side for the Bar. The entrance for jurymen is found unnecessary, and the gallery meant for them is forbidden to be used on account of its inconvenience.

The present construction of the doors diminishes the accommodation by cutting out a large corner on each side; (2), being in the centre, they leave no sufficient gangway, so that the decorum of the court is continually disturbed by people hurrying in; (3), if both sides are used (in all, four doors), four officers are required,—if only one side, the other is useless; (4), they are perpetually being opened, drawing off the attention, and making a noise.

LOUIS DE SOUZA.

CHURCHES IN SCOTLAND.

WILL any one kindly name two or three Episcopal churches in Scotland that are considered the best examples, as to purity of Ecclesiastical style of architecture, erected either in ancient or modern times? INQUIRER.

ASBESTOS.

We mentioned briefly not long ago the increased use of asbestos, as prepared by Mr. John Bell, at his works in Southwark-street, London, and we are led by some inquiries we have received to add a few particulars. The peculiarity incidental to asbestos fibre for a long time baffled all attempts to spin it into a yarn without the intermixture of a certain proportion of flax or other vegetable fibre, which, of course, could only be looked upon as an objectionable adulteration, and was only to be tolerated until other and better means could be discovered. Within the last few years, however, the difficulty has been overcome, and yarns capable of withstanding great tensile stresses can now be readily produced by machinery which has been specially constructed for the purpose. One of the most important applications of this yarn is for the manufacture of steam packings, of which a great variety are made, each description being designed to meet some special demand. In making packing, it was at first not sufficiently recognised that the fibres of asbestos were apt to be largely charged with minute particles of pyrites, and until this fact was appreciated it was often found that the pistons were scored, the damage being attributed to the action of the asbestos itself, instead of to the impurities it contained. To obviate this defect, it therefore became necessary, not only to carefully select the most suitable kind of asbestos for the purpose, but to thoroughly cleanse it from all stone and grit before spinning, or which duty machinery had to be adapted. The yarn now produced is quite pure, and is capable of being woven into almost any kind of

invented by Mr. Maignen. This apparatus consists of a hollow perforated cone of earthenware, over which is stretched a specially woven asbestos cloth. On the outside a layer of the finely-powdered filtering medium,—Maignen's patent carbocalois,—is automatically deposited by being mixed with the first water put into the filter.

For forming the joints of pipes exposed to the action of moisture, and for man and mud-hole doors requiring frequent removal, asbestos woven cloth is very largely in demand. In these cases asbestos millboard, which is the cheapest form of jointing material, is comparatively worthless, if, indeed, it is not absolutely objectionable, from its permeability to water, which soaks through and attacks the iron of the bolts, and it was therefore necessary to devise a combination which would effectually resist the heat and damp.

The remaining uses of asbestos which we have to notice appear to be mainly in the production of fireproof cement and putty, for which there is considerable demand for certain kinds of joints, and in the manufacture of fire and acid-proof lumps, blocks, and bricks. The ordinary gas fire is familiar to every one, and it will suffice to point out that asbestos enters largely into the composition of the artificial fuel upon which the success of the fire in a great measure depends.

BUILDING PATENT RECORD.*

APPLICATIONS FOR LETTERS PATENT.

3,366. W. R. Lake, London. Door locks. (Com. by E. A. Chameroir, Paris.) July 6, 1883.

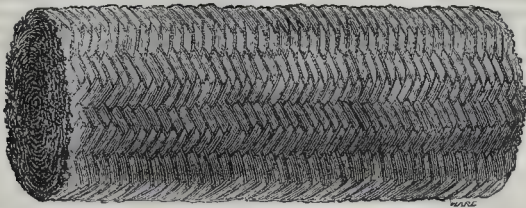


Fig. 1 shows the most common form of packing, in which the pure asbestos yarn is simply plaited up by machinery into a square or round rope. It was first brought out by Mr. Bell, in the year 1879, and was immediately adopted by the British and German navies, where its use is still continued. But it was soon ascertained that special cases required special treatment, and though the plaited packing was generally satisfactory, it became evident that something else was wanted in the use of steam-engines with extremely high piston speeds, such as are now being introduced into the merchant service. To meet this demand the yarn was first woven into a cloth, which, being slightly waterproofed with vulcanised indiarubber, was rolled up into a rope in much the same way as the canvas is treated in what is known as Tuck's packing, only without the rubber-core. The enduring owners of this asbestos block-packing are quite remarkable. In one case, on being taken out after twelve months' working with steam of 0 lb. pressure, it was found to be perfectly good, and was accordingly replaced, while, as an instance of its efficiency, we can cite a case in which, after uselessly trying almost every kind of packing in a troublesome stuffing-box of a large pumping-engine, the asbestos block-packing was found to answer admirably, and the result has been that an average of 1½ lb. to 1 lb. better vacuum has since been maintained in the cylinder.

It has often been erroneously stated that asbestos packing could be used without lubrication. No greater mistake could exist. It not only requires a good supply of oil, but demands careful attention on the part of the engineer in charge.

A great deal of yarn is woven into cloth, the increased use of which has been very marked during the last twelve months, and which is being adopted for a great variety of purposes. No noteworthy application is for fireproof curtains, and several of these have been supplied by Mr. Bell for theatres in Great Britain, the United States, and some of the principal cities of Europe.

Another interesting application is in the filter

3,379. G. Maw, Broseley. Manufacture of earthenware tiles. July 7, 1883.

3,396. D. Timings and S. Timings, Birmingham. Construction of door springs. July 9, 1883.

3,399. F. Newman, Ryde. Fastenings for doors. July 10, 1883.

3,438. J. Thomlinson, Carlisle. Manufacture of plaster of Paris. July 12, 1883.

3,446. G. Howard, London. Manufacture of marquetry parquet for flooring, &c. (Comp. Spec.) July 13, 1883.

3,467. H. J. Haddan, London. Grates. (Com. by E. Breslau, Berlin.) July 13, 1883.

3,469. H. J. Haddan, London. Cord fasteners for window-blinds. (Com. by D. W. Ernsting, Bremen.) July 13, 1883.

3,488. J. Fairbairn, Edinburgh. Water-closets, urinals, lavatories, baths, and service cisterns. July 16, 1883.

3,512. E. Gilbert and A. E. Gilbert, Dundee. Water-closets. July 17, 1883.

3,540. W. Ayres, London. Manufacture of sash-weights, &c. July 18, 1883.

3,555. C. J. Mason, London. Manufacture of slabs and coverings for building purposes, &c. July 19, 1883.

NOTICE TO PROCEED

has been given by the following applicants on the dates named:—

July 10, 1883.

1,391. E. R. Wethered, Woolwich. Latches, locks, and lock furniture. March 15, 1883.

1,690. F. P. Preston, J. T. Prestige, and E. J. Preston, Deptford, and E. W. de Ruett, Anerley. Lavatories. April 4, 1883.

July 13, 1883.

2,921. C. Major, Bridgwater. Roofing tiles. June 12, 1883.

July 17, 1883.

1,302. R. Whiston, Wolverhampton. Fastenings for doors, windows, and shutters. Mar. 12, 1883.

* Compiled by Hart & Co., Patent Agents, 186, Fleet-street.

1,317. J. Harsant, London. Apparatus connected with the handle of a closet for preventing waste of water. Mar. 13, 1883.

1,372. J. E. Rendle and F. B. Rendle, London. Glazed structures for horticultural purposes, &c. Mar. 14, 1883.

3,446. G. Howard, London. Manufacture of marquetry parquet for flooring, &c. July 13, 1883.

ABRIDGMENTS OF SPECIFICATIONS,

Published during the week ending July 14, 1883.

5,393. W. N. Hutchinson, Wellesbourne. Joints of drainage-pipes. Nov. 13, 1882. Price 8d.

The sockets and spigots of the pipes are coned, and round the spigots inside of the sockets are gaskets of india-rubber, &c., of a conical or triangular section to keep the joints tight.

5,490. C. Wheeler, Newbury. Packing or "caulking" for pipe-joints, &c. Nov. 18, 1882. Price 2d.

This packing consists of soft wire wound spirally round the spigot end of the pipe, and between each coil is also wound hemp. A ring or collar is forced down when the ends of the pipes are in position to set this packing up. (Pro. Pro.)

5,496. S. Slater, Oldham. Stoves. Nov. 18, 1882. Price 2d.

These are portable stoves, and inside the outer case is a perforated shell to contain the fuel. This shell can be lifted out when the stove is to be removed from one room to another. (Pro. Pro.)

5,508. L. A. Groth, London. Producing architectural ornaments, &c., from wood and other fibrous pulp. (Com. by C. G. Mineur, Stockholm.) Nov. 20, 1882. Price 4d.

This is an improvement on Patent No. 158 of 1881, in mixing the wood pulp, &c., with water until it is quite fluid, and then pouring it into the mould, when the water is removed by a sponge through muslin. More pulp is then poured in, and the water again removed in the same manner, and so on until a sufficient thickness is left of the pulp in the bottom of the mould.

5,528. E. B. Brooke, Huddersfield. Apparatus for removing the superfluous body and glaze off enamelled bricks. Nov. 21, 1882. Price 2d.

This is a revolving face-plate covered with a sheet of sieving or wire-work. (Pro. Pro.)

5,542. F. Wirth, Frankfurt. Combined urinal and wash-stand. (Com. by F. Muller, Stuttgart.) Nov. 21, 1882. Price 2d.

The basin is pivoted above the urinal, and is brought to a level by treading on a foot-board. Afterwards, when the foot is removed, the basin tilts up and empties its contents into the urinal. (Pro. Pro.)

5,581. E. Hughes, Liverpool. Wood-block and other pavements. Nov. 23, 1882. Price 6d.

The bottoms of the wood-blocks are so rotated that when the blocks are placed together a dovetail is formed by two adjacent blocks, which is filled with the cement on which the blocks are laid.

Published during the Week ending July 21, 1883.

5,598. F. Greatrex, Uxbridge. Construction of stoves, &c. Nov. 24, 1882. Price 6d.

Two uptakes are fitted to the stove, one at the top, the other at the back, whereby two currents of air—a vertical and a horizontal one,—are drawn through the fire.

5,636. T. Carder, Bideford. Preventing the flow of sewer gas into buildings. Nov. 27, 1882. Price 2d.

Two or three traps are united into one apparatus. (Pro. Pro.)

5,646. F. K. de Stasioki, London. Manufacture of fire-lighters. (Com. by F. A. Christ and J. Weiler, Vienna.) Nov. 28, 1882. Price 2d.

These are made of a few twigs of wood bound together, which are dipped into an inflammable mixture and then coated with sawdust. (Pro. Pro.)

5,650. H. J. Haddan, London. Chairs. (Com. by E. Schmidt, Leipzig.) Nov. 28, 1882. Price 2d.

The seat is mounted on a disc, on the periphery of which is a thread which engages screw threads on the legs, so that by turning the disc the seat is raised. (Pro. Pro.)

5,680. H. Doulton, London. Construction of the steps of flights of stairs. Nov. 29, 1882. Price 4d.

On the terra-cotta step blocks and treads are fitted tread-pieces of hard vitrified ware.

5,795. J. Whitehouse, Birmingham. Sash-fastenings. Dec. 5, 1882. Price 6d.

A sliding bolt is fitted in the lower sash, connected with the eccentric pin of the ordinary lever, fastening in such a manner that when the lever is crossed over to the other sash to secure the two together, the sliding bolt is shot into a recess in the meeting rail of the upper sash.

Sad Sequel to a Bank Failure.—Mr. John Barratt, builder, Southport, hanged himself on the 20th inst. He had to file a petition a few days previously, having lost heavily by the stoppage of the Southport Bank two years since, and this, it is believed, led to the suicide.

IMPORTANT BUILDING ACT CASE. ASPHALTE NOT COMBUSTIBLE.

A summons taken out at Marlborough-street, by Mr. Thos. H. Watson, district surveyor of St. George's, against Mr. Wey, builder, for covering a concrete flat with asphalt at the house, No. 4, Half-moon-street, Piccadilly, was heard before Mr. De Rutzen. Mr. Poland, barrister, conducted the case on the part of the builder.

Mr. Watson, district surveyor, said he considered asphalt an inflammable material, because it melted and partly burned when a piece of it was held in a gas jet, and that as it dropped it would set light to anything combustible near it.

Mr. Cubitt Nicholas, the architect engaged on the buildings, related his many years' experience in the use of Claridge's patent asphalt, and believed that such asphalt, as used for flats, was the best incombustible material, and safer than a lead covering. In answer to Mr. Poland, the witness said he believed there was a small portion of bitumen in it which would burn, but that in combination with about 90 per cent. of carbonate of lime it was, as a mastic, perfectly incombustible, and later on many cases were cited fully supporting his evidence.

Professor Attfield, F.R.S., Professor of Chemistry to the Royal Pharmaceutical Society, stated that he had analysed and tested Claridge's asphalt. It contained a small portion of bitumen, which, if extracted, would burn. About 90 per cent. of all asphalt was mineral matter, which would put out flame far better than water. In the ordinary dictionary meaning of the word, asphalt was incombustible. In cross-examination the witness said that in any case natural asphalt would not convey fire.

Mr. Penrose, architect to the Dean and Chapter of St. Paul's Cathedral, for the defence said he had used asphalt to cover roofs, and found it very sound and safe, as it was incombustible, he had used it in Mr. Watson's district.

Mr. Robert Walker, architect, said he had used asphalt in more than thirty cases for covering roofs of factories and warehouses. He had known several cases where buildings had caught fire, but in no case had asphalt spread the fire; on the contrary, they had always retarded it. The witness gave proofs of the disastrous effects of fire on lead and asphalt roofs by referring to the Alhambra fire.

Mr. De Rutzen stopped the case, and stated that he was clearly of opinion that Claridge's asphalt was incombustible within the meaning of the Act. He therefore dismissed the summons.

Mr. Farrell, secretary of the Company, was present, but after the magistrate's prompt decision, his evidence was not taken.

COMMISSIONS.

HEARNE V. KEELING.

THE plaintiff in this case (Queen's Bench, before Mr. Justice Williams and a Common Jury), was a brewer's agent, in business in Guildford-street, and the defendant was an architect who was interested in some buildings connected with the Auction Mart, Tokenhouse-yard. The action was to recover fifty guineas for having got Messrs. Spiers & Pond to take the Auction Mart Restaurant.

Mr. Wilkey Wright was for the plaintiff, and Mr. Willis, Q.C., and Mr. Tindal Atkinson, for the defendant.

The case for the plaintiff was that he was promised the fifty guineas by the defendant on the 13th of March; that on the following day he wrote to the defendant—"To prevent misunderstanding, please drop me a line stating that on the contract being signed by Furnival & Co. and Spiers & Pond you will pay me on behalf of Dove & Co. fifty guineas, as verbally promised by you in the presence of Mr. Hudson;" and that the defendant replied ten days afterwards—"Owing to your letter of the 13th inst. having been inadvertently covered under papers on my desk, it is only this day came under my notice. As to the contents, I think your request is premature, as the arrangement, which I admit, does not become binding until the business is a *fact accompli*, which is scarcely yet the case, but when it is I may rely on my share of the understanding being carried out."

Evidence was given on both sides, the question in dispute being whether the promise to pay the 50 guineas was a personal one on behalf of the defendant, or whether the understanding was that he was merely to use his influence to induce Messrs. Dove Brothers to pay the plaintiff that amount.

The Jury having in the course of the case intimated that their minds were made up, found a verdict for the plaintiff for £24. 12s.

WOODEN PROJECTIONS UNDER THE BUILDING ACT.

T. W. WILLIS V. J. DAVIS.

THIS was a summons taken out by the District Surveyor for Putney and Brixton, under the 28th section of the Metropolitan Building Act, for the removal of six wooden balconies which the defendant had erected to four houses in Dyers-lane, Putney, and for which the sanction of the Metropolitan Board of Works had been refused.

The case was argued last week before Mr. Sheil at the Wandsworth Police-court.

The District Surveyor having proved the facts, and the service of the usual statutory notice to amend, the Magistrate made an order for the removal of the balconies within twenty-one days, the defendant to pay the costs of the District Surveyor.

Look to the Balconies.—Mr. Bedford, the coroner for Westminster, held an inquiry on Saturday, at the Session-house, touching the death of James Frederick Cassell, nineteen years of age, of 61, Blake's-road, Peckham, who was killed by the fall of a balcony at 17, Aylesford-street, Fimlico. The balcony was about to be repaired, and the deceased had incautiously stepped upon it and fell with it into the area below.

The jury, on returning a verdict of "Accidental death," asked the coroner to communicate with the district surveyor, calling his attention to other balconies in the same street.

ST. BEDE'S (R.C.) COLLEGE, MANCHESTER.

On the 18th inst., which was Speech-day at St. Bede's (R.C.) College, Alexandra Park, Manchester, Mr. Humphrey F. de Trafford laid the foundation-stone of the central block of college buildings. The south wing was completed about two years ago, the erection of the central block and the north wing being postponed. The central portion will consist of an entrance-porch, 47 ft. by 10 ft., behind which will be a large vestibule with porter's rooms, and offices on the first floor. Like the south wing, it will be four stories high, and will be in the Italian style of architecture. The architects are Messrs. Dunn & Hansom, of London, the principal contractor being Mr. Healey, of Salford, and the cost of the work will be about 6,000l.

LAND TAX.

SIR,—Some few weeks back you published an interesting paper by Mr. Grimes upon the land tax [*Builder*, June 2, 1883, p. 758], which contained one of the most useful tables upon the subject, and one which I have never seen before.

I have since been trying to ascertain upon what assessment Mr. Grimes has calculated his pound rate, but have been unable to obtain a satisfactory answer, although I think it must be calculated upon the income-tax assessment for 1877. Would Mr. Grimes oblige by stating upon what assessment his pound rate was calculated, and whether the rate may be taken as the present actual charge?

I have always understood that the rate varied in different districts of the same county, and that it was very difficult to obtain the actual pound rate for any parish, as the present Income-tax assessment is more than one hundred times greater than the original Land-tax assessment made in 1692.

As all annuities and charges payable out of lands are liable to a deduction for land tax, you will at once see how necessary it is to be able to arrive at a pound rate calculated upon the present Income-tax assessment.

F. K. S.

FIREPROOF FLOORS.

SIR,—Referring to "C. W. H.'s" inquiry in your issue of the 14th inst. [p. 62], I have much pleasure in bringing before his notice an article, which is not only fireproof, but sound-proof, and is already pretty extensively employed by architects and builders in London and New York. The material in question is a fibrous production from blast furnace slag, and is known to the trade as a silicate cotton.

Silicate cotton can be so manipulated as to completely protect ordinary wooden joists from the action of fire; and, if used in conjunction with Hyatt's Patent Corrugated Iron, specially prepared for ceilings, a perfectly fireproof and sound-proof ceiling, of a light and inexpensive description, may be obtained.

I understand that your correspondent can receive samples and full particulars from the Silicate Cotton Works, Kentish Town.

S. R.

THE UNDERGROUND RAILWAYS.

SIR,—Your correspondent's idea in your last week's edition [p. 87] for the ventilation of the tunnels on the Metropolitan Railway is, I am afraid, not an original one, for between Portland-road and Gower-street stations the tunnel is divided by a partition of woodwork.

Why been so some time? by a partition of woodwork. Why been so some time? by a partition of woodwork. Why been so some time? by a partition of woodwork. I think I know from experience that while waiting for trains on Portland-road Station platform each train that enters brings with it volumes of hot, offensive air that almost chokes one, and if it is for this reason that they have not adopted the means of division of the tunnels for ventilation all through the line, I think that they are quite right too; for to have all the stations on the line like Portland-road and Gower-street stations would be most injurious to those waiting on the platform for trains.

By means of a shaft of some kind running into the open air just before the station, which would carry the foul air from each train out of the tunnel, the divided tunnel might be useful, but as it is at present the air is taken from the tunnel and deposited in the station, which, if it is a station like Portland-road, is most injurious.

I think it is high time that some one stepped forth with an idea for saving the lives which we know we must lose, and are losing day by day,

by these wretched tunnels; and I think that if the Metropolitan Railway Company were to offer some kind of reward or prize, it might be the means of doing something good; but it seems that nothing will be done until public feeling is risen to such a pitch that it will almost demand, instead of requesting, safe passage by rail, as it has a perfect right to do.

HASKINS W. ROWETHAM.

MADDISON v. HELSTON RAILWAY COMPANY.

SIR,—Your observations on this case [p. 74, ante] will interest all who are concerned in contracts. It is not easy to see how the decision was arrived at. One would suppose that the sub-contractor was held by the conditions in the main contract as to the plant. This, however, must depend upon legal interpretation of the documents. However, now we know, we can provide for this contingency by not only specifying that the contractor shall not sublet without written consent, but further that the sub-contractor so approved shall be bound by the conditions applying to the main contract. This must be so, otherwise the greater part of a contract might be sublet, and the contract evaded in its material parts. I have looked upon a sub-contractor as being in the place of and bound by the conditions of the contract, as though he were the only party to it.

May I add, whilst on this subject, that I think in every case a suitable advance should be made for contractors' plant, as it can be impounded, and also the interest should be allowed on retention money?

J. B.

SUB-CONTRACTS.

SIR,—Allow me to say a word on the contractor's side of the question [*see Builder*, pp. 81, 82, 97, ante]. Specialists generally get some 50 per cent. higher prices than ordinary builders; they are, as a rule, exempt from the supervision of the clerk of work and are allowed to do their work their own way. They enter the building, use the builder's scaffolding, ropes, &c.; beg, borrow, or steal all sorts of small matters, such as a lod or two of mortar, a few bricks, a little paint or solder; cut the work about, dirty the floors, and leave all their rubbish for the builder to clear away. Often, watching, lighting, and fuel are found for them, and their arrogance is pre-eminant.

Surely it is not too much to allow a builder 10 per cent. for all this, and the architect must be very unjust not to do so, as he can ensure payment by insisting on the builder settling the account before including the amount in his certificate. Where it is not done, the builder thinks the architect takes the 10 per cent. for himself.

ROBERT PHILLIPS, Clerk of Works.

PROPOSED LIVERPOOL CATHEDRAL.

SIR,—I noticed in the *Builder* for the 30th ult. [p. 897], the report of the special sub-committee entrusted with the duty of collecting facts bearing on the subject of a site for the proposed Liverpool Cathedral, from which I am very much surprised to find that the committee appear to specially favour the St. George's Dock site. Now, I think every one is agreed as to the desirability of the cathedral being in a central position; and I, as an old Liverpoolian, and one who is willing to subscribe my mite to such an object, must protest against the proposal of a committee to plant the cathedral at the extreme edge of the town, as would be the case if it were built down at the docks. The committee say that the St. George's Dock site is easy of access from the Cheshire side; but for the people of Liverpool to erect a cathedral for the Cheshire folk is a new doctrine, and if the Cheshire were asked to transfer Chester Cathedral to Birkenhead for the convenience of Liverpool, the absurd proposal would be laughed to scorn.

The site of St. Luke's Church is a very fine one, and surely the Churchmen of Liverpool will never let their new cathedral be sacrificed for the sake of 20,000l. It would be central here; and although Bold-street at the present is too narrow to be the Ludgate-hill of Liverpool, yet it is quite possible that that thoroughfare may be widened in the not very distant future, when the west front of the cathedral would be seen to advantage.

But, sir, I have always maintained that Monument-place would be the grandest site in Liverpool for a cathedral; it is central, open, and high; it is completely surrounded by streets; the property encumbering the site is not very expensive, and main thoroughfares from all parts of the city converge on the spot. The west front would present an imposing appearance on ascending London-road, and this thoroughfare would be truly the Ludgate-hill of Liverpool. As regards St. Silas' Church, which stands on a portion of the ground, that might be absorbed into the cathedral scheme, and the present incumbent made a canon.

I leave the consideration of this matter to the good sense of the Churchmen of Liverpool, trusting that they will never fall into the mistake of subscribing towards building the cathedral down by the docks.

T. B. DENNETT.

BUILDERS' BENEVOLENT INSTITUTION.

The thirty-sixth annual meeting of this institution was held at Willis's Rooms on Thursday, the 26th inst., Mr. George Plucknett, J.P., treasurer, in the chair, in the unavoidable absence of the president, Mr. J. T. Chappell.

The committee, in their annual report, read by the secretary, Major Bruton, observe that the Institution continues to fulfil the purposes for which it was founded, and is in a satisfactory condition. The prosperity of the past year was greatly influenced by the liberality and energy of the president, as by his exertions the donations at the last anniversary dinner exceeded in amount those of any former occasion. Nevertheless, the committee express regret that many master tradesmen engaged in the various branches of the building trade in and around London have not yet contributed to the funds of the charity, though it is one which, they urge, has pressing claims upon them. The committee regret the loss by death during the past year of several prominent supporters of the Institution, among whom was the late Mr. William Higgs, of South Lambeth, president of the Institution in 1877. During the past year eight pensioners had been elected, six men and two women, and one widow of a pensioner had been placed on the pension list. Ten pensioners had died during the year.

The balance-sheet shows a total income for the year (including 938*l.* forwarded) of 5,214*l.*, of which 810*l.* was received from annual subscribers, 1,471*l.* in donations, and 692*l.* from dividends in Stock. The expenditure amounted to 2,224*l.* 4*s.* 3*d.*, including 1,808*l.* 6*s.* 4*d.* paid to pensioners, and there remained in hand a balance of 2,990*l.* 12*s.* 7*d.*

The report and balance-sheet were unanimously adopted, on the motion of Mr. Thomas F. Rider, seconded by Mr. Thomas Rogers.

A vote of thanks to Mr. J. T. Chappell, the President of the Institution for the past year, was moved by Mr. H. G. Smith, seconded by Mr. T. Rogers, and heartily accorded, the chairman speaking of the great obligations which the Institution was under to the indefatigable services of Mr. Chappell.

On the motion of Mr. Rogers, seconded by Mr. Smith, thanks were given to the Vice-presidents, and Mr. W. J. Mitchell proposed a vote of thanks to the Trustees (Mr. Plucknett, Sir S. M. Peto, Ald. Sir J. C. Lawrence, M.P., and Mr. C. T. Lucas), which was carried, as were also votes of thanks to the Treasurer (Mr. Plucknett) who was re-elected; to the auditors; and others.

The retiring members of the committee were, with one exception, re-elected, and on the motion of Mr. F. W. Keeble, seconded by Mr. Thomas Stirling, Mr. Thomas Hall (of the firm of Hall, Biddall, & Co.) was elected a member of the committee.

Mr. Henry G. Smith, of the firm of G. Smith & Co., Pimlico, was, on the motion of Mr. Rider, seconded by Mr. Rogers, unanimously elected President for the coming year, and in returning thanks for his election, he said he intended to do his utmost for the Institution, and would endeavour to obtain a large increase in the number of annual subscribers.

It was announced that the annual dinner will be held on the 8th of November next at the Freemasons' Tavern.

TENDERS FOR BOARD SCHOOLS.

8*u.*—Now that another Board School is to be tendered on, let us hope it will be given to the lowest competitor, and not to a builder third or fourth on the list of tenders above the lowest; that has been the case before, not in one instance, but in nearly every school that has been built by the Tottenham School Board, and consequently at the expense of the ratepayer. If the contract is given to a builder say 600*l.* (and sometimes more) above the lowest, because that builder could not find sureties, had the Board 60*l.* better, even at the additional cost of 150 guineas, secure the temporary services of a surveyor to survey the building from time to time during construction, or employ no clerks of the works instead of one? But what security required from a builder where 20 per cent. of the outlay is retained in hand by the School Board? That touches the security itself, and as a rule, of course there is no rule without an exception—the first instalment certified by the architect is not paid until the second instalment becomes due, and so on until the end, when part of the "retention money," i.e. the 20 per cent. retained in hand by the School Board, to the amount of 500*l.*, is held back for six months for the final certificate has been granted, and when that final certificate becomes due, say upon a contract of 8,000*l.*, the "retention money" amounts to no less an amount than 1,600*l.*, 500*l.* of which is not due to the builder until some months after completion, when the "certificate of completion" is granted after the building has been surveyed by the architect and all faults and deficiencies pointed

out by him to the builder made good. It is not every builder, although he may be perfectly sound, that can obtain sureties (even if he likes to make the request) from a friend or friends for a building contract of 8,000*l.*, that friend not knowing what responsibility is attached to a building contract of 8,000*l.* Although it seems a great responsibility, it really is nominal, where 20 per cent. is kept back for every 100*l.* advanced to the builder; consequently, the responsibility grows less and less to the surety as the building approaches completion. It is seldom a builder fails at the commencement of any contract, and if an architect and the clerk of the works cannot ascertain that the work is being carried on according to their specification as the building is being carried up and roofed in, what more servants do the School Board require? WILLIAM H. PIER.

CEMENT.

Sir,—Could you or some of your readers kindly answer me the following query?

I have done the concreting to a reservoir, the walls of which are built of rough wall-stones and lime. On the outside is a stream of water running, some of which percolates through the wall, and causes the lime to keep soft. I have plastered the sides with cement and sand, gauged 3 of sand to 2 of cement.

On the side where the stream runs it has shelled off, and in many cases never set at all. The architect condemns my cement, which is of best quality.

What I want to know is, who is at fault and what is the best way to avoid this occurring again? Also, what action the wet lime would have on the cement? AIREDALE.

PROVINCIAL NEWS.

Halifax.—New premises in New South-street, for Messrs. G. Webster & Son, grocers, are approaching completion. The drawings have been prepared and the work is being carried out by Messrs. George Buckley & Son, architects, Halifax. The building is described as being in the Greek style of architecture. The block will comprise three large shops, with extensive and well-lighted offices over, for which a separate entrance is provided in New South-street. The furnishing is in the same style. With its rich internal fittings the shop, when completed, will, we are told, be one of the finest and best appointed in the provinces. The contractors are Messrs. Drake & Riley, masons; Mr. James Smith, joiner; Messrs. J. Bancroft & Sons, slaters and plasterers; Mr. John Naylor, plumber; Mr. John Berry, iron-founder; and Messrs. Millar, Dennis & Co., of Bradford, brasswork and internal fittings.

Sherburn (Durham).—On the 12th inst. the new Sherburn Hospital Dispensary was opened by the Bishop of Durham. The new buildings stand on the opposite side of the road to the hospital, and are, therefore, quite detached, though designed to harmonise with and form part of the general group. The buildings comprise a waiting-room, a dispensing-room, a consulting-room, and an examination-room and store-room. The whole has been erected at a cost of about 1,600*l.*, the contractor being Mr. W. Forster, of Croxdale, his sub-contractors being Mr. Laidler for plumbing and ironwork, Mr. W. Hodgson for painting, and the Gateshead Stained Glass Company for the glazing.

Eastbourne.—In Grossington-road, at the corner of Meads-road, a new college for the Misses Deacon, to accommodate (in the first instance) 100 lady students, has been completed under the direction of Mr. Crisford, architect, the builders being Messrs. Rowland & Sons, of Horsham. The largest room is 42 ft. 6 in. long, 25 ft. 9 in. wide, and 25 ft. high from floor to ceiling. It is divided into three portions by revolving partitions.

CHURCH-BUILDING NEWS.

Standlake.—The parish church of the Holy Cross at Standlake in having another section of its restoration brought to a close. The nave and north aisle were re-opened by the Venerable Archdeacon of Oxford on Easter Sunday in 1881. It is contemplated that the restored south aisle, the baptistery, and the new south porch now in progress, will be first used upon St. Mary Magdalene's Day (July 22nd). The architect for the general restoration is Mr. Clapton C. Rolfe, of St. Michael's Chambers, Ship-street, Oxford. The restoration of the nave, &c., is of a substantial character. The new oak roofs are adorned by life-sized angels, carved in the same material. These angels bear shields

upon which are emblazoned the various emblems of the Passion. The seats are of oak, massive in construction; upon every bench-end is a sculptured representation of a saint. They are placed according to ancient usage, the virgin saints on the north side, and the male ones on the south.

The sculptor of all this work, under the immediate direction of Mr. Rolfe, the architect, was Mr. Harry Hems, of Exeter. The chancel has not been touched yet; it contains many mural tablets and monuments to the Stricklands, Westerns, &c. Messrs. Barnes & Sons, the builders, of Witney, who carried out the first section, are doing the portion of the work now in hand. The fine Early English arcade upon the south side has been carefully overhauled; a new lean-to roof in oak has been placed upon the aisle. It is of oak, having carved bosses in the solid beams. The struts supporting it rest upon angel corbels. They take the same line as an existing ancient example, and have carved spandrels. The new south porch is of early type; it exhibits richly-carved work in stone and oak, and the exterior door will be covered with much wrought-iron work. The south transept has been turned into a baptistery. In the midst stands the new font, with its oaken cover, over 6 ft. high, and worked up and down by a wrought-iron apparatus suspended from the central beam of the roof. This piece of work is by Mr. Harry Hems, of Exeter, who has also done all the rest of the new sculpture. In the baptistery will be a two-light stained-glass window, representing the baptism of our Blessed Lord by St. John the Baptist. The artist for this work is Mr. G. J. Baguley, of Carlisle-street, Newcastle-on-Tyne.

Books.

Economy of Coal in House Fires. By T. PRIDGEN TEALE, M.A. London: Churchill. Leeds: Goodall.

THE author claims for this little treatise, "the expansion of a lecture," that in it he for the first time sets forth the necessity for combining two principles, which other authors have severally recommended, in order to get the maximum result out of a given quantity of fuel, and to reduce the waste and inconveniences resulting from its combustion to a minimum. The conditions on which he insists, are that the bottom of the grate shall be such as to prevent the percolation of currents of air through the mass of fuel, and that the air-space under the fire-grate shall be kept warm. These he effects at once by a sort of sheet-iron box which fits under the grate and closes the space between the hearth and the bottom bar, surely not a new arrangement? He calls his contrivance an "Economiser," and gives directions for its application to all sorts and conditions of fire-grates, and for its construction at a cost of a few shillings.

The main positions which this writer on an old subject takes up are incontrovertible. They are not new; but truths, however old, require frequent repetition before they get accepted, or, at least, acted upon. During many years the *Builder* fire, lighted at the top, has burned in thousands of grates without any attention, and with no smoke. Of the complete success of this plan of economising fuel and reducing dirt and dust there is no question. But years have not brought the plan into general use, and it would seem that the extra half-hour fires of this sort require to "burn up" after being lighted outwards, in the public mind, all the grievances attending the present wasteful and unscientific system of coal consumption. The book under notice gives seven rules for the construction of fireplaces, and all of them are sound. It is written in a pleasant style, and is introduced by a short but suggestive preface, and (*nota bene*) the author has the rare modesty to admit that occasional failure does attend the arrangement. When such has been the case, he has generally succeeded in ascertaining the presence of something which invalidated his principle, and when he has not made a discovery of the kind he consoles himself with "Exceptio probat regulam," and gives us a new reading in "the exception proves the rule" (put in the proof), the rule, for which alone he would deserve our thanks. The recommendations contained in this book are fully explained by cuts and diagrams, and we hope the principles thus further advocated will find at least a fair trial by all those who have to do with the construction of the domestic fireplace.

The Hygiene of Armies in the Field. By R. RAWLINSON, Esq., C.B. London: Wyman & Sons.

We mentioned this paper briefly when it was first read by Mr. Rawlinson at the Parkes Museum. It ought to have extensive circulation, and we are glad to see that the author has now published it in a pamphlet shape. It is a valuable production, and comes at a most opportune moment.

VARIORUM.

"THE SHEET METAL WORKER" (Crosby Lockwood & Co., London). This book appears to us to quite fulfil the intention of the author, and to provide intelligible instructions, amply illustrated by diagrams, for practical workers in sheet metals. The chapter on joints is especially complete and useful. The author is evidently familiar with his subject in all its phases.—"The Mechanic's Assistant," by John McCoom (Merser & Sons, London). This book will assist the mechanic to find the area of rectangular figures when the length and breadth are given, without the trouble of working a sum in duodecimals,—an assistance not many mechanics require nowadays. However, the work may have its uses,—when saving time is of importance. A notable feature is that it is the compilation of a professor of music!—"The Charles Dickens Birthday Book," compiled by his Eldest Daughter (Chapman & Hall, Limited). Certainly, in this age of birthday books, Charles Dickens should not be forgotten, for no author,—Shakespeare perhaps excepted,—furnishes so many apt mottoes for every occasion. The labour has evidently been one of love, and has been reverently and carefully performed; but why does the authoress depart from custom and give no clue to the novels and other writings from which the extracts have been culled? Some, of course, are at once assignable to their respective characters; but there are many which are riddles to one at least who knows his Dickens pretty well. The illustrations are full of nice feeling and graceful drawing, but they have a great fault, there is not enough of them.—"Stationary Engine Driving," by Michael Reynolds (Crosby, Lockwood, & Co., London). A very clear and comprehensive treatise on a very interesting subject. It is well written, inasmuch as it is made perfectly explicit without the use of one redundant word. The illustrations are numerous and excellent. Where we can apply tests to the contents of this book we find it trustworthy, and where we have to take it on trust we feel quite at ease in doing so. The book should be possessed by every intelligent and ambitious engine-man. A very good portrait of James Watt is an additional recommendation.—"Gleanings from Popular Authors" (Cassell & Co., Limited: London, Paris, and New York). This compilation has reached its twenty-second part, and fully maintains its character. The extracts from well-known works and prints from the blocks which illustrate them are alike well-chosen, good and varied, and specially adapted for the now fashionable recreation of public and semi-public reading and recitation. One advantage of such compilations as this is,—like Hunting, according to Mr. Leech's well-known drawing,—it introduces us to authors we should not otherwise meet.—"Picturesque America" (Cassell & Co.) has now reached part 28; but we cannot say that it is, in our opinion, equal to the "Picturesque Europe" by the same firm.

Miscellaneous.

Lancashire and Cheshire Archaeologists at Chester.—Some fifty or sixty members of this society, including representatives both of Manchester and Liverpool, visited Chester on the 21st inst. They were met by the Dean of Chester, who personally conducted them over the cathedral, and delivered an address to them, which was, in fact, a very interesting historical sketch of the fabric. He went through the twelfth-century crypt, recently discovered, with them, and received a vote of thanks, moved by Sir Thomas Baker, and supported by the president of the society, Professor Boyd Dawkins, and the Rev. J. H. Stanning. The society afterwards viewed the Roman remains of Chester, and dined at the Town-hall.

Kensington Vestry-hall.—At a recent meeting of the Vestry, a report of the Special Purposes Committee was read, stating, with reference to the painting and finishing the hall, ante-room, large room, staircase, corridors, committee-room, and council-chamber, that eight sets of designs for the whole of the work, and one design for the decoration of the panels in the frieze of the large room, were submitted with estimates. Mr. Fisher moved the adoption of the first, for 1,375*l.*—Mr. Muriis seconded it, as he thought the design was the most useful.—Mr. Campbell objected to it, as there was no wear and tear in it. He hoped No. 3 "Competition," 1,348*l.* 18*s.*, would be selected, as there were no light and delicate tints in it. The Vestry, after a short discussion, resolved to accept No. 1, which belonged to Messrs. Liley & Wood, Radnor-terrace. A discussion ensued as to the employment of a suitable person to supervise the work, at a cost of 3 per cent. on the outlay, but the proposition was rejected, as it was considered that there were competent members on the Vestry who would be able to supervise the work.—Mr. James Flood moved "That it be referred to the Special Purposes Committee to consider and report upon the best known method for improving the very defective state of the Council Chamber and large Committee Room, so far as the acoustics for sound is concerned."—Mr. Flood invited the Chairman to go to the lower part of the chamber, and he would judge for himself that it was impossible for members to hear.—Sir A. Gordon seconded the proposition, and said one way to improve the sound would be for gentlemen to talk less. The motion was referred to the Committee.

Swedish Galvanised Iron.—We have received some particulars of Swedish galvanised iron. It seems to be an article of a most excellent quality, and though higher in price (30*l.* to 33*l.* a ton here), ought to find a large sale on account of its great durability and other merits and the many various purposes for which it can be used. It is made in plain sheets, 2 ft. by 4 ft., its ductility allowing it to be folded or worked in any shape without cracking; it is the best article possible alike for roofing, gutters, water-pipes, cisterns, tanks, railway-trucks, and so on. For roofing it does not want to be corrugated, the edges of the sheets being simply folded over one another in any way thought best or easiest. This circumstance will, of course, save a certain amount in weight as compared with corrugated sheets, besides giving the roof a much nicer appearance, and the durability, so far as the common galvanised corrugated iron is concerned, cannot be compared at all.

The National Smoke Abatement Institution.—A meeting in support of this institution was held at the Mansion House last week, when the following resolution was agreed to:—That the period has now arrived at which systematic inquiry is desirable into the application of the resources of technical science for the abatement of smoke now largely produced in its industrial processes and in the heating of houses, as well as into the operation of the existing laws for smoke abatement; and that the Council of the National Smoke Abatement Institution be requested to urge upon the Government the desirability of appointing a Royal Commission for the purpose."

Coslany.—Plans for the restoration of the Church of St. Michael at Coslany, Norwich, have been accepted at a Vestry meeting. The works will be commenced forthwith from the designs and under the superintendence of Messrs. Oldham, Chambers, & Wilkins, Bank Plain, Norwich. The beautiful finework of the Turp Chapel (well known to all archaeologists) is to be continued round the exterior of the chancel.

Fancy Paper.—We have received from Messrs. John Walker & Co. some specimens of their crocodile leather note-paper and envelopes and their morocco leather note-paper, with corresponding envelopes. The colours, which are tender and delicate, are varied. The markings on the paper are somewhat strong, but these do not interfere with the passage of the pen over it. The whole is a very successful piece of fancy-work.

Art Schools.—You may be glad to hear that two of the suggestions contained in Mr. Stoford's letter upon "Design in Art Schools," published in the *Builder* in May last [p. 723], have been adopted by the Science and Art Department in this year's national competition, viz., giving awards for collective work, and exhibiting elementary works.—H.M.

Mr. Harkomer's School of Art.—Mr. Harkomer, A.R.A. (the London correspondent of the *Manchester Guardian* states) has returned from his visit to the United States, and is busily engaged in completing his arrangements for his new school of art, which is to be opened in October, at Bushey. The school is a pet scheme of the artist's, and he has expended no little time and labour upon its arrangements. The students are intended to live at the school, to be free from the distractions of society and London life, and to hold communion with the world of nature, so that their full artistic feelings and powers may be ripened and developed. Hard work is expected from those who join, but ample opportunities are given for recreation and exercise. Mr. Harkomer is a great believer in the Swedish system of gymnastics, and his students will be encouraged to exercise such as these, or in any other form which they may most affect. The school is for both sexes, and a great number of young men and women have already announced their intention of joining.

A New Hall at Bristol.—An important work has just been commenced at Bristol, in the addition of premises to the Bristol Young Men's Christian Association and Literary Institute, St. James's-square. Last week the foundation of a new hall was laid. The building will be in the Italian style, and of Cattybrook brick with terra-cotta dressings. It will be so arranged as to accommodate either 1,200 or 1,400 persons sitting, or a couple of thousand standing. The hall will be 97 ft. by 47 ft., and 35 ft. high. There will be four entrances; a commodious orchestra is included in the plans, and an organ has been promised. The cost of the building will be 3,300*l.*, and about 300*l.* or 400*l.* is required to make up the amount. Mr. Joseph Foster, of Redland, is the architect of the building, and Mr. H. J. Rossiter, contractor, of Bedminster, will be the builder.

Party Walls at Spalding.—At the last meeting of the Improvement Commissioners, a memorial from Mr. Jepson, architect, signed by about forty builders and house-owners in Spalding, was read, complaining of the by-law now in force, which compels all persons building two or more houses together to erect a party-wall between each to a height of not less than 1 ft. 3 in. above the roof level, so as to be a protection against fire. The memorial stated that the carrying out of such by-law was a matter of considerable extra expense, was no protection against fire, spoiled the appearance of the houses, and kept them continually damp by allowing the rain to penetrate. They asked the Board not to put the law in force. All the members appeared to agree with the memorialists, but as it was not in their power to grant the request made, the clerk was instructed to ask leave of the Local Government Board to do so. All the memorialists have to do is to properly cover with water-proof material the top of the party-wall.

Large Exportation of Bricks to America.—The large full-rigged ship *Maryahay*, of Glasgow, 1,428 tons, left Leith on Monday for Portland, Oregon, direct with 1,485 tons of brick, 360 tons of fire-clay, and 220 tons of cement, being the largest cargo of the kind ever shipped at Leith.—*Journal of Commerce.*

TENDERS.

For the erection of Leicester-street Schools, for the Leamington School Board, Messrs. G. B. Nichols & Sons, architects, 64, Queen Victoria-street, and Handworth, Birmingham:—

F. & S. Orchard, Banbury.....	25,192 0 0
J. Dover, Oxford.....	3,850 0 0
G. F. Smith, Milverton.....	4,100 0 0
Coleman Bros., Gloucester.....	3,388 0 0
D. Ireson, Watcote.....	3,368 0 0
C. A. Horton, Brierley-hill.....	3,198 0 0
R. Bowen, Leamington.....	3,160 0 0
J. Fell, Leamington (accepted).....	3,100 0 0

For the erection of Shrubland-street Schools, for the Leamington School Board, Messrs. G. B. Nichols & Sons, architects:—

F. & S. Orchard, Banbury.....	23,797 0 0
J. Dover, Oxford.....	3,650 0 0
G. F. Smith, Milverton.....	3,350 0 0
Coleman Bros., Gloucester.....	3,282 0 0
D. Ireson, Watcote.....	3,026 0 0
C. A. Horton, Brierley-hill.....	2,940 0 0
F. W. Lee, Leamington.....	2,934 4 6
R. Bowen, Leamington.....	2,795 0 0
J. Fell, Leamington.....	2,750 0 0
T. Bailey, Leamington (accepted).....	2,660 0 0

For rebuilding the Salutation and Cat Taverns, Newgate-street and Rose-street, for Mr. E. Liebmann, Messrs. Wilson & Long, architects. Quantities by Mr. A. W. Saville:—

R. & H. Pickersgill.....	29,400 0 0
* Amended tender (accepted). See <i>Builder</i> last week p. 69, for list.	

For the erection of a hospital at Gravesend, for contagious diseases, for the Honourable the Corporation of London. Mr. Horace Jones, architect. Quantities by Messrs. William Reddell & Son:—

Rayner.....	£5,154 0 0
Naylor.....	4,620 0 0
Blake.....	4,600 0 0
Avard.....	4,435 0 0
Asby Bros.....	4,374 0 0
Colls & Sons.....	4,342 0 0
Gentry.....	4,135 0 0
Mortimer.....	4,075 0 0
Mowlem & Co.....	3,960 0 0
Terry & Co.....	3,900 0 0

For repairs to Vestry-hall and offices, St. Matthew, Bethnal-green. Mr. W. H. Gathercole, architect:—

J. S. Taylor.....	£424 0 0
W. & H. Castle.....	421 0 0
R. Beeton.....	405 0 0
Pryor & Son.....	387 0 0
Barber, Lotwyche, & Co.....	362 10 0
Smith & Son.....	348 0 0
C. Cooper.....	337 0 0
J. Chamberlain & Co.....	335 0 0
Thomson & Son.....	297 10 0
G. Knight.....	297 10 0
H. Hawkins (accepted).....	220 0 0

For house at Enfield, for Mr. W. Strangman Taylor. Mr. W. Gillibee Scott, architect, 102, Guildford-street, Russell-square:—

Gould & Brand.....	£1,689 0 0
J. Brown, Son, & Blomfield.....	1,660 0 0
Mattock Bros.....	1,633 0 0
W. Scrivener & Co.....	1,617 0 0
L. H. Johnson.....	1,598 0 0
Harris & Wardrop.....	1,580 0 0
I. H. Johnson.....	1,560 0 0
Allen Fairhead, Enfield (accepted).....	1,445 0 0

For garden house, Enfield. Mr. W. Gillibee Scott, architect:—

J. Brown, Son, & Blomfield.....	£1,150 0 0
Mattock Bros.....	1,147 0 0
W. Scrivener & Co.....	1,104 0 0
L. H. Johnson.....	1,100 0 0
Gould & Brand.....	1,095 0 0
Harris & Wardrop.....	1,078 0 0
Allen Fairhead, Enfield (accepted).....	1,035 0 0

For house on Windmill-hill, Enfield. Mr. C. W. Meves, architect, 102, Guildford-street, Russell-square:—

Gould & Brand.....	£1,287 0 0
W. Scrivener & Co.....	1,275 0 0
J. Brown, Son, & Blomfield.....	1,260 0 0
Mattock Bros.....	1,237 0 0
L. H. Johnson.....	1,231 0 0
Allen Fairhead.....	1,175 0 0
Harris & Wardrop.....	1,173 0 0

For building six cottages in Bailey's-lane, Stamford-hill. Mr. A. Sanders. Mr. Edward Brown, architect, 18, Hanbury-street, Saltgheld:—

J. C. Christopher (accepted).....	£361 0 0
-----------------------------------	----------

For repairs at Surrey Tavern, Battersea, for Mr. G. M. Anderson. Mr. Edward Brown, surveyor:—

Holbbe.....	£118 0 0
Gibbins.....	107 15 0
Read (accepted).....	106 5 0

For alterations at the Walpole Arms, New-cross-road, for Mr. C. Mees. Mr. Edward Brown, architect:—

G. W. Beal.....	£1,666 0 0
C. Marr.....	1,600 0 0
Jackson & Todd.....	1,546 0 0
S. W. Hawkins.....	1,533 0 0
W. Shurmer.....	1,575 0 0
Belcher & Ulmer.....	1,500 0 0

For alterations at the Walpole Arms, New-cross-road, for Mr. C. Mees. Mr. Edward Brown, architect:—

R. Pringle.....	£141 0 0
R. Peirce.....	133 0 0
W. J. Paddon.....	133 0 0

For alterations at the Moorgate Tavern, Moorgate-street, for Messrs. Hammond & Bolton. Mr. H. I. Newton, architect:—

Mitchell.....	£1,443 0 0
Hewitts.....	1,360 0 0
Oxford.....	1,125 0 0
Beale.....	993 0 0
Godden (accepted).....	895 0 0

For alterations and additions to the Royal George, Cecil-street, Lambeth, for Mr. Humphreys:—

Johnson & Mansers.....	£485 0 0
B. E. Nightingale.....	462 0 0
S. Hayworth.....	439 0 0
J. Beale.....	415 0 0
T. Jennings (accepted).....	333 15 0

For cleaning and re-decorating the offices of the London Assurance Co., 7, Royal Exchange, for the Corporation. Mr. George Fagge, 8, Old Jewry, architect:—

Colls & Son.....	£216 0 0
Ballham & Son.....	695 0 0
Adams & Sons.....	581 0 0
Shaw.....	475 0 0

For new tramp-wards, Berkhamstead. Quantities not supplied:—

Austen.....	£628 0 0
Honour.....	605 0 0
Monk.....	500 0 0
Yash.....	490 0 0
Fincher (accepted).....	456 0 0

For new premises, 101A, White Lion-street, Islington, for Mr. F. C. Frye:—

Hook.....	£535 0 0
Woodbridge.....	508 7 0

For pulling down and re-building women's school-rooms at the Workhouse, Princess-street, Old Gravel-lane, for the Guardians of the parish of St. George-in-the-East. Messrs. A. & C. Harston, architects, 15, Leadenhall-street, E.C.:—

W. & H. Castle.....	£365 0 0
Mayle & Son.....	350 0 0
Falconer & Son, Old Gravel-lane (accepted).....	272 0 0

Results of Tenders to School Board:—

	Craggan.	Brady.	Oldroyd.	Jerrard.	Humphrey.	Hemming.
Pratt-road.....	£ 8. 10. 0	£ 8. 10. 0	£ 8. 10. 0	£ 8. 10. 0	£ 8. 10. 0	£ 8. 10. 0
Pascoe-green.....	997 10 0	915 0 0	816 789 816	726 10 0	726 10 0	726 10 0
Mandale-street.....	997 10 0	915 0 0	816 789 816	726 10 0	726 10 0	726 10 0
St. Andrew-st.....	997 10 0	931 0 0	834 790 816	731 10 0	731 10 0	731 10 0
Dennett-grove.....	855 0 0	740 0 0	681 655 490	760 0 0	760 0 0	760 0 0
Plough-lane.....	997 10 0	920 0 0	806 779 816	721 10 0	721 10 0	721 10 0
Dutmar-road.....	997 10 0	939 0 0	831 797 816	739 10 0	739 10 0	739 10 0
Ackmar-road.....	997 10 0	943 0 0	828 795 816	737 10 0	737 10 0	737 10 0
Coburg-road.....	998 0 0	997 10 0	870 819 816	747 10 0	747 10 0	747 10 0
Surrey-mead.....	997 10 0	924 0 0	816 780 816	726 10 0	726 10 0	726 10 0
Grange-road.....	997 10 0	923 0 0	823 787 816	740 10 0	740 10 0	740 10 0

For alterations and additions in forming flats, at South Hornsey, for Mr. Charles Tomkins. Mr. G. Sherrin, architect:—

S. J. Scott (accepted).....	£300 0 0
-----------------------------	----------

For repairs at the Railway Ale Stores, Camden-town, for Mr. J. Ellesworth. Mr. Edward Brown, surveyor:—

Smith (accepted).....	£300 0 0
-----------------------	----------

For additions and alterations to Thomas Schools, near Norwich, for Messrs. J. & J. Colman. Mr. Edward Boardman, architect, Norwich:—

G. E. Hawes.....	£1,528 0 0
Dowling & Son.....	1,520 0 0
J. Youngs.....	1,390 0 0
R. Daws.....	1,394 0 0
Wilkin & Wilkins (accepted).....	1,370 0 0

For alterations to shop in Rampant Horse-street, Norwich, for Messrs. Carl Bros. Mr. Edward Boardman, architect:—

J. Youngs (accepted).....	£300 0 0
---------------------------	----------

For new front and alterations at No. 16, Commercial-street, Hereford, for Mr. C. W. Slater. Mr. W. W. Robinson, architect, King-street, Hereford:—

H. Welsh, Hereford.....	£350 0 0
Beavan & Hodges, Hereford.....	580 0 0
Penson, Hereford.....	550 0 0
Pritchard, Hereford.....	533 0 0
W. Cullis, Hereford (accepted).....	495 0 0

For small house at the Abbeys Waterworks, Hereford, for Messrs. Davies & Co. Mr. W. W. Robinson, architect, King-street, Hereford:—

H. Welsh, Hereford.....	£689 0 0
J. Rowberry, Hereford.....	550 0 0
J. Ford, Hereford.....	540 0 0
J. Watkins, Hereford.....	523 0 0
T. Lewis, Hereford.....	520 0 0
W. Pritchard, Hereford.....	480 0 0
W. Bowers & Co., Hereford (accepted).....	470 0 0

For additions to Royal Oak Inn, Milnthorpe, for Mr. Wm. Hodgson. Mr. John Stalker, architect, Kendal. Quantities by the architect:—

Masons' Work (labour only).....	£283 0 0
---------------------------------	----------

For alterations to Royal Oak Inn, Milnthorpe, for Mr. Wm. Hodgson. Mr. John Stalker, architect, Kendal. Quantities by the architect:—

Joiners' Work.....	£815 0 0
Plumbing, Painting, and Glazing.....	28 15 0
John Thompson, Milnthorpe.....	28 15 0
Slatings and Plastering.....	40 10 3

For extra works, Havelock House, Hill-brow Estate, East Liss, Hants, for Mr. Geo. Wright. Mr. Mark H. Judge, architect:—

Andrews (accepted).....	£358 1 0
-------------------------	----------

For the erection of dwelling-house, workshops at rear, and sundry works, at 18, John-street, London Fields. Mr. S. C. Copes, architect. No quantities:—

Smyden.....	£212 0 0
Thomson & Son.....	630 0 0
Milwood.....	630 0 0

For the erection of dwelling-houses and shops in Old Bethnal Green-road, for Mr. Ramsey. Mr. A. C. H. Watkins, architect. Quantities supplied:—

Lister & Co.....	£2,480 0 0
Shurmer.....	2,750 0 0
Marr.....	2,700 0 0
Holland.....	2,601 9 10
Jackson & Todd.....	2,595 0 0
Forrest.....	2,586 0 0
Thomson & Son.....	2,545 0 0
Johnson.....	2,461 0 0
Beale.....	2,365 0 0

For industrial dwellings, White Horse-alley, Cox Cross-street, Southfield, for Mr. F. Statham Hobson. Mr. R. E. Tyler, architect. Quantities by Mr. Walter Barnett:—

L. H. & R. Roberts.....	£1,973 0 0
E. Stord.....	1,927 0 0
W. Shurmer.....	1,762 0 0
G. Phillips.....	1,671 0 0
Burch & Moor.....	1,617 0 0
Schier & Williams.....	1,583 0 0
Jackson & Todd.....	1,650 0 0

For painting and re-decorating the Metropolitan Tavern, for Rev. C. H. Spurgeon. Mr. F. Gough, architect, 35, Aldersney-street:—

Dove Bros., Islington.....	£1,398 0 0
Colls & Son, Camberwell.....	1,379 0 0
Bywaters.....	1,250 0 0
J. Smith & Sons, Norwood.....	1,143 0 0
McLachlan.....	1,085 0 0
W. Johnson, Wandsworth Common.....	1,070 0 0

For alterations and additions to No. 75, High-street, Peckham, for Mr. T. Binstead. Mr. Walter Davis, architect:—

C. Deveraux (accepted).....	£240 0 0
-----------------------------	----------

For building a pair of houses at Hampstead. Mr. E. J. May, architect, 14, Hat-street, Bloomsbury:—

T. H. Adamson & Sons (accepted).....	£3,995 0 0
--------------------------------------	------------

For the erection of a mission-house at Putney, for the vicar and churchwardens of the Parish of St. Mary, Putney:—

B. Stone, Chelsea.....	£1,230 0 0
G. Picton, Kensington.....	1,192 8 0
Johnson & Co., City.....	1,050 0 0
F. Paia, Putney (accepted).....	987 0 0
Harris & Wardrop, Limehouse.....	865 0 0

For factory, Gervase-street, Old Kent-road, for Mr. F. Stocks. Mr. W. H. Serrington, architect, 50, Lincoln's Inn-fields. Quantities by the architect:—

W. Watson.....	£1,390 0 0
W. Shepherd.....	1,350 0 0
Jangles & Pinkham.....	1,340 0 0
J. Anley.....	1,310 0 0

For alterations and additions at 63, Sydney-street, Chelsea. Mr. W. H. Colburn, architect:—

H. Smith.....	£2470 0 0
H. Tuten & Sons.....	470 0 0
Styles & Holdstock (accepted).....	440 0 0

For alterations and repairs to The Roebuck, Salisbury, for Messrs. Eldridge, Pope, & Co. Messrs. Kemp-Welch & Pinder, architects, Bournemouth:—

G. Harris, Salisbury.....	£2,197 10 0
P. Tryhorn, Salisbury (accepted).....	489 10 0

For East Molesey Church enlargement. Mr. Charles Barry, architect:—

New Nave. New Aisle. Vestry.....	£2,380 0 0
Perry & Co.....	1,645 472
Dove Bros.....	2,254 2,675
Wheatley.....	1,707 333
Lea & Co.....	1,459 1,033
382.....	

For the erection of schools at the East End, Finchley, for the Finchley School Board. Messrs. Dunk & Geden, architects. Quantities by Mr. W. B. Brown:—

Priestley & Gurney.....	£3,897 0 0
Jones & Co.....	3,423 0 0
Adcock.....	3,404 3 8
Steel Bros.....	3,244 14 0
Downs.....	3,222 0 0
Outwater & Son.....	3,176 0 0
Julian & Co.....	3,126 0 0
Johnson.....	2,995 0 0
Yardley & Sons.....	2,910 0 0
Scrivener & Co.....	2,894 0 0
Shurmer.....	2,749 0 0
Wall.....	2,628 0 0
Grover.....	2,620 0 0
Oldrey.....	2,619 0 0
Sargeant.....	2,443 0 0
Brass.....	2,424 0 0
E. Lawrence.....	2,132 0 0

For the erection of schools at the North End, Finchley, for the Finchley School Board. Messrs. Dunk & Geden, architects. Quantities by Mr. W. B. Brown:—

Priestley & Gurney.....	£2,462 0 0
Steel Bros.....	2,447 0 0
Jones & Co.....	2,408 0 0
Adcock.....	2,302 19 7
Outwater & Son.....	2,371 0 0
Downs.....	2,355 0 0
Julian & Co.....	2,313 0 0
Johnson.....	2,315 0 0
Yardley & Sons.....	2,182 1 6
Scrivener & Co.....	2,112 0 0
Shurmer.....	2,084 0 0
Wall.....	2,071 0 0
Oldrey.....	2,077 0 0
Grover.....	2,072 0 0
Sargeant.....	2,008 0 0
Brass.....	2,000 0 0
E. Lawrence.....	2,000 0 0

For the erection and completion of a factory, with offices, bleach-works, dye-works, stables, cottages, &c., at Daybrook, Nottingham, for Messrs. Jacoby & Co. Mr. Herbert Walker, architect, Nottingham. Quantities by the architect:—

Dennett & Ingle, Nottingham.....	£21,530 0 0
Bains & Burton, Basford.....	21,090 0 0
Hopewell & Sons, Basford.....	20,961 18 0
Ball & Son, Nottingham.....	20,867 0 0
Wheatley & Maule, Nottingham.....	20,650 0 0
F. Messon, Nottingham.....	20,591 0 0
Fisher, Hutchinson, & Asting, Nottingham.....	20,550 0 0
H. Vickers, Nottingham.....	20,005 0 0
Fisk & Son, Nottingham.....	20,000 0 0
Lysons & Kidd, Nottingham.....	19,954 8 7
R. Hind, Nottingham (accepted).....	19,193 0 0

For the erection of dwelling-houses and shops in Old Bethnal Green-road, for Mr. Ramsey. Mr. A. C. H. Watkins, architect. Quantities supplied:—

Lister & Co.....	£2,480 0 0
Shurmer.....	2,750 0 0
Marr.....	2,700 0 0
Holland.....	2,601 9 10
Jackson & Todd.....	2,595 0 0
Forrest.....	2,586 0 0
Thomson & Son.....	2,545 0 0
Johnson.....	2,461 0 0
Beale.....	2,365 0 0

For industrial dwellings, White Horse-alley, Cox Cross-street, Southfield, for Mr. F. Statham Hobson. Mr. R. E. Tyler, architect. Quantities by Mr. Walter Barnett:—

L. H. & R. Roberts.....	£1,973 0 0
E. Stord.....	1,927 0 0
W. Shurmer.....	1,762 0 0
G. Phillips.....	1,671 0 0
Burch & Moor.....	1,617 0 0
Schier & Williams.....	1,583 0 0
Jackson & Todd.....	1,650 0 0

For painting and re-decorating the Metropolitan Tavern, for Rev. C. H. Spurgeon. Mr. F. Gough, architect, 35, Aldersney-street:—

Dove Bros., Islington.....	£1,398 0 0
Colls & Son, Camberwell.....	1,379 0 0
Bywaters.....	1,250 0 0
J. Smith & Sons, Norwood.....	1,143 0 0
McLachlan.....	1,085 0 0
W. Johnson, Wandsworth Common.....	1,070 0 0

The Builder.

Vol. XLV. No. 212.

SATURDAY, AUGUST 4, 1933

ILLUSTRATIONS.

Raffaello Sanzio.—Herr Von J. Silbernagl, Sculptor	146
The Castles, Camps, Fortifications and Earthworks of Warwickshire	148
Turnham-Green Congregational Church.—Mr. T. Lewis Banks, Architect	150
Hyde Park Mansions, N.W. (Double-page Engraving).—Messrs. C. Rales & Son, Architects	152, 153
Proposed School, Long-lane, Finchley, for the Finchley School Board.—Mr. Arthur J. Gale, Architect	155
Stable Offices, Grafton, Cheshire.—Mr. John Birch, Architect	157
Dorchester House.—A Sideboard, by Mr. Alfred Stevens	159

CONTENTS.

The Fish at Zaan	135	J. Silbernagl's Statue of Raffaello	141	The New Street from Oxford-street to Shore-ditch: Large Sale of	144
The Question of Equestrianism in Relation to Sepulchral Monuments: Elsewhere and in St. Paul's	136	Stable Offices, Grafton, Cheshire	146	Building Sites	144
Paintings in the Houses of Parliament	138	Dorchester House: The "Magazine of Art" for August	150	The Widening of Parliament street	145
Gates of Southern Italy and Sicily	138	On Recent Improvements in Artificial Lighting, and their Bearing on the Purty of Air in Rooms	150	Lincoln's Inn	145
Ki-tan and Cables in Ornament	139	The Builders' Accident Insurance, Limited	151	Buildings, Patent Record	145
The Dust-Bin	140	Visit of the Bristol Architects to Bath	152	Worthing	145
Artist Workmanship and Royal Patronage	141	The Tilbury Docks	153	Artisan's Gymnastic Halls	145
Camps, Castles, Fortifications, and Earthworks of Warwickshire: Brandon Castle, Caldon Castle	142	The Fire Brigade of Rome	153	London Improvements	145
Congregational Church and Schools, Turnham-green, Middlesex	142	The ASSOCIATION of Public Sanitary Inspectors	153	Gilgwyn Church, Peniarth, Cheshire	145
Hyde Park Mansions, N.W.	144	Old Whitminster House and the Greek Church, London Wall: New City Buildings	154	Asphalte Flats and the Building Act	146
Finchley Board Schools	144	The State of Vienna	154	Church-building News	146
Value of Property, Ludgate-hill	144	New Furniture Warehouses in Bunhill row	154	Books: Familiar Lessons on Food and Nutrition David Bogues	146
				Variorum	147
				Miscellaneous	147

The Field of Zaan.



ZOAN, the chief city of Lower Egypt, has been fitly styled by that graphic writer on Egyptian matters, Mr. Reginald Stuart Poole, the Alexandria of primitive Egypt. Few cities in all that land of mystery, and especially in that most mysterious and fascinating part the Delta, offer so great an inducement to the explorer to open the tomb and remove the grave-clothes of centuries which hide the dead city. Indeed, these two cities may be regarded as two valves by which the

great heart of Egypt poured forth the flood of her life-blood of civilisation into the distant parts of East and West, drawing at the same time herself fresh nourishment from the ebb of the tide which bore to her the learning of Chaldea or Phoenicia, of Athens or Rome. Following in the footsteps of our victorious army in Egypt, M. Naville, as the general of the small corps of workmen employed by the Egyptian Exploration Fund, has gained important victories in the field of science and solved, problems which for centuries have awaited their answer by the true solvent of such questions, the pick and shovel. The site selected for the work was the mound of Tel-el-Makhsutah, on which the guards' camp was placed during the brief campaign. Two theories were current as to the site which lay buried beneath these ruins. By some it was regarded as that of the city of Rameses, one of the treasure cities of Rameses II., built by the captive Israelites (Exod. i. 11). The explorations, after a brief campaign of less than two months, have proved that hero was situated the fellow treasure city of Rameses, namely Pithom or Pa-Tum. But this was not all that rewarded the explorer, for as Mr. Rassam, in unearthing the ruins of the ancient Chaldean Heliopolis, also found the city of Agade or Akkad, one of the tetrapolis of Nimrod, so in the discovery of Pithom the explorer has also discovered the site of the city of Succoth, the first station on the Hebrew Exodus (Genesis xxxiii. 17). To students of Oriental history and Biblical archaeology the discovery of these amalgamated important sites is ample reward for the small sum, considerably less than 1,000*l.*, which has been expended on the work. The most interesting portion of the discovery to the architect and archaeologist was in the vast store-houses of which the city was mainly composed; built of sun-dried brick, some with straw binding, others without. The

bricks, which were of large size, resembling the Babylonian bricks, were made of the clay, large beds of which are found a short distance from the mound, and the walls built with them were, like the walls of Babylonian edifices, of great thickness, probably to serve the double purpose of preventing the grain stored in these chambers being spoiled by the heat, or by rain, or moisture which might percolate through. The inscriptions found here were chiefly those of the builder, King Rameses II., the Sesostris of the Greek writers, whom we must now certainly identify with the Pharaoh of the oppression. The works of this first campaign of the Egyptian Exploration Fund have already been described in the press, but encouraged by the success which has rewarded these first English explorations in Egypt, the committee intend to commence as soon as funds will permit the exploration of the city of Zaan, the metropolis of Lower Egypt, the capital of the Shepherd Kings, and the chief meeting-place between Egyptian and Asiatic culture.

The mound of San, which forms the grave of Zaan, admits of no picturesque description such as the word-painter might lavish on the columned forests of Karnak or Luxor. All around is desolation,—in summer dry, fiery, parched desert; in the time of the inundation, a marsh. Yet few mounds are more tempting to the explorer: statues and obelisks, the latter in number exceeding any other Egyptian ruin, large blocks with inscriptions and half-obliterated royal names, are scattered all about, and await the explorer's coming to render up their secrets, and take their place in the rank of the world's historic authorities. This great frontier city of Egypt had existed from as remote a period as the days of the sixth dynasty, as shown by the researches of M. Mariette. A site, therefore, whose records extend back to as remote a period will be a treasure-house worth opening. Pepi-Meri-Ra, the discovery of whose tomb was the legacy of Mariette, founded the vestibule of the great temple of Phtah. There are but few records of the ancient days of Zaan; but of the middle age many are extant, and many more will, we hope, be recovered. The Pharaohs of the twelfth and thirteenth dynasties were lavish in their donations, additions, and restorations to the temples and public edifices of Zaan, and many a record of these builder-kings now lies half-buried in Nile mud or drifting sand. Of these, the largest and earliest is a statue of colossal size of Amen-em-hat I., which exhibits a remarkable ethnic type of features characteristic of the Pharaohs of this dynasty. Of this type, we have already examples in the seated figure of this king, which is placed in the north vestibule of the British Museum. The type remains the same in the son and successor of this king, Usertesen I., of whom a statue was also found. In the opinion of M. Mariette, in these types with large eyes, the nose short and straight, the

mouth thick but not unpleasant, we have perhaps the truest types of an Egyptian native Pharaoh. In this statue of black granite the king is represented as seated, the head is surmounted by the double crown of Egypt, has the conventional square royal beard, and bears an inscription dedicatory to Anubis, the funeral god. Next in order of the monuments are a pair of statues of Ra-smenkh-ha, high priest of the temple of Mendes. One of the most interesting features about this monument is that it has passed unscathed through the barbarian period of the Hyksos or Shepherds, who have only added the cartouche of King Apapi, the supposed Pharaoh of Joseph, to those already on the figure. The decay of the thirteenth dynasty marks the end of the middle Egyptian empire, and the strong hand of the Queen of Africa begins to relax her hold on surrounding lands. The gold and turquoise mines in the Waddy Magarah (Sinaitic Arabia) are no longer guarded or pushed on. In the Delta the Bedouin hordes press further on until at last the hated shepherds become lords of Zaan. It will be the elucidation of this period which archaeologists will expect. Indeed, if the appeal of the Fund is met, we may now hope for the solution of one of the great problems of the ancient history of the East, as to these wild but powerful tribes, who made themselves masters of Egypt for over 500 years, and the influence they exerted on the civilisation of the land, and what effect had the advanced condition of Egypt on them. It has been suggested that the vindictive character of the wars of Thothmes III. and Rameses against the Kheta was due to their being the leaders of the Hyksos.

The monuments of the Hyksos or Shepherd Kings which are extant are but few in number; they are, however, so varied and important that they form, indeed, most strong incentives to further research. The best known examples of this period are (1) a statue of a Hyksos king in green basalt, now in the Louvre; (2) the group of two Hyksos officials standing beside an altar or table of offerings, covered with fish, fowl, and flowers. This interesting group now forms one of the most valuable objects in the Hall of the Hyksos in the Boulak Museum; (3) a remarkably fine specimen, exhibiting more of the Asiatic peculiarities of the art of the period, is to be seen in a head and bust in the collection of the Villa Ludovici at Rome. These, with the statues of the kings and their subjects still lying neglected at San form the chief material for our study of the art and ethnic peculiarities of this remarkable race. Next in order to the statues of the period are the fine series of sphinxes found on the site by M. Mariette, selected specimens of which are now in the museum at Boulak. These figures exhibit the same type of features as the statues, but in treatment have a strong resemblance to the lions of pre-Hellenic Asiatic art, such as those at Boghaz Kevi, in Phrygia, or the *couchant*

lion at Jerabis. These monuments show that the Asiatic invaders had adopted not only the customs and manners of the Egyptians, but also their official language and writing, and that court etiquette was entirely based on the model of the Egyptian. In this borrowing and adaptation of the modes of the land to which they had made themselves masters, they yet retained in their statues, in the human-headed sphinxes, and the figures of their supreme deity Set, many evidences of their extra Egyptian origin, as in the treatment of hair and costume, and it is by this conservatism that we gain some clue as to the land from which they came. Nor was the benefit of the contact between the representatives of the two continents an unfairly balanced one. The Egyptians also derived benefits from their sometime masters. The horizon of their artistic views was enlarged, and new forms and shapes were introduced. The Semitic origin of many of these, and especially those relating to the worship of the goddess Anat, the Asiatic mother-goddess, are obvious at a glance. The winged sphinx with which we are familiar in Hittite and Babylonian art is also a notable example of this art introduced into hitherto conservative Egypt. The slight explorations at San have revealed one remarkable fact, which is of the greatest encouragement to future explorers, in the conservative and protective nature of the Hyksos rule in regard to the memorials of former kings. They did not, like Mohammedan or Mongol invaders of modern times, break and destroy the records of their predecessors. The discovery, in good preservation, of memorials of Pharaohs of the tenth and twelfth dynasties at San, show that the Hyksos could not have been the Vandals and desecrators that the later Egyptian writers would have us believe; there would have been but little chance for the monuments of Pepi and Anusermat. It is evident, as pointed out by Dr. Brugsch, that instead of destroying they preserved them, and by writing their own names on the statues side by side with those of their predecessors they not only sought to perpetuate their own persons and memory, but also to guard the statue thus franked. On this point, M. Mariette says, "It is a doubtful assertion that the great temple, that of Ptah, suffered much from the invasion of the shepherds. The second dynasty of these conquerors laboured even to augment its splendour, and placed in it remarkable works of art, conceived in an Egypto-Asiatic style. Indeed, we may expect that many a grand *trouville* awaits the explorer beneath these mounds. How grand must the temple have been, with its avenue of Asiatic sphinxes, its colossal statues of the kings and priests, and the numerous obelisks, more than a dozen of which are known to exist in a more or less perfect state in the ruins." To those who wish to gain some idea of this new field of exploration and to see the evidences of the rich harvest that awaits the explorer, a glance at the excellent view of the site in the English edition of Dr. Ebers's "Egypt" (p. 96, vol. i.) is sufficient. Statues and obelisks, monoliths and sculptured friezes, are scattered around. But in the art of the Hyksos period, and the numerous problems which it affords and the solution it offers to difficulties in later Egyptian art, is not all that we may expect from the explorations at Zoan. It is now almost universally admitted by Egyptologists that the Israelites entered Egypt during the time of this foreign rule, and the Apepi, the last king of the seventeenth dynasty, was the Pharaoh of Joseph; while the discoveries made by M. Naville at Tel-el-Makh-sutah show that Rameses II. was the Pharaoh of the bondage. The researches of Dr. Brugsch show that under the nineteenth dynasty, and especially under the conqueror Sesostri, the city grew into great power, and was known as Pe-Rameses, "the City of Rameses." It was here that Rameses II. erected sanctuaries, temples, and storehouses in which to treasure the wealth and treasure gathered during his Asiatic campaigns. As the Hebrews laboured at Pitom, so they laboured here; and while the great king was warring in the land of the Ruten and Kheta, and gaining great victories in the land which was promised to their seed, they were toiling under hard taskmasters, building the storehouses and public edifices. To estimate the importance of this city we cannot do better than quote the description of it in its zenith by the learned Egyptologist, Dr. Brugsch ("Exodus and Monuments, Hist. Egypt," vol. ii., p. 387).—"This city, whose harbour was filled

with Phœnician and Egyptian vessels, which carried on the commerce between Egypt and Syria,—this city, which the texts style expressly as the end of the proper Egyptian territory and the beginning of the land of the foreigner,—this was the very city where the Children of Israel experienced a long and oppressive slavery, and from which they set out on their journey to the Promised Land." Independently of these facts, there is so great a sequence of historical and social problems connected with these ruins, that their exploration is to be most strongly urged. Here Rameses came after his victory over the Kheta and their Asia Minor allies, and in the palace of Zoan was signed that ancient diplomatic document, the silver treaty. For years there was a constant intercourse between Carchemish, Kadesh, Hamath, and Zoan, and such a contact,—military and commercial,—cannot fail to have left traces on the art and building of the city, whose markets and temples were the resort of all the learned and the wealthy of Egypt and Western Asia.

It is to the merchants of Zoan and the cities of the Delta the inhabitants of Kaphur or Greater Phœnicia, whose descendants are plainly to be seen in the fishermen of lake Menzaleh, that we are indebted for our alphabet, and there may yet come from the treasury of the temple of Sutech of Ptah some small fragment of priceless value which will furnish us with the first stages of the transition from the hieratic of Egypt to the script of Phœnicia and India. With such a golden harvest awaiting them "in the field of Zoan," we trust that the spade of the explorer will not long be delayed from rescuing from the oblivion of centuries the records which bind together the history of three continents.

THE QUESTION OF EQUESTRIANISM IN RELATION TO SEPULCHRAL MONUMENTS.

ELSEWHERE AND IN ST. PAUL'S.

THERE are at present two equestrian statues of the Duke of Wellington concerning the final disposal of which the world is in difficulties. The bronze colossus which so long surmounted and disgraced the arch at Constitution Hill has had a future place assigned to it by the opinion of a committee, yet it still remains unmoved; and public opinion appears to be in suspense as due to whether, in the consideration of what site would be most appropriate for it, due thought would be allowed as to the site where it would be the least offensive. The belief is held by some that its proper destination is the melting-pot. Sculpture has failed in this instance, so all are agreed, to fulfil its task of producing a worthy permanent expression of a nation's gratitude, and may be thankful if a nation cancels its error and allows it permission and an opportunity with the same materials to try again. Military critics in the face of a new generation, though still with all admiration and respect, have much to remark on the military administration and even strategy of Wellington, which his contemporaries had neither ears nor eyes for; but all are agreed that his merits deserve memorials which should not be out of harmony with all that was so admirable and honourable in his character and career. It is due to this sentiment that a movement has been revived in favour of another memorial which is asserted to be a work of unimpeached excellence,—the equestrian statue of the duke which Mr. Stevens designed for the summit of his monument in St. Paul's Cathedral.

The original position fixed on for this monument under consultation with Mr. Cockerell, who was then the "Surveyor of the Fabric," was under one of the large arches between the nave and south aisle, a position somewhat similar to that of Queen Elizabeth in Henry VII.'s Chapel. This decision was revised, in a certain number of others, under a change of administration and the present position was assigned, which in itself has certainly some advantages. But, however this may be, an original condition under which Dean Milman had consented to receive Mr. Stevens's design has held good to this day. This design included the recumbent figure of the duke, as we see it executed, under an elaborate baldachino, bearing certain emblematic figures, and central above all the duke himself again, but as in life and on horseback. The model for this figure exists, and an agitation is at present on foot to cause it to be executed and erected in accordance with the design of the lamented sculptor.

The story of the sculptor and his design, it is well known, is pathetic, is painful. With a noble ambition, not unjustified by his endowments, he secured an opportunity to embody his artistic conceptions in a great work, but under terms and limitations which were quite inadequate, unsustained as he was by considerable independent means. He condemned himself to work for bread with half his power while working for fame with the other half, and so exposed himself to the rude inartistic collision under which he succumbed. It has not recently been the fate of many producers of really fine work in art to be martyrs, so much the more touching is a case of fatal self-devotion when such does present itself. Nevertheless, we are bound to keep our feelings neutral while we set ourselves to a judicial appreciation of the precise artistic value of even a work which has involved martyrdom.

There is the double question before us of the value of the equestrian statue in itself, and then of its appropriateness and effect in the position of elevation proposed for it. We will assume, —and it is no little to assume,—that the statue is worthy to take its place with those few equestrian statues that linger delightfully in the memory; but this alone will not meet the objection of Dean Milman; he expressed it somewhat epigrammatically, but the question is whether the point of his epigram was not barbed with logic. He demurred decidedly to have "the duke riding into the cathedral on the top of his own monument." How far is there any incongruity in the proposed combination? How, we may ask, is this caused, or how far might it be alleviated or aggravated by special treatment of pose and action of the horse and its rider?

These are questions which it is more easy to ask than answer; but they present themselves inevitably and are worthy of study and consideration, if decision may be left to those who are more distinctly bound to be responsible. Such consideration, if from a purely speculative point of view, is invited by the coincidence that parallel conditions are laid before us in the recently-published memorials of the studies and works of Leonardo da Vinci. Among his notes and sketches are a variety that have reference to the design and casting of a colossal bronze horse, and then to the cost and composition of a sepulchral monument, which in detail and distribution has great correspondence with the monument of the English duke. The design of Leonardo marks, indeed, one stage in the unbroken series of evolution by which the memorial in St. Paul's was developed from a germ which had already assumed all its characteristics in the fifteenth century, and had a still remoter history.

When Ludovico Sforza was regent at Milan (1480), he proposed to erect a memorial bronze statue in honour of his father, the victorious Condottiere Francesco Sforza. Leonardo wrote from Florence in 1484 with offer of his services, and till 1493 was resident and in favour at Milan. In the excellent memoir of the artist which Professor Sidney Colvin has contributed to the "Encyclopædia Britannica" (new edit.) we have this further notice:—"Contemporary evidence is referred to that in 1493 the group of horse and rider was cast in bronze and set up under (?) a triumphal arch erected for the purpose, during festivities on the occasion of the marriage of the Emperor Maximilian to a bride of the house of Sforza." Mention, it is further stated, occurs of the statue as existing in 1501, after the fall of Ludovico; thereafter it disappears and must have been destroyed.

But it is quite certain, as assumed by Professor Colvin, that the statue was ever cast? Is there any other contemporary authority, beyond Sabbà da Castiglione, who is quoted for the statement that when Milan was taken by the French in 1499 the model, *la forma del cavallo*, —not the cast figure,—sustained some injury; and such also is the distinct statement of Vasari.

The sketches which are reproduced of Leonardo, of horses in connexion with pedestals and more elaborate monuments, are variations of two models,—of a horse walking and a horse prancing. Some sketches of the horse as walking betray a reminiscence of the Marcus Aurelius of the Capitol, the only ancient statue which has remained on its basis from all antiquity, and others have still more direct resemblance to the Colonne monument at Venice; one reminds us of Donatello's earlier equestrian statue at Padua. Verrocchio died in

1488, before the casting of his Colleone statue was completed, and it appears certain that Leonardo, who was even in his studio in 1477, must have seen his model or sketches for it.

According to Vasari, the artist Pollajuolo made a design for a statue of F. Sforza on horseback, leaping his horse over a fallen enemy, which was never executed; this nearly describes the motive of the second set of Leonardo's horses; but it is justly observed by J. P. Richter, that it is in favour of the model of the pacing horse having been finally selected that the studies for this are alone accompanied by copious notes as to the method of casting. Among the models for casting, there is only one for a galloping-horse. The prancing-horse is in one case sketched as on a simple pedestal with the off-forefoot supported by a stamp, but otherwise it is shown as erected on the summit of an architectural tomb, or of an architecturally-developed pedestal; as in the drawing of Pollajuolo, which is said to have been identified at Munich, it rears over a prostrate foe disregarded by the rider, who is in vehement warlike action.

There is nothing to indicate that the Sforza colossal statue was to be connected with a tomb; and these sketches manifestly had reference to another project of which an interesting record remains. This is a detailed estimate under Leonardo's hand of the cost of a tomb for Gian Giacomo Trivulzio; this was to comprise a marble figure of the deceased extended on a bier or sarcophagus under an open baldachino with columns and entablature, above which was to rise a pedestal supporting a horse and rider in bronze, of the size of life. The total cost is given as 3,046 ducats; made up of 1,582 for the metal and making of the bronze group and its model, 389 for the marble, and 1,075 for working the cornices, columns, and figure of the deceased on the bier.

The correspondence of this scheme of a monument with the sketches, and with earlier Italian works, as well as with that of the Wellington monument, asks for attention; but in the first instance interest in Leonardo calls for some remarks. The Trivulzio for whom this tomb was designed during his lifetime, was the victor of his former patron, Ludovico Sforza. In September, 1499, he entered Milan at the head of a victorious French army, and only retired from it to return in April of the next year, after having defeated Ludovico at Novara, who ended his life a captive. It is not very pleasant to think of Da Vinci as exposing his later work to the interpretation of exhibiting his former patron Ludovico unhandsoinely prostrate under the hoofs of his more recent protector; as little pleasant as to reflect on his relations with Cesar Borgia. "In the end," says Professor Colvin, "he attached himself not to the Court of Mantua but to the service of Cesar Borgia, then in the plenitude of his criminal power and almost within reach of the realisation of his huge ambitions. But artists and men of letters formed in their day a caste apart, and changed service not less readily than did the condottieri or hired military commanders." A theory to account for these changes would be more welcome which should in some degree provide an excuse for them. Not very honourable could it be for literary or artistic genius to enrol itself in the sorry battalion of "Heaven's Swiss, who fight for any god or man." The best, perhaps, that can be said amounts to this,—that the patronage of the wealthy and the powerful was indispensable to men of artistic endowment, if they were to come within reach of opportunities for the very noblest exercise of their gifts; they had, and small blame to them that they had, no more respect for a Sforza than a Borgia, a Medici than a Rovere, for one patron whom they made a convenience of, than for another; and they might transfer their services without scruple the rather that such patrons would be the last persons in the world to vapour about obligations that stood in the way of even gross self-interest. Michelangelo, it is true, did not understand matters quite in this way; but Michelangelo stands alone.

Leonardo's memoranda of ideas for what we need not hesitate to call the Trivulzio tomb are very various in the degrees of development and enrichment which they indicate, however sketchily. But in all of them we observe that same relation to models of an antecedent style, which meets us so constantly as we note the course of transition from Medievalism to the Renaissance, in paintings also, and even most conspicuously in architecture. As we pass

along the Grand Canal at Venice, we see an alternation of Gothic palaces, with their successors of Classic details and aspirations, side by side; but if we compare the examples which seem at first so contrasted, we find that the change has been one less of transformation than substitution. The Giustiniani Palace of Longena, and the Balbi of Palladio, present themselves as plain versions of such a façade as that of the Foscari; round arches superseding pointed, pilasters and columns taking the places of light shafts and pilasters; and cusps and quatrefoils obliterated for enrichment by Roman mouldings, architraves, and cornices. In these examples, and in the churches of Palladio, we see as distinctly as in the Cortile of the Ducal Palace, that the new design is the old design modernised. Such is the law of evolution, as manifested in the succession of architectural tastes or fashions. Time goes on, and it may be the fate of a modernised version to shed its skin again; to divest itself of its garb, borrowed at best, but adapted to a more or less successful fit, and to reassume an antique or a diseased costume, and hold itself prepared to masquerade with becoming gravity in the formality of classicism, the inversions of Jacobean style, or the frillery of Queen Anne.

Among the marble tombs which the traveller comes upon so frequently in the churches of Italy, there is one beautiful class, of which the specimens are almost invariably of wondrous refinement, when dated in the inscription within the two last decades of the fifteenth century,—1480-1500. Even the forms of the letters of the inscriptions are of unusual beauty. The figure of the deceased lies in calm dignity on a representative sarcophagus of graceful design, and under an arch and cornice supported by pilasters or engaged columns; some emblems or an escutcheon may be added; but the true enrichment is in the admirable distribution of graceful mouldings and a delicacy of execution in those which are carved, which involuntarily provokes a comparison with the work of the artists of the Erechtheum. In these works the ideal was carried to perfection, which we find embodied at a much earlier date in the wonderful group of the tombs of the Scaligers at Verona. The earliest of these is attached to the wall above the door of the adjacent church. An oblong sarcophagus rests on dogs supporting shields charged with the cognisance of the ladder; upon it is a draped couch on which lies supine the Scaliger in plain drapery, with arms at length and hands crossed over his sword, which lies upon his body. The expression of the recumbent figure, especially in pose of head and arms, is very fine. Columns on each side support a trifolied arch, with gable above; lower tables at the flanks of the shallow recess lose themselves in the church roof, and immediately above rises a plain pyramid of tall proportions, which bears a small figure of the knight on horseback; his helmet hangs back off his head, and the horse is draped. The other tombs which stand free, successively elaborate this type. The latest of all is hexagonal in plan, and every member that is simple in the others is here developed into ingenious, but no doubt overdone, complications. But in all, the general elements of the composition are the same; the solid basement supporting the exposed sarcophagus of the dead, with his recumbent effigy under canopy or baldachino, and the surmounting central pyramid bearing the mounted knight of exceedingly diminished proportions.

Now this type of a funeral monument affiliates unquestionably on the well-known series, which has examples in every province of the ancient Roman empire, and is ultimately traceable, taking up the tomb at Mylassa on its way, to the Mausoleum of Halicarnassus. Whatever doubts may linger as to the details of this monument, we know for certain that a solid basement supported a lofty colonnade, which was surmounted by a pyramid bearing on the summit the effigy of the buried monarch with his chariot and horses. But what excites our curiosity is this:—How comes it that we find the tradition of the equestrian hero conspicuous on the pyramid above his tomb, reappearing and realised in the depth of Medievalism? We have remains still existing of ancient monuments which retain traces of the pyramid; is it possible that the Gothic architects knew some which have now perished that bore plain evidence of having originally been finished by a statue?

The horsemen on the summits of the tombs of

the Scaligers are of such moderate dimensions that they become rather finials than statues; but the statue which Leonardo proposed to erect upon the tomb of Trivulzio was to be of life size, and in all his sketches it is indicated as much larger in proportion to the architectural composition which supports it. In one small sketch the statue is on a cylindrical base, which rises from a circular colonnade that reminds of Bernini's well-known church or temple at Rome. In another, on a square plan, the Gothic element is so far admitted that an upper platform is supported by flying buttresses, which extend from vertical buttresses at the angles of the lower platform.

In another sketch the bier or sarcophagus, with the recumbent figure of the dead, is apparent between columns of which the entablature supports the plinth of the horseman. Another sketch on the same sheet shows the sarcophagus under an arch; at each angle of the general base is a pillar against which a captive is bound.

Most interesting of all is a sketch in which, by a further elaboration, the *adulæ*, so to call it, which houses the sarcophagus, has a pediment, at the back of which rises the plinth for the equestrian statue; at the sides, on a level with the horizontal cornice of the pediment, sit captives with hands bound behind their backs; in scale and attitude these might have been the suggestion of the finely-conceived figures which Stevens boldly placed in the same position on his Wellington monument. Leonardo had sketched in the figure upon a horse, apparently rearing full front, and, as in the other cases, upon a very large relative scale, but, what is very remarkable and, perhaps, significant, he afterwards erased them.

It is fair to assume that opinions will be in accord on the point that the erection of the Duke of Wellington as equestrian on the summit of his monument, should be contingent on considerations of artistic effect, which have further relation to considerations of appropriate sentiment. These must not be disregarded for the indulgence of sympathy,—sympathy which is natural for a career which was rather hardly dealt with and prematurely closed; neither shall we be justified in giving in to the blind assumption that work which was largely meritorious was, therefore, absolutely so and entitled to acceptance in every detail. We are in St. Paul's Cathedral, and here if anywhere the admonition on this head may come home to us from the very epitaph of the architect,—*circumspice*!—"look around." How much that is incongruous and disappointing has Wren combined in this interior with how much that is admirable! With such a warning we cannot decline responsibility in judging how far we will adhere to the further intentions of Sir Christopher Wren as though they were infallible, and how far we will adopt without critical examination the full scheme of Stevens.

We have, therefore, to ask ourselves independently, What effect is to be anticipated, what effect have we to be prepared for, from the horse and rider in the position to which efforts are now being made to bring about its elevation? It must be understood that the figures are, at least, the size of life. The proportions of the horse as shown in the full-size model seem somewhat heavy, but it has the appearance of spirited and natural action. But let any degree of any merit whatever be conceded to it, what aspect would it present to the spectator from below? and to a spectator not merely on a much lower level, but very narrowly restricted in the distance to which he can retire? It was some alleviation to the unpleasantness which was so long inflicted by the statue on the arch at Constitution Hill, that it was most usually seen at such a distance from its "bad eminence," that the angle of the line of sight with the horizon was vastly reduced. Beyond a certain point across the park, the distance became virtually equivalent to the infinite distance postulated in isometrical perspective, and the statue might be seen in almost true profile. But the case is very different when the choice of station from which to view a horseman high over head is limited by the width of the narrow nave of St. Paul's. The beauty of any organism is put to an unfair test when it is looked at upside down; and between upside down and "downside up,"—the phrase quite accurately descriptive of the presentation in question,—the difference is nil. It is difficult to avoid unhandsome phrases in describing unhandsome facts; and the objectionable fact in the present

case is neither more nor less than that if the equestrian statue of the duke is to be hoisted to the top of his monument, the duke himself will only be visible grotesquely fore-shortened, for the benefit of giving a fair view of the scales of his boots, and the underside of the barrel of his charger. The combined figures would be taken in reverse, and show as a jumbled monstrosity. If the statue is worthy of being cast, it is worthy of a position where it will not entail discredit on the memory and fame of the lamented sculptor. And let the life-size horse and rider be of whatever excellence they may, as crowning the architectural canopy of the recumbent warrior, they would constitute an intrusive and distracting element in the sepulchral composition. On the monuments of the Scallagers, and on that of Aymer de Valence in Westminster Abbey, the mounted knight is little more than a symbol, a finial, not, perhaps, the best finial that could be devised,—not, perhaps, the best use that the figure of a mounted knight of any scale could be put to. But in these examples, from excessive contrast in scale, the image of the warrior as living does not enter into competition with the recumbent effigy. But in the suggested combination in St. Paul's, the competition would be declared, and the conflict most detrimental to that repose which, if ever at all, is required in a funeral monument within the walls of a cathedral. The mischief would be intensified by the emphasis given to the figure of the Field Marshal, Command-in-Chief, by the vast symbolical bronze groups in his immediate proximity. To which figure are we to look in the first instance, and on which are we ultimately to dwell? The very apprehension of such confusion is bewildering.

Let us compose our thoughts by a draught at the very fountain-head of calm and conscientious criticism. When objects, said the first President of the Royal Academy, are scattered and divided into several equivalent parts in a composition, the eye is thereby perplexed and fatigued from not knowing where to rest, where to find the principal action, or where is the principal figure; for when all are making equal pretension to notice all are in equal danger of neglect. "The expression which is used very often on these occasions is the piece wants repose, a word which perfectly expresses the relief of the mind from that state of hurry and anxiety which it suffers when looking at a work of this character."

PAINTINGS IN THE HOUSES OF PARLIAMENT.

ON Friday last a short, and what, in some respects we should call a rather painful discussion, took place in the House of Lords in regard to the series of fresco paintings commenced by Mr. Herbert in the Peers' Robing-room, and the question whether the original engagement with the artist to paint the whole series should be carried out. In characterising the discussion as in one sense painful we mean no insinuation against the matter or manner of the speeches made on the occasion. Subjects connected with art are usually discussed with much more knowledge and sympathy in the Upper than in the Lower House of Legislature. We do not hear from the Lords those sneers at the mere notion of expenditure on art for its own sake which proceed from incorruptible economists in the House of Commons, or the depreciation of all artists of the present moment as nobodies, which is the pet amusement of one or two self-elected arbiters of taste among that body. The subject was discussed with sympathy and good sense as regards artistic interests, and with a spirit of marked generosity towards the artist most concerned. But, in spite of this, the conclusion was against the continuance of the commission to Mr. Herbert, and we fear it must be admitted that no other conclusion could have been come to. Mr. Herbert was originally, it may be remembered, to have painted a series of panels in the Robing-room, illustrating the progress of the idea of Justice and the development of Law. Of these the two first alone are completed, "Moses coming down from Mount Sinai," and the "Judgment of Daniel," of which the latter was only finished in 1880, but the painter had to contend with unexpected causes of delay in the difficulties arising from the comparative failure of the first fresco process, and the adoption of the water-glass process. The in-

creased difficulty and expense thus occasioned was recognised by the Government in the payment of a considerable sum over and above the proportion which should have been due for these works according to the original agreement. On the whole, it cannot be said that the artist has in this case been badly or illiberally treated. The point urged by Lord Mount-Temple, who opened the discussion or conversation referred to, was that Mr. Herbert ought now to be given the opportunity of completing the whole decoration of the room in accordance with his original design,—a view which was supported by Lord Emily and the Earl of Carnarvon, on the double ground that any other arrangement would be unfair and ungenerous to the painter himself, and that the introduction of a different hand in completing the scheme would destroy its homogeneous character; which, of course, cannot be denied. The reasons given by Lord Thurlow against adopting the recommendation were that the original agreement had been cancelled with the painter's acquiescence, or, at least, his assurance that he would make no further claims on the Government except under a fresh contract. "Under these circumstances, and inasmuch as the water-glass process had not only proved very much more costly than the previous fresco painting, but also caused an indefinite amount of delay" (indeed, it appears that the completion of the second painting by 1880 was only accomplished after considerable pressure had been put upon the painter), Lord Thurlow "regretted that it was not in his power to hold out any assurance, or, indeed, any hope" that the Office of Works would now call on the painter to complete the series. Considering the previous delays and the time expended on the works, it is impossible, however sincerely we may wish the painter many years of life, to suppose it probable that he would be able to finish the series himself, so that the argument as to the value of homogeneous style in the whole falls to the ground. But, though the first painting was artistically a success in many ways, and the Moses certainly a fine and impressive figure, it is impossible to deny that the painter himself has furnished, for two or three years back, on the walls of the Royal Academy, more decisive arguments against his claims; and this fact, which was no doubt in the background of the discussion, though unexpressed, forms what we called the rather painful element in the matter.

Whether in such cases it is wise, under the present "dispensation," to entrust so large a proportion of decorative painting to one hand and mind, is a question which the discussion suggests. Much as we have advanced from the artistic dullness of the earlier part of this century, the efforts of our best men in decorative painting are still in a great degree tentative, both in regard to style and medium of execution, and it is the best men who are probably themselves most feelingly convinced of this. It would seem better to limit the productions of each artist, in such a case, to a part only of the work, thus leaving more opportunity for the full consideration and careful carrying out of each portion. This consideration would, however, affect, or ought to affect, in the first instance, the architectural design which is to be the framework of the decorative painting. Where all the decoration can be carried out by one hand on one scheme, the architectural frame may be comparatively slight and be even allowed to efface itself somewhat in relation to the painting. But where, as in the majority of instances, we cannot reasonably hope that the whole scheme of decoration can be carried out advantageously, or at all events, by one painter, then it is necessary that the architectural setting should assume such elaboration and importance as to separate the paintings, to predominate over them and call attention away from their differences of style. And this is a matter to be thought of from the first, in designing any architectural interior to which it is intended ultimately to add pictorial decoration; the architectural detail must be more or less important and prominent, accordingly as it is to blend the parts of a single pictorial series by one hand, or to divide and frame a collection of separate subjects by various hands.

A suggestion in Lord Carnarvon's speech on the occasion is also worth comment: in regard to the relation of the pictorial subjects to the uses of the room in which they are introduced. The work, he said, which the Chairman of Com-

mittees, who sat in the Robing-room usually, was called on to perform, was certainly a remarkable contrast, in its matter of fact character, to the subjects of the pictures on the walls. But "the same contrast existed in the great council chambers of Italy, where, in former times, politicians and merchants transacted their business. Mighty Governments had passed away, and the merchants had gone to dust, but on the walls the great pictures of saints and angels remained to delight the present generation." This is well put, and is an argument against the idea, sometimes too prominently acted upon, that pictorial decoration should necessarily have some immediate relation to the uses of a room. This is carried so far by some decorative artists that they would paint scenes of men printing round the walls of a printing-office (if printing-offices were ever decorated in so elaborate a manner), or men binding books on the front of a publisher's shop. That is just what is not wanted. Where the real thing is being done, we do not want the painted imitation of it; we want painting to relieve the reality of work by fancy and imagination. A relation of some kind there should be, but not a realistic and prosaic one; and for a really great painting, it may be conceded that the want of any relation to the uses of the room or building would be readily pardoned; though such a want would be a defect, no doubt, to a certain extent. It must be admitted that the idea of the decorative paintings now executed, remaining to be a delight to future generations, is a rather more ambitious one than most recent works would justify; but it is the right way to look at the subject, and the proverb, one may hope, still remains true in the main,—*"Aim high, and you strike high."*

"CITIES OF SOUTHERN ITALY AND SICILY."

THE author of this delightful book* expresses the belief that it will find but few readers. In our opinion there never was a more groundless fear. We cannot conceive that any one who has the good fortune to open it casually and read a sentence or two at hazard will lay it aside without reading the book from end to end. The author further thinks that still fewer persons will follow in his route and consult his work amidst the scenes which he describes. And in this we are disposed to agree with him, for there could be, to our thinking, for those who might have had such a tour in contemplation, no stronger disinclination therefrom than this faithful record of what such a traveller would have in store for him. It is, in some respects, one of the saddest books that ever were written. We are conducted through scenes after scenes of surpassing beauty, and everywhere our pleasure is destroyed by memories of a cruel past and evidences of a degraded present. The book is written without any attempt at effect, and is, apparently, wholly free from exaggeration. It is a sweet, mournful song, with the ever-recurring refrain, knavery, lying, cruelty; the luxury of the very rich, the helpless, hopeless, poverty of the very poor; misery, want, and toil,—of open, shameless mendicancy, and the "ill-dresses that clothes a man with rags."

No one can read of the system under which Italian farms are cultivated,—the absentee nobles, the extortionate middlemen, the abject dependence of the labourers, and the blank desolation of their lives,—without feeling that there is rough work in store for this country when the poor shall have learned the extent to which they have been defrauded, and shall at last awake to "a capable and wide revenge."

One cannot better illustrate the strange antitheses which meet us on every side than by repeating what this writer says of the deserted town of Ninfa, the Pompeii of the Middle Ages.—It is now uninhabited and desolate; a bubbling spring falls into a pool below, and turns a neglected mill, making the stillness more complete. A hundred years ago the town was a busy place, and no one now can tell the date or cause of its evacuation. Streets, houses, churches are all overgrown and hidden in flowers, and the whole is wrapped in a malaria so deadly that even the wandering shepherds will not pass the night there.

Flowers and malaria are fit types of the things which, in abrupt and shocking contrast,

* "Cities of Southern Italy and Sicily." By Augusta J. C. Hare. London: Smith, Elder, & Co.

characterise this beautiful, but unhappy country. Words fail the writer in his attempts to describe the loveliness of the scenery and wretchedness of the people. The country districts are infested with robbers; the inns are miserable, and swarming with insects; the beds are damp; the food is scanty, and disgusting. All sanitary arrangements are unknown. If the reader cares for none of these things, let him start on his travels, and let him by all means put into his courier's bag, so as to be ever at hand, this most charming of guide-books.

To the adventurous architect it will be doubly welcome. The author, as his previous works have shown, has a keen eye for, and a competent knowledge of, both Classical and Medieval architecture, and never passes any remains unnoticed. The little sketches with which the work abounds are invariably chosen with the instinct of a true artist, and the architectural detail is indicated in a way which shows that the draughtsman is alive to its distinctive character. Another charm which the work possesses is due to the author's wide knowledge of ancient literature and ancient history, and the learning which he brings to the elucidation of every scene. Not an allusion or reference in either ancient or modern authors which would help to the realisation of the facts is omitted, and the whole is presented to us in a modest and unpretending shape, as rare as it is captivating. If we must find a fault, it is in the absence of a map. It is not given to every one to remember the geography of the country well enough to follow with complete pleasure the author's zigzag wanderings. In the old days of engraving, the cost of such a map as we desiderate was a serious matter; but now there are many cheap processes by which such can be printed. Our daily newspapers are getting into the habit of illustrating their foreign news by hastily-prepared outlines, and henceforth no book of travels such as this should be considered complete without its map.

The first section of the book is devoted to the journey from Rome to Naples, and lateral excursions to points of special interest. Albano, Porto d'Anzio (where the food is tolerable), and where a Doric portico is still intact; Serraneta, with its important and picturesque castle; Fossanova, where St. Thomas Aquinas, the "angelic doctor," died; Palestrina, with its numerous antique remains, the Temple of Fortune, and the once magnificent but now forlorn Barberini Palace; Subiaco, where Nero fished for trout with a golden net; and so on through scenery which becomes more romantic at every step, until we reach St. Benedict's Ilia Grove, "dating from the fifth century, and never yet profaned by axe or hatchet,"—the church dating from 1116, and covered with frescoes; the cave in which the saint dwelt, and where he routed his tempters by throwing his naked body upon thorns and briars.

At San Cosimato we are introduced to a village of hermits, inhabited by recluses, and we seem to have gone back five hundred years into the Italy of Dante. The chapel is hewn out of the rock, the ilia covers its sides, and the river plunges and roars a hundred fathoms below.

A sketch of the gate of the Papal Palace at Agnani is interesting, and shows that the architectural student need fear no dearth of matter for his sketch-book. The great Carthusian monastery of Trisulti, with its thirteenth-century church, its terraced gardens, and its picturesque Illegions, are brought vividly before us, and the natural beauties of the district exhaust even the writer's vocabulary of admiration.

At Sora we meet with the refreshing novelty of a thriving, industrious, and happy community, engaged in the fabrication of peasants' jewelry. The ornaments and dress of the inhabitants have a Grecian character, and the women are remarkable for their beauty.

At Monte Casino the inhabitants were, we are told, pagans in the sixth century, and still worshipped Apollo in a temple on the mountain, and that a grove there was sacred to Venus. The monastery has alone been spared from confiscation on account of its services to art and literature.

The "purple gray" of distant Vesuvius is now in sight, and we reach Naples, which has a most interesting chapter devoted to it.

Of extreme antiquity and Grecian origin this marvellous town, so well known to every traveller, has been called a "Paradise inhabited by devils"—cruel, filthy, idle, lying, thieving, laughing, good-tempered, amusing devils. Every-

body cheats his neighbours all round; the Government officials speculate and rob the exchequer; gambling is universal; the upper classes have little but their titles; the younger sons have no professions; the middle-classes are inert and insolent; the poor are so poor that "Pizza, i.e., dough baked with garlic, rancid bacon, and strong cheese, is esteemed a feast." But with all this they are satisfied with their lot, and in so far happy. Ragged improvisatori recite to delighted crowds as ragged as they, and adjourn only to laugh over the antics of Policinella. Public letter-writers still, in this nineteenth century, sell their services to the uneducated masses. Macaroni-eaters devour incredible quantities of that favourite food in public as an exhibition of skill; and the very arcana of the personal toilette are frankly displayed in the open streets.

But we cannot afford space to linger over the multitude of touches which go to make up a picture of Neapolitan life and manners; the book is a storehouse of learning, wisdom, observation, and its style is so lively and brisk, the graphic power of the writer so great, that "one's appetite does grow by what it feeds on."

Naples,—dear to painters,—has but little to interest the architect as such. Its churches are either modern or modernised out of all charm, and their chief interest lies in the pictures, sculpture, and fittings with which the interiors are adorned. But all these have been often described, and as the principal object of our author is to take us along the less-frequented routes and explore neglected treasures, thither with quickened steps we will follow him. In the immediate neighbourhood of Naples, Virgil's tomb, which was almost certainly visited by St. Paul, who landed here a prisoner A.D. 59, is of supreme interest; and of all the beautiful spots on earth Capri is one of the most beautiful. The church and the houses are surmounted by numerous domes either white or painted in gay colours, and these, half-hidden by palm-trees, make up a picture of Eastern brightness and beauty. A bas-relief found here represents the Emperor Tiberius riding a led donkey just as the modern tourist now explores the same scenes, thus bringing the past and the present together.

Herculaneum and Pompeii,—that strange city, which, after a life of sixteen years, was fated to be entombed for sixteen centuries,—are, with the inevitable Vesuvius, fully dealt with, and almost regain the charm of novelty by the author's treatment of a well-worn subject. Sorrento, "where the cliffs are overhung with wild fig-trees, cypresses, and a thousand flowers, long tresses of ivy swooping into the depths, and the rugged stairs [which the author has however, written, *staircases*] cut into the rock"; the circular church at Nocera, 80 ft. in diameter and domed; the Abbey of Cave, where Salvator Rosa lived and studied, an abbey rivalled in interest only by that at Monte Casino, possessing archives dating from A.D. 840; these are all duly passed in review, and their attractions dilated upon. Amalfi, with its Sarcenic tower, is dear to all artists. Here, however, the "pest of beggars" reaches its climax and drives the tourist to despair or bad language. We are told that "three-fifths of the able-bodied men, and every woman and child, beg,"—a truly startling state of things which has grown up under the Sardinian Government.

"Sicily is said to be an 'ugly island with beautiful spots,' if, indeed, there can be any positive ugliness in this favoured clime. The beautiful spots are indicated and described. The most interesting is Syracuse, the most beautiful Taormina, Girgenti, and Palermo. The latter, being in direct communication with Naples, is well known to every traveller. The cathedral* is full of interest; but cannot, of course, compete with Pestum,—the ancient Posidonia, the city of Neptune,—where, though the Roman works have perished, the earlier Greek work remains,—

"Standing between the mountains and the sea."

To the architect the Grecian remains at Segeste, Selinunte, and Girgenti, are the great attraction. There are Sarcenic remains at Cefalù, and Medieval buildings at both Cefalù and Monreale. The history of the island is given at some length, and it is more romantic than any mere romance. Roads are bad in the island, but new roads are being opened up,† and many

* A view of the Cathedral of Palermo was given in the *Builder*, vol. xiv., pp. 608, 609.

† See Paper, "Acragas, Agrigento, Girgenti," by Alexander Graham, in *Builder*, vol. xlv., p. 338.

of the hitherto inaccessible points are being brought within the tourist's range. The flowers here are indescribably beautiful and the people are extremely ignorant. Both superstition and religion are dying out. The old palaces are falling to ruin, and the whole picture is one of melancholy splendour. At Taormenium there are the ruins of a theatre built to accommodate 40,000 spectators. Bronte is noteworthy as having given our Nelson his second title, and, indeed, there is not a spot to which some artistic or historical interest does not attach.

One feature in the book is the modesty with which the writer, whose powers of description are remarkable, stands aside and lets others describe the scene before him. His work is full of extracts from the writings of Bulwer Lytton, Dickens, Shelley, J. A. Symonds, Wordsworth, &c. The descriptions of Theocritus, often quoted, are as applicable now as when first written, and he, too, labours for the want of adjectives in sufficient abundance to do justice to this lovely land. The air is filled and fragrant with mythology, and one would not start to see the great god Pan resting on the turf and piping under the shadowy trees. The desolation of the environs of Etna is depicted with terrible power and pathos,—that region from which all vegetation has ceased and where there is "no sound of bird, beast, or insect." The Sicilians believe Etna to be the place of torment for Anne Boleyn, who perverted the faith in the person of its "defender." On every hand the prospect is the same,—vast, desolate ruins, overgrown with flowers, the sea, or the mountains as a background, and beauty and decay the universal accompaniments. As these lines are being printed, the news of the earthquake in the Isle of Iachia reaches us, and feasting, gaiety, and a sudden and awful doom are brought into harsh and cruel juxtaposition.

The ever-increasing demands upon our space leave us no room for further remarks. We have given our readers a "taste of the quality" of this book. As we close it a strange picture is left upon our mind. The picture of a country lovely beyond compare, every scene of which is linked with the remembrance of deeds of rapine, cruelty, and blood, or hallowed by the memories of saintly lives,—a history full of extremes, of craven fears and heroic courage, of shameless vice and of the loftiest virtue, of the simplest faith and the wildest superstition, of exemplary piety and of intense and varied wickedness.

In conclusion, we can but repeat to all intending tourists Mrs. Glass's excellent advice, and say:—"First catch your Hare."

KNOTS AND CABLES IN ORNAMENT.

WHEN Professor Tait first promulgated his theory of knots before the Royal Society of Edinburgh in 1876, he evidently did so in ignorance that Listing, in his "Vorstudien zur Topologie" had anticipated him by nearly thirty years. Tait's paper was suggested, he tells us, by an inquiry concerning vortex atoms, and he says that the scientific meaning of a knot "is an endless physical line which cannot be deformed into a circle," and he gives us numerous characteristics of knots, such as their "knottiness," "be-knottiness," and "knotfulness," and he also shows "that any knot, however complex, can be fully represented by three closed plain curves, none of which have double points, and no two of which intersect." The illustrations which he gives of his theory are so emblematical of some of the earliest classical forms of ornamentation in architecture and sculpture as to suggest the thought that the ancient mathematicians had already found out the theory which is promulgated to-day as new; and somewhat curiously the oldest emblems of the Trinity are derived from twisting one line or thread round another. We find these figures repeated in the *guilloches*, frets, and scrolls which have been handed down to us from Egypt, from Greece, and from Rome. That many of these had other meanings, and were significant of some not fully-expressed thought in the designer, is evident from their arrangement and association in their original positions, but we would more particularly direct attention to the use of cable ornament and the interlacing of knots by those nations who had maritime instincts and who were practically acquainted with cordage in all its various shapes, forms, and appliances. There seems ever to have been a charm in the arrangement of knots, ties, loops, and pendants of

twisted cord. We know from Homer how Ulysses secured his treasures, ere locks and keys were known, by divers knots of cord. The Gordian knot, which Alexander did not deign to untie, but cut with his sword, was doubtless a knot of subtlety and difficulty. We have in the collection of Indian antiquities which are placed on the walls of the grand staircase of the British Museum, many elegant examples of the use made of ties, twists, and plaitings of cord, probably coeval with Alexander himself. They are totally distinct from the twists and turns of the serpent ornamentation, and are disposed in graceful curls and combinations with drooping pendants, which show that they were not the mere conventional ornaments of the day. What the serpent worship was to the East a knotted rope appears to have been to the inhabitants of the wild North. There was something to the Norwegian eye cabalistic in a twisted knot, and even in our later day Lapland witches have sold to the fisherman a bundle of knots to aid him in foul weather by untying one or another of the twists of the charmed rope. Though there are many examples of plaits and twists in classical ornamentation, we do not find distinct examples of the cable representation in its simple form till we come to the Roman period, when we have several adaptations of it round the base of columns, both here and on the Continent. There is a good example on the base of the columns found at Reclivers, and now preserved near the library within the precincts of the Cathedral of Canterbury. But we find at this period but few remains of interlaced work, which afterwards became so common. The representations we have of Roman galleys are not conspicuous for their rigging, and some of the intricacies of knot-tying were not known to the carvers of bases and pillars. When the Romans had left Britain and the neighbouring isles, and we had to receive tribes who could navigate their ships through the stormy North Sea, some intimate knowledge of rigging, cordage, and splicing was essentially necessary, and accordingly we have abundant examples of their knowledge and use of knots in the sculptured stones they left behind, and the customs which have lasted as long as the cut stone itself, and which gives to these twisted emblems a curious significance. The knot was the symbol of Love, Faith, and Friendship amongst the ancient Danes. The true-love-knot, of which we have an example in the signet ring attributed to Shakespeare in the museum at the birthplace of the poet at Stratford-on-Avon, is from the Danish Trulofa, "I plight my faith." Thence came the bride-favours or top-knots at marriages. To put a thong round the neck was a mark of servitude. The little thong, suspended from charters, was for the subscribing party to make a knot. The bond of matrimony was sealed by a knot, which it was subsequently said was "made by the tongue and could not be untied with the teeth," and the phrase, "Tie a knot in your handkerchief," is shrewdly suspected to have come from the legal use of the *corrigia*, as implying a contract or a promise to fulfil; but the most important of all is "the placing of a thong on a tomb," which, according to Du Cange, signifies that you renounce all claim to the goods of the deceased.

Thus we find the use of these things, which are termed "cables" in heraldry, or crest wreaths, and "cats-paws" in nautical parlance, formed by twisting tightly two coloured strands until they form a rope-like parti-coloured band, remaining with some significance till our own day. It encircles the crest, and thus has become identified with the family honours. Some of the knots yet remain as badges, the simplest of all the knots used in this way is the Stafford Knot; the next in complication is the Wake or Ormond Knot, which is a "hitch bend," and like the Boucher Knot (the "garlick bend") familiar to yachtmanship, whilst the one represented on the monument of Anne of Bohemia is a very elegant one apparently designed as a monogram. The Henesge Knot forms a not inelegant ornament. The Bowen Knot is similar to one of Professor Tait's illustrations, whilst the Lacy Knot seems to have been suggested as a rebus on the name Lacy, so much is it interlaced. Knots were used also in combination with other devices. The badge of the Daerces is formed by a loose knot tied round an escarp shell and a ragged staff; and the badge of Edward, Lord Hastings, is produced by tying in a similar manner a sickle and a garb. There are many foreign examples of this device. One of the family of Morvillers

shows the Pythagorean Y (so called because the philosopher made it the symbol of life, entwined with a hitch knot which is attached to a harrow, which thus forms a rebus on the name of the French Chancellor at the time when Elizabeth ruled over England. Pope Leo X. had a twisted knot and band round a yoke, and the House of Savoy took a "figure-of-eight" knot for their device, with the motto, "Stringe ma non constringe,"—it binds, but constrains not. As far back as 1252 an Order of the Knot was established at Naples. The badge, of silk, gold, and pearls, was tied in a knot upon the arm, and those who were invested with it made a vow to untie it at Jerusalem. Some of the earliest adaptations of these interlaced patterns, evidently suggested by the curves of cordage, may be seen in the new Anglo-Saxon room of the British Museum, on the various hollow or saucer-shaped fibulae there exhibited. They were evidently accepted as patterns not because of their simplicity, but because of their significance or their familiarity. These are of anterior date to any of the sculptured crosses and stones which exist in these islands, as far as we know, and they seem to mark a departure in ornamentation which was afterwards destined to influence the revival of architecture in England. These forms were evidently favourites with our Anglo-Saxon progenitors, for they appear in some delicate filigree work on gold ornaments set with jewels, which were exhibited from the collection of Sir Charles Mordaunt, at the Society of Antiquaries, some time since.

The transition from metal to stone was but a natural sequence. The interlaced patterns so common in Scotland and the North of England seem to have preceded those of Ireland, for Dr. Petrie could not assign any existing remains to an earlier date than the twelfth century, whilst many English examples are undoubtedly pre-Norman. The interlacings of the initial letters of the "Book of Kells" were therefore not copied or imitated in stone prior to the influence of the Norman architects, whose pillars show how cables were "served" or "parcolled" in the manner so familiar to the mariner of to-day in the rudest state of civilisation. The knots on the cross at St. Creves are but variations of the ornamental anchor loops and intertwined knots which "Jack" prides himself upon when in harbour. The network ornamentation imitating what is technically known as a "tennis" cord (tightly or loosely) plaited in the manner of the handles of carter's whips, is also common. These obvious imitations of cordage began to disappear in England at the latter end of the twelfth century, and they are but rarely seen in the First Pointed style, when natural forms and foliage took their place. Elaborate attempts have been made to explain how these intricate patterns were suggested, but a skilled boatswain of her Majesty's Navy would easily show how each and every one of them could be tied, plaited, or knotted without the aid of mathematics or scientific theories.

THE DUST-BIN.

It is a sad reflection that the severest lessons seem alone capable of correcting human nature of a culpable indifference to, and neglect of, some of the most important questions. Thus it has been truly, though apparently paradoxically, said of the cholera epidemics of late years, that more lives have been saved by the destructive and terrible character of these visitations than have been sacrificed to the carelessness from which they too often arise. It would seem, indeed, as if this were the mission such fearful scourges came to preach, forcing the attention of the public to subjects on which in vain the unheeded voice of science has been uttering its warning.

Once again we seem threatened with a great cholera epidemic, and, with the memory still fresh in the minds of all, of those awful weeks twenty years ago when the black flag was hoisted in the city, well can we understand the fears that are being expressed in many quarters at home as to the far from satisfactory condition of most of our sanitary arrangements. For years the cry has been raised, and in these columns has ever found a ready response, of the necessity for rigid cleanliness, pure air and water, good drainage and ventilation, and these, it is generally conceded, are the chief points of consideration and watchfulness on the part of the sanitary authorities. Such blessings

are, however, not to be obtained all in a moment, even when their necessity is admitted. What, between, on the one hand, the often positively restrictive action of the very legislation and its officers who should most aid in the work, and, on the other, the indifference generally of the public and the not unfrequent disagreement of those admitted to be authorities, the advances made towards a thorough understanding and application of the principles of domestic sanitation are singularly slow. It would seem to require, as we have remarked, some severe lesson to arouse anything like interest in what, after all, from the most selfish point of view, is a subject of vital importance to all and each. The absence of good drainage and a plentiful supply of pure water,—*desiderata* still wanting in a vast number of the homes of our city populations,—it is no easy matter to correct, and many years must elapse before we can even expect, with the best will, to obtain universally such boons.

There are steps, however, which it is in the power of every household to take. For his water-supply, his ventilation, and his drainage he must necessarily to a large extent be dependent upon the action of others; he is only too cruelly at the mercy of monopolising companies and careless where not directly unscrupulous builders. In this direction the household is comparatively helpless; once, however, in possession of his home, he has it in his power to enforce the observance of many hygienic precautions too often neglected. Among these may be placed in the front rank a watchful attention over that singular relic of pre-historic barbarism, the dust-bin, to which, for some occult reason never yet explained, we in our country cling with a pertinacity which, displayed in any other direction, would be most praiseworthy.

Even the warning which, within a few days, has been sounded by the proofs afforded of the undoubted death of a child due to the shameful condition of a dust-bin near the house in which she lived, even this warning, though it has raised some small amount of attention, will, we feel certain, be forgotten before a month is passed. "It is an accepted canon of hygienic science that disease is engendered, intensified, and perpetuated by dirt, and it behoves us, therefore, to give it as small a resting-place as possible, should it unhappily appear. In order to minimise the danger of such a visitation as cholera, we should at once endeavour to eliminate from our homes and surroundings those elements which act as factors in its production, and regulate and govern its virulence."

These are the words of the medical officer of health for the City, at a recent meeting of the City Commission of Sewers. Could more cogent arguments be found for the abolition of the dust-bin than in this simple straightforward advice of Dr. Sedgwick Saunders? We have ourselves said the same thing in other words a thousand times. We may talk of sewers and foul gases, filtering mediums, charcoal, ventilation shafts, and so forth; these are big questions for the specialists to determine, though they seem singularly at variance as to the exact steps to be taken; but the daily removal of our house-refuse is a point concerning which there can be no possible difference of opinion. The accumulation within a box, during any time of the year, of the masses of decaying matter which inevitably find their way into the dust-bin; the clumsy barbarity with which this mass of corruption is placed under our very windows, as it is in most London houses, and left for days to fester, and then removed but very imperfectly; these acts of defiance of the commonest rules of cleanliness are, as is well known, practised alike in Belgravia and Seven Dials. It is a pleasing fiction of our municipal arrangements that the dustman is obliged to make his calls at stated periods, when, for a consideration, and at any time in the day that may suit his convenience, he will clear out the contents of the domestic dust-bin. His huge lumbering dust-cart certainly calls,—sometimes; our dust-bins are, after a fashion, emptied; and matters proceed generally with a sufficient degree of regularity not to excite more than mere passing storms of complaint; but the system is radically wrong.

Above, as we have more than once pointed out, the barbarity of a dust-bin is unknown; the house-refuse is placed in a small movable box,—the *boîte aux ordures*,—which before nine o'clock in the morning is put by the *concierges* on the side-walk in front of the house and duly

emptied into the municipal dust-cart; the pavement is swept, the box washed out under the bright brass tap in the courtyard, and restored to its proper corner. The occupants of the smallest "flat" possess each its movable *botte aux ordures*,—a small box with sloping sides lined with zinc,—and which, either at night or early in the morning, is taken down and emptied into the general box or separately, the tinkling of the dust-cart bell hurrying down stairs many a late lodger with the relics of the joyous supper of the eve. From the regularity of this system adopted throughout France and Belgium, and even in our English dependence of Guernsey, the dust-bin is unknown, and its source of inconvenience and danger avoided.

Once a system of disposing of the refuse has been established,—as is the case in our great cities,—the daily removal of our house-refuse should be enforced, as it is abroad, by law, and insured by the infliction of heavy fine. We can understand, though scarcely excuse, the difficulties which our New York cousins find in the disposal of their house and city refuse. A walk in any but the most aristocratic neighbourhoods of the "Empire City" is far from pleasant on a day when the wind scatters about the ashy contents of the innumerable barrels dotted along each side-walk, the French system of no dust-holes having been adopted, but the visits of the cart having been left in embryo.

We in London have organised, or rather a shrewd set of contractors have organised, a system by which what is so useless to the householder can be turned into a source of immense wealth. This system organised,—as it is in the great dust-yards by the banks of the Paddington Canal,—the public should demand that their dust and refuse be removed *daily*, and before a certain hour in the morning. Our Parisian neighbours set to work to brush their streets at daybreak, winter and summer, and before the bulk of the population are about the mud has been laded up, and the dust laid. In our country,—in London, at least,—it is no uncommon sight to see the mud-cart at the very height of the day and season, in Piccadilly or Regent-street, bespattering the unwary passer-by. As for the dust-cart, with its grit blown about by every gust of wind, it is so familiar a feature of an afternoon's walk or drive, that it seems alone strange, and painful, to the eyes of those who have been absent from town during a lengthened period.

Amongst the poor, the visit of the dustman, with his obligatory tax, small though it may seem, charged alike for the removal of the whole bin or a basketful of dust, is naturally deferred as long as possible; and those familiar with the poor neighbourhoods are, or should be, aware that weeks are constantly allowed to pass by without the bin being emptied; and the refuse, it must be remembered, in such cases, is far more offensive than that of the wealthier house-owners. Thus the dustman, as is well known, should prefer the poorer neighbourhoods to the rich, it is only a sad proof of the thriftlessness of the dependent classes in our country. The well-to-do portions of the community, however, are in many points as careless, if not more culpable, than their less favoured brethren. An eminent physician has recently stated it as his experience that, in the course of many years' practice in the fashionable quarters of the metropolis, he has rarely found a house among the dwellings of the rich which in any way fulfilled the requirements of modern sanitation. He gives it as his opinion that, as a rule, he has found them as carefully prepared for the inroad of disease as are any of the filthy courts in denser parts of the town. The poor, being helpless with regard to means, can at least command the official supervision appointed by Government; but the rich, with sufficient knowledge to guide them, are absolutely indifferent where sanitation means the expenditure of money on things unseen. An obligatory inspection, therefore, of the houses of the wealthy is as necessary as it is in those of the poor. The long hidden horrors of the underground cellars of most of our houses require to be examined by the authorities. In the mean time, the abolition of the unventilated, refuse-saturated dust-bin should be enforced, if that simple "precaution" of the memorandum recently issued by the Local Government Board is not to remain a dead letter:—"House-refuse and other filth which has accumulated in neglected places should be removed, and future accumulations be prevented."

ARTIST WORKMANSHIP AND ROYAL PATRONAGE.

THERE are not a few matters artistic and even architectural in and about the great Fisheries show at South Kensington that it is hard to specialise without, perhaps, going somewhat too deeply into special details and forgetting the general and proper purposes of the display. But there is one item in it which may well have an interest of its own, and a most curious one it is, looking to the source from which it comes. At this exhibition it was thought to get together all that has relation to "Fishing" and to those who make it a vocation and to their homes and modes of living, and to the apparatus generally by which their hard vocation is carried on. Thus have been got together the most extensive and complete collection of models of ships and boats, and all other craft, ever yet seen in one place and together, and that from all parts of the world, both civilised and uncivilised and but partially civilised, and we may thus see in it the methods of work as they now are, under all and every kind of influence, and with every kind and sort of apparatus. Our intention here is not certainly to go into these, but to make note,—hardly likely to be done or even attempted elsewhere,—of one special item in it which is not a little suggestive and curious, and, we cannot but think, of much of even architectural and artistic interest. It ought most surely to interest the workman and art workman, whatever line of work he may follow.

We refer, then, here to the wide and unique display of ornament and ornamental details and mouldings, to be found in the many examples of ship and boat building from all parts of the world,—from north to south, from the land of the Esquimaux to that of the South Sea Islands, and the little-known but vast coasts of South America and the coast lines of India. We but lately ventured to call a moment's attention to the many beauties of form to be found in the Greek temples, and in some modern architectural works always before us, and we would, to make them the clearer and more emphatic, supplement this by taking note of some equally striking examples of "form," as shown in ornamental details and mouldings from the strange and as yet but little-known nationalities and countries we have indicated.

We may first note the quaint and thoroughly characteristic "ornamentation" from New Zealand, viz., the figure-head of a boat, thoughtfully brought over from New Zealand, as a specimen of art-work, from a visit to the South Seas. It is a most elaborate piece of careful carving by a New Zealand artist-workman of no little skill, and even powers of design, for, rude as it may be, it has in it much that must have been utterly missed by a workman of inferior skill, especially in those details of it which go to express life and living action. It may serve also to indicate, dimly, what the art of the New Zealander promised to be in the future. We can but regret that the boat,—a war-boat,—from which this "ornament-prow," or figure-head, was taken, has not with it the war-boat itself, of which it doubtless formed a most characteristic part. Is it not possible, we would here ask, to add to this "carved prow" the boat itself? We have first named this from the fact of its inherent interest, and from the fact of its exemplifying the present, if not the distant past, of native New Zealand fine art and power of wood-carving, and then from the additional fact that an equally noteworthy example of New Zealand skill has been brought to this country through the same thoughtful care for museum treasure-collecting. To it we owe the hut, or house, from the same place, now on the grounds close to the entrance to the South Kensington Museum. Both these examples of the art skill of the "savage" are of no small interest, educationally; for do they not go far to show how entirely independent one nationality is of others where art is concerned, if isolated and left to itself? In these so highly polished and advanced days we go back to and copy the forms and details of the rough and rude Norman and Romanesque work, as in the caps of columns and surface ornament, having nought inherently rough or rude of our own, and of to-day's growth. But that is not so in this island of the sun, in mid ocean, for being so isolated, the primitive inhabitants of it were and are compelled to work out ideas of their own, and to have an art language of their

own, more or less expressive of their individuality, artistically tested, and in these specimens of their handiwork we may see how this, in one special case, expresses itself, or at least did in its time so express itself.

But this art from New Zealand is not here alone, for there are a multitude of objects, both from house, and ship, and boat-building, from out-of-the-way places in the world, which are equally noteworthy as objects of primitive and original art, if not fine art, and it may be useful to point to a few of them as evidencing how the old methods of art action worked, and do yet still continue to do so in places where the antique isolation yet reigns supreme, and where the art-language, if the term be allowed, of the race, their own proper art, yet obtains without mixture or improvement. This is seen in almost every object exhibited, more especially in ship and boat building, of which work there is here so magnificent a display. It may seem at first sight somewhat out of place to put together, side by side, or to compare two such, at first view, diverse things as architecture and ship-building and their art-results, but it must be borne in mind that in bygone days all the world over, in each separately distinct nationality, the same style of art was made use of, and was visible in all and everything, in the buildings and in the furniture in them, and in all other objects about them, both public and private. It is difficult, if not impossible, to realise this even to the mind's eye in these days, that of a certain and definite style of art and mode of art-workmanship making itself visible everywhere, and in all things all round and about us, and so making up with nature the world about us.

It is a curious fact, but certainly noteworthy, that there are here examples of general forms and details, from divers nationalities, which will be found on careful looking at to be quite equal in art power and interest to any that have been elaborated in their public buildings, as in the great temples of the same people who have built up both of them, as may be seen and evidenced in those from Bernese sources, and in the India "extra exhibit" department. In the special example to which we are now referring,—without number, unfortunately,—there is seen a beauty of form in the lines of the stem and stern, and even in the rudder of it, which is most noteworthy, and which these Eastern artists have not excelled even in their temple building. Again, close to it and to the Chinese court or division, there are seen some ordinary fishing-boats, which have evidently been thus designed, and afterwards worked out, or rather both these simultaneously. There are others from the Straits Settlements, together with a fisherman's dwelling-house, which go far to evidence how original the work is, and how purity of outline and fineness of working it out are alike common to all peoples, however isolated, always provided that such work is their own, and that those who do the actual work are in themselves artists as well as workmen. It would be difficult to find in the whole of this most interesting fishery show anything more to the special purpose of the artist and workman when at work on any art object, and in the twofold capacity of artist and workman.

We have ventured thus hurriedly to call a moment's attention to these little-noticed matters, away, as they are doubtless, from much practical realisation at present, in the hope that all this great collection of art-objects will not be again dispersed at the close of the Fishery Show; but that, at least, a sufficiently instructive portion of it may be collected together, and retained so as to form a new museum of art objects not now anywhere, on any systematic plan, or with any settled idea, to be found. Of the utility of such a collection in an educational point of view, no one can doubt, and that it would, if permanent, serve to fill up a void in our present means of making art, and the mode of its production, more thoroughly and completely, and the results of it more interesting to the public, and more sought after. And not only do we feel certain of this, but that a further necessary consequent of it would, and must be, that very much that is now an eyesore to many, and an injury and hindrance to the public in their search after a better order of things, would in no long time disappear.

Oldham Fine Art and Industrial Exhibition.—On Wednesday, Sir John Lubbock opened the Oldham Fine Art and Industrial Exhibition.

CAMPS, CASTLES, FORTIFICATIONS, AND EARTHWORKS OF WARWICKSHIRE.

BRANDON CASTLE.

The castle of Brandon, situate in the meadows adjoining Brandon Station on the London and North-Western Railway, is five miles and a half from Coventry, and six miles from Rugby by the road, and formed in the unsettled Norman period of our country's history an important military post, guarding not only the passage of the river Avon at this point, but from its position adjacent to the Fosse-way which traversed the kingdom from the German Ocean to the English Channel, with the junction of the Watling-street from London to the Irish Sea a few miles distant, made it a place important to hold. These royal roads, which had been kept in repair from a very early period at the cost of the Crown, formed, in the then unsettled state of the country, the principal, if not the only, safe means of communication between the towns and villages of the Midlands, and thus John Rouse, the earliest Warwickshire historian, writing of another main road running through Dunsmore-heath says, "via periculosa est et alia et communis via inter civitatem Londoniarum et civitatem Coventrensem."

The earthworks of the castle do not appear to have been earlier than the Conquest, and nothing is known of it beyond that time. The first notice we have of the manor is in the Domesday-book where the Norman survey tells how in 1086 "Wlasi holds of Turchil in Brandon half a hide. The arable employs 4 ploughs. There are 10 villas, with 1 bondman, and they have 3 ploughs. A mill pays 20d., and there are 16 acres of meadow. Woods 4 furlongs long, and 2 broad. It was worth (in King Edward the Confessor's time) 20s., now 25s. Turchil held it freely." Brandons, as it is spelt, was, therefore, part of the great possessions of Turchil, or Thurkill, the Saxon vice-count, earl and sheriff of Warwick, who held half a hide of land, about 80 or 100 acres of our measure "freely"; that is, he paid no fee or homage to the Crown for his possessions, and could dispose of them at will. The mill dues are small in comparison with those of other local mills, and were derived from the amount of corn crushed into flour by the lord's tenants, and the inhabitants of the district. Brandon Mill is now about a mile away in the meadows below the castle, but there is a mill on the river between it and the castle in the parish of Wolston, which may have been connected with the castle itself. Turchil did not oppose William at Hastings, and adhering to the Norman king, retained his honours and possessions for a considerable period. William, from motives of policy, did not at once dispossess so powerful a noble, employing him to enlarge and rebuild Warwick Castle and town, but his purpose being at length accomplished, he partially deprived the earl of his rights, dividing his manors between the Norman nobility. It is, however, probable that no castle then existed here, but was built on the site of the dwelling of Wlasi, the Saxon tenant, by Geoffrey de Clinton, treasurer and chamberlain to King Henry I., and to whom this manor was given by the king shortly after Turchil's disgrace. It may be mentioned that only forty-nine castles are shown in the Domesday Book, of which eight were then being built by the king, and ten by the barons.

Of Geoffrey de Clinton it is related that, originally a man of humble parentage, he was raised by the king to a position of great power and trust, who at that time created several new peers, hoping thereby to link them with the older and tried lords of Leicester, Warwick, and others to strengthen his hands against the partisans and barons supporting the cause of his brother Robert against him. They were encouraged to build a chain of fortresses throughout the Midland Counties to overawe their opponents, nor did the king alone rely upon his nobles; for, seeking the aid of the Church, he appointed De Clinton's nephew Roger, bishop of Coventry, receiving thereby the sum of 3,000 silver marks for the gift. Geoffrey, enjoying the confidence of the king, was entrusted with the building of the keep and early fortifications at Kenilworth, and likewise empowered to build a castle and keep at Brandon about the year 1129.

From Geoffrey this castle came to Norman de Verdon in right of his wife Lesceline, daughter of Geoffrey de Clinton. But her kinsman, Geoffrey, the next male heir, endeavoured to

regain it, and having great interest at that time by his marriage with Agnes, daughter of Roger de Newburgh, Earl of Warwick (an adherent of the Empress Maud against King Stephen), with whom he had in frank marriage ten knights' fees of those seventeen which he held of that Earl de *vetere feoimento*, or which his father was enfeoffed with in the time of King Henry I., such having been settled on him conditionally that he should keep Brandon Castle, and perform military service there. He obtained possession, but being unable to fulfil the conditions in the wars which followed, it again reverted to the Verdon within the next seven years. Norman de Verdon, at his death, left the castle to Bertram, his son and heir, during whose minority William FitzRichard garrisoned it about the year 1200.

To Bertram succeeded Nicholas his son, to whom, in 1218, Henry III. granted a charter of free warren to him and his heirs in all his demesne lands in Brandon. He constructed works and dams, by which he raised the water in the pools and ditches of the castle to such a height as to drown the lands of the monks of Coombe near thereto, and the abbot of that monastery brought an action against him for the same. His grandson, John de Verdon, held the castle during the rebellion of the barons under Sir Simon de Montfort, they being in the possession of the castle of Kenilworth seven miles away, and hearing that De Verdon was raising troops in Worcestershire under the king's commission to oppose them, issued from thence, assaulted, took, and destroyed the castle, pulling down all the stonework, and other buildings thereon. A mound, situate on rising ground on the Wolston side of the river, but without bowshot of the castle, was probably constructed by the besiegers, as it stands on higher ground than the earthwork of the keep, and formed an excellent post to observe what was being done within the castle enclosures. To John succeeded Theobald, who in 1279 extended his right of free warren beyond the confines of his barony, and engrossed the fishery of the river on his side; he also rebuilt the castle, and added a park thereto a mile in length. His tenants here consisted of three kinds, viz., servants, cottagers, and freeholders, of whom we are told that "of the former there were twenty-five who held twelve yards and a half of land in socage,—that is to say, besides payment of a certain rent, each of them to find one workman, at their lord's disposal, to labour from Monday next, after the Feast of St. Peter and St. Paul, unto the Feast of St. Peter *ad vincula* (which is the 1st of August), in every week, two days, and after that time to Michaelmas, to find one man working two days one week and three days another, by turn, at such employment as the lord may appoint, and the cottagers to find each of them every week, from the 1st of August till Michaelmas, one labourer to work upon Monday only, as their lord should appoint. But the freeholders, which were only three, held by a certain rent and homage, and to do service to his court every three weeks. It was likewise then found that he had free warren here of the grant of King Henry III., and how he had encroached upon the Prior of Coventry and Abbot of Coombe, and also that he had a court-leet gallows, with assize of bread and beer, for a saddle-horse yearly payable to the king, unto which leet his father, being a powerful man, had drawn the hamlets of Thurlaston and Ashoe without any justiciable authority; but as to the rest of these privileges, being questioned by what authority he claimed them, he pleaded prescription, which was allowed."

His son, Theobald, succeeded to the estate at his death, whose four daughters, being his heirs, Elizabeth married Bartholomew de Burghersh, and had Brandon Castle and estate, with others assigned her in partition with her sisters. From her heir, Sir Bartholomew, it passed to Sir Walter Pavely, knight, and other feepees, who conveyed it in 1370 to Sir John Delves, knight, when it came to Sir John Arundel, who, dying in 1380, left it to Sir Richard, his son; Sir William St. George on marrying Eleanor, his daughter, received it, but she dying without issue, the inheritance devolved upon her sister Joan's heir, Sir Robert Willoughby of Breshy, knight. Yet Sir William St. George had possession whilst living, in 1463, as a tenant by the courtesy of England. After which the reversion came to Sir Christopher Willoughby, brother of Sir Robert. From this Christopher, by Thomas, his third

son, one of the justices of the Common Pleas in the reign of Henry VIII., descended Sir Percival Willoughby, knight, who sold it to Sir Henry Yelverton, knight, Attorney General to King James I., whose heirs possessed it in 1640. It is now in the possession of James Beuch, esq., of Brandon Hall.

The castle was allowed to fall into disuse, and, in the time of the Civil Wars, is said by tradition to have been dismantled. The remains show that its fortifications covered more than twenty acres, and prove it to have been a place of great strength. The Norman castle or keep guarded the passage of the river, where probably a wooden bridge existed. The possessors took great pains to protect themselves in case of attack, and, taking advantage of the river running to the south and south-east, they constructed ditches, moats, wards, baileys, and outworks upon the flat, low-lying meadow-land adjacent to the Avon, using the water therefrom to completely isolate the site in case of an enemy's approach, and gradually, as occasion required, developing the system of defence.

The castle keep stood on a mound of earth moated round, and was independent of the inner wards; but the ditch to the north between them is now filled up with debris and earth from the fallen keep. The base of the mound occupied a square of 160 ft. by 120 ft.; the ditches were about 40 ft. broad; whilst the mound was 35 ft. high, above the bottom of the moat, having a platform on top and around the keep, varying from 10 ft. to 30 ft., which was probably surrounded by a low wall. On this mound, occupying the north-east corner, stood the square keep, the walls of which were from 6 ft. to 10 ft. thick, and the space inside the keep between walls was about 20 ft. and 26 ft. respectively. At the south-west and south-east angles were circular towers of 10 ft. interior diameter, the former of which contained the stairs leading to an apartment underneath the keep, probably the dungeon; and at the north-west and north-east angles there appear to have been two smaller angle towers, but the remains are very imperfect. The entrance was in the north-west wall, between these smaller projecting angle towers, whence probably draw-bridges connected it with the castle earthwork and bailey. The rubble masonry consists of red and white sand and lime stones held together with a mortar of lime, sand, and gravel. The remains have long since lost their outer facing, and are much battered.

As the keep was the residence of the lord, so the castle court or earthwork was that of his retainers, whose dwellings and offices seem to have been to the south and south-east of it, where excavation has shown the existence of stone foundations and an underground passage. The ground here is level, but the earthworks on the north-west bank are stronger and higher than the other side, probably for the reason that the ground to the north rises sharply and necessitated it for defence. On these banks surrounding this court were strong stone walls, the foundations of which are said to exist, having towers at the angles, intervals, and terminations, which wall, probably, reached across the moats to the walls of the castle keep. The level of the top of this earthwork is about 8 ft. below that of the keep; it was surrounded by a fosse from 30 ft. to 40 ft. wide, and 10 ft. deep. The bailey to the north-east of the keep is still lower, and not so strong an earthwork as the other; it was surrounded by banks and low walls, and probably contained the horses and draught cattle in times of siege. The large base-court, or acre on the west, occupying half of the site, was for the use and encampment of a large body of men. The embankments on the river side here appear to have been strengthened, and are larger than on the northern face; there is also an entrenched bank running along the whole face of the river, on which, probably, stood a wooden fence. The north-west angle of the embankment of this court is imperfect, but the banks were probably surmounted by a wood or stone fence on top. Near the castle, on the river side, appears a circular water-drinking place for cattle, and there are some foundations of buildings at the spot indicated on the plans.

In the fore-court the embankments are greatest on the north-east side, whilst the angles show large quantities of earth, where probably towers existed. The entrance to the castle appears to have been on this side, but all traces of it are lost. The turnpike road ran originally along this outer ditch before the new

way was made under the railway arches. The ground in this court is disturbed, but there are slight indications of a habitation visible. At a few hundred yards higher up the river is a large moated area containing about an acre, from which tradition states an underground passage led to the castle. This area may have been used by the De Verdons for some domestic purpose, although in Wolston parish.

CALEDON CASTLE.

Situate in the main road from Coventry to Hinckley, at a distance of three miles from the centre of the city, yet within the parish of St. Michael, and the Parliamentary boundary, stands a picturesque ivy-clad ruin and moated area, which are all that now remain of the ancient Castle of Caludon. Its name is spelt differently in old documents, as Calwedon, Caledon, Caledon, Caludon, and Calonghdon (as written by Camden). It is said to be derived from two Saxonised-British words, *calod*, signifying moss, and *don*, a small hill, or ascending ground,—which theory is well borne out by the ground itself. The chronicler, Richard of Cirencester, however, speaking of the *Coritani*, the British inhabitants of Leicester, Lincoln, and Nottingham, states that all the woods in Britain were called,—presumably by the Romanised-British people,—*Caledonia*, meaning a well-wooded country, which may have been the source whence the name was derived.

This castle is said by local tradition to have been the home of England's patron saint, St. George, and minstrels have left us their manuscript verses, which add some strength to the legend. Rhyming on the birth of the saint, an author tells how:—

"In Coesetre some time did dwell
A knight of worthy fame,
High Steward of this noble realm,
Lord Albert was his name."

Who this Lord Albert, the High Steward of England, may have been, or of the date at which he lived, we are not informed. But, as will hereafter appear, Stephen de Segrave, an owner of the castle, was for a time Chief Justiciary of England; and another, Thomas Mowbray, was Lord Marshal. It may also be remarked that, by the charter of King Henry VI. granted to Coventry, the mayor for the time being is to exercise the office of Steward to the king when within the city, hamlets, parcels, and precincts of Coventry. The office of High Steward was, says Lord Coke, annexed at a very early date to the Barony of Hinckley, in the county of Leicester, which town is only ten miles away. In the poem above quoted, the wife of the Lord High Steward has a dreadful dream respecting the birth of her son, and forthwith my Lord, as a dutiful husband, probably at his wife's desire, seeks the assistance and advice of a "weir'd lady of the woods," in order to ascertain its purport, whom, finding in "a dreary dell with dismal yews o'erhung," he consults, and learns that his wife will die, but the youth will live, and,—

"Shall prove most dreadful to his foes,
And terrible in fight."

Adding that,—

"His name, advanced in future times,
On banners shall be borne,
But lo! thy lady's life must pass
Before he can be born."

Sad and cast-down the High Steward returns to his castle, at which he arrives to find his retainers making lamentations loud and bitter, the gate and walls are draped in black, and the lady, his wife, is dead. Great as is his trouble, greater, however, is in store, for strange to relate "the weir'd lady" herself follows him to the castle, and in the dead of night steals the child, whom she bears far away, and as the lad, the future St. George of romance, grew to manhood,

"Train'd him up in feats of arms,
And every martial play."

So great a grief fell upon the lord that, forsaking his castle and estates, he for many years occupied himself with foreign travels, until death put an end to the great man's troubles. Tradition points to England's patron saint as the deliverer of distressed damsels and captive knights; in fact, a knight-errant fighting against giants and infidels in the East, for right against might, a terror to evil-doers; but at last having chosen a wife, he is seized with anxious desires to see his native land once more: so putting by his armour, he leaves the

wars behind, and jogs home with his lady. Thus, as another minstrel has it,—

"He set her on a palfrey steed,
And towards England came with speed,
Where being in short space arrived
Unto his native dwelling-place,
Wherein with his dear love he lived;
And fortune did their nuptials grace.
They many years of joy did see,
And lived their lives at Couesstree,"

where, during a lengthy stay, both the knight and the lady are credited by local legend with many acts of kindness, and when at length the saintly knight died of wounds received in defending the city from the attack of an enemy whom he vanquished, he was honourably buried on St. George's Day, beloved and mourned by the townspeople and country generally. So much for tradition; now for historic reality.

The old township of Caludon was originally a member of Coventry, and shortly after the Conquest, with much of the land hereshouts, became the property of the Barls of Chester, one of whom,—Ranulph Blundevile,—gave it about the year 1220 to Stephen de Segrave, who had attended him to the Holy Land, to hold by the service of "a sour sparhawk," to be given to the earl or his heirs yearly. Segrave appears to have soon made headway and become an important personage in the political matters of his time, for in 1229 and for some years after, he was sheriff of the county, and as such accounted for the mending of the banks, pool, and castle of Kenilworth, and was further advanced to be governor of the same about the year 1242. Subsequently he or an immediate descendant of the same name was raised by the influence of the unscrupulous Peter de Roches, Bishop of Winchester, to the high office of Chief Justiciary of England about the year 1235, but Bishop Peter's conduct and that of his ally Segrave in the nation's affairs grew so intolerable that clergy and laity joined together under the leadership of Edmund, Archbishop of Canterbury, and compelled the king to dismiss them. This Segrave married Ida, daughter of William de Hastings, owner of Fillongley Castle, by whom he became possessed of much land in the county of Norfolk, and was soon after created a baron, to whom succeeded Gilbert de Segrave his son, who obtained the inheritance of the Chaucombes, whose arms he bore, viz., on a shield sable a lion rampant, argent, crowned, by marriage of Anabel, daughter of Robert de Chaucombe, who gave her as part of her marriage settlement the lordship of Apsley, in Warwickshire, containing an ancient manor-house and park, with demesne lands and free warren appertaining. This Gilbert was sheriff of several of the midland counties, and after his death his wife married again to Sir Roger de Somery, whom she also survived, and after a short period the Chaucombe estates again reverted to the Segraves. He was succeeded by his son Nicholas, who was a strong partisan on the side of the Barons under Simon de Montfort, and was taken prisoner at the battle of Evesham on the 4th of August, 1265. As appears from an inscription taken before Sir William Bagot and Robert Grendon, at Leicester, by order of King Henry III., in the same year, he was possessed of much property at Witherley, in Leicestershire, which appears to have been given to a certain Sir Henry ("a foreigner"), whose surname is not given in the manuscript. Segrave, however, made his peace with the king, and by a pecuniary fine received back the greater portion of the forfeited lands, including those at Caludon. The fine amounted to a payment of seven years' value under a clause in the decree, formulated at Coventry, called "The Dictum of Kenilworth," and to do this he heavily mortgaged his estates. In 1279 he is certified to hold two carcats of land here, also a park containing 20 acres, a pool called "Franchehaye," and two water-mills. He had one freeholder (free by reason of the military service rendered) on this estate, named John Le Haye, who held three acres of land at 1s. per acre,—the said John also doing homage and suit at court for the same. A carcat of land consisted of about 100 acres of land, more or less, or as much ground as could be worked with a plough during the year. This measure, however, appears to relate to assessment and not to actual measurement; for, whilst the object was to have a carcat of equal value throughout the whole of the district, the nature of the soil, the amount of woods and marshes, were taken into account and depreciation deducted accordingly, whilst the system of husbandry adopted in the locality

was also considered and allowed for in the estimate. In 1299 he obtained a charter of free warren on the whole of his estate, and died in the year 1301. He held land at Brailles, in Warwickshire, from William Beauchamp, Earl of Warwick, paying for the same one-sixth of a knight's fee. Free warren, Blackstone tells us, "was a franchise granted by our early kings for the custody of beasts and birds of warren,—viz., hares, rabbits, partridges, pheasants, heath game, &c."

John de Segrave obtained a licence from King Edward I. to build for himself a house at Caludon, and for defence to surround it with a moat and embattled walls. This fortified mansion, probably built on the site of the older dwelling of John le Haye, was greatly added to and enlarged afterwards by John de Segrave himself and his descendants, who, for the most part, resided here until the failure of the male issue. His wife's name was Christian, and their son, Stephen de Segrave, succeeded, to whose son, John de Segrave, in 1354, the then king (Edward III.) granted another licence to further extend the buildings, to embattle walls and gates, to make a park and repair the moat. He likewise confirmed the privilege of free warren, and granted further licence to rebuild a chapel on the estate to be served with a priest for the better celebration of service from St. Mary's Cathedral at Coventry, with whom arrangements appear to have been made for the due performance during the next few years only.

In 1350 this John de Segrave received a summons, with other Warwickshire knights, to be in readiness, sufficiently equipped with horse and arms, to proceed with and attend the king in his French wars. He married first Alice (surname unknown), having no issue, and afterwards Margaret Duchess of Norfolk, daughter of Thomas Brotherton, whose daughter Elizabeth married John de Mowbray, and brought into the family of the Mowbrays the dignity of Marshal of England, and title of Duke of Norfolk. He is said to have been buried at Dorchester Church, Oxfordshire, and a brass is there shown as his; but the testimony is doubtful. From this castle, in 1397, their son, Thomas Mowbray, the then duke, set out to encounter Henry Duke of Hereford in the lists at Gosford Green, Coventry, when the combat was stayed by the king, who banished Hereford for a period, and Norfolk for life. The mansion continued in the possession of the Mowbrays but for three descents, when it passed by marriage to John Howard, Earl of Norfolk, but upon a partition being made between the Howards and Berkleys, through his wife's sister Isabel, who married Sir James Berkley, it became the property of Maurice Berkley, their heir, about the year 1495, who frequently lived here, as did his descendants afterwards, but in the year 1632 George Lord Berkley sold it to Thomas Morgan, of Weston-under-Wetherley.

Local tradition says the castle was besieged in the civil war, and reduced by an opposing force, who are credited with having pitched their camp at a spot called the Camp Field, near Henley Mill, whence they issued to batter down the wall and reduce it to a ruinous condition. The property soon afterwards came into the hands of the Cliffords, one of whom, about the year 1800, finding the buildings much dilapidated, erected on the site a comfortable farm-house and offices. Its present possessor is the Rev. E. H. Garrard, and it is occupied by Mr. J. A. Beaumont, B.A., as a college for young gentlemen.

What little remains of the original buildings consists of three bays of the north wall of the banquetting-hall, and cellars below it. The masonry is of local white sandstone, with red sandstone dressings and strings, which give a pleasing appearance to the structure. A curiously-contrived chimney exists, with fire-place in the cellar. The walls are 7 ft. thick, and were probably built about the year 1350. By the care of the owner the ruin has during this month been entirely stripped of ivy and rubbish, the top covered with cement, and the whole pointed and made sound. The moat is 5 chains long from west to east, and 3½ chains from north to south, whilst the area of the castle within the walls was 1 acre. Stones dug out show that this outer wall on the inner bank of the moat completely surrounded the buildings. Tradition asserts that the gate and drawbridge were on the eastern side. There are, however, several other moats adjoining the castle, the uses of which are not clearly defined, but were probably constructed for flooding the

adjacent pool, and letting off the water, as occasion required. The field to the south still retains the name of "the Park," and on the brow of the hill, there is, at 7 chains distance from the castle, a square-shaped moated area of about 60 yards in length and breadth, to which there are no defensive works, except on the south side, in the shape of an inner raised rampart, from which an extensive view is obtained looking towards Binley. Moated areas exist of a somewhat similar character adjoining Brandon, Astley, Fillongley, and other castles hereabouts. Warwick Castle had its "vineyard." Coventry had Chylesmore, in the castle park, where the children of several of our early kings were reared and brought up; whilst at Kenilworth, half a mile from the castle was a "pleasance," which, to quote Viollet-le-Duc, "was a garden planted with fruit-trees and groves, which served for a place of promenade and for divers outdoor pastimes." That at Caldon is called "the bowling-green," and by a curious coincidence its use is illustrated in the old rhyme of Warwickshire children—

"Rob-a-dub, dub,
Three men in a tub,
The brewer, the baker,
The candlestick maker,
They went into a lady's garden,
And there they found a farthing,
An apple for the king,
And a pear for the queen,
And a good toss over the bowling-green."

It seems clear, therefore, that in times of peace enclosures were for purposes of recreation, amusement, and fruit-growing, and were, perhaps used for the defence of cattle and minor servants of the estates in times of war.

T. W. WHITLEY.

HYDE PARK MANSIONS.

These buildings have been erected on the Bond Cabbell Estate, St. Marylebone, and are arranged as residential flats in continuation of the Oxford and Cambridge Mansions upon the same property. They are faced with red Farnham bricks, with Portland stone dressings, and are of fireproof construction, being fitted with all modern requirements. The works have been carried out by Messrs. Wheeler & Warren, from the designs and under the superintendence of Messrs. C. Eales & Son, architects, Welbeck-street.

CONGREGATIONAL CHURCH AND SCHOOLS, TURNHAM GREEN, MIDDLESEX.

The land occupied by the church and schools is, as the accompanying plan shows, of peculiar shape. It is a parallelogram of about 120 ft. by 80 ft., connected with the road by a narrower strip about 38 ft. wide. As this latter width was insufficient to allow of efficient buildings being arranged on it, both church and schools occupy the larger site at the back. It affords them the advantage of most perfect isolation from street traffic and otherwise.

The form of the site has dictated the design, both as regards plan and architectural treatment. The church cannot be seen from a distance, being screened by the houses in High-road. Accordingly, some architectural feature was thought desirable which should be visible from the road, and indicate the existence in the rear of an important building. This purpose is served by the tower and spire, which are placed in the centre of the approach. The latter, planted with trees on either side, will form an avenue and lead in a very pleasing way to the entrance of the church. The entrance gateway supplies the feature needed in the street.

Upon the ground-floor of the church there is accommodation for 458 persons, and provision has been made for possible future extension, which will take the shape of a gallery at the west end of the church.

The plan sufficiently shows the arrangement of church and vestries, and it will be seen that every member of the congregation has a clear and uninterrupted view of the pulpit.

The schools are planned for 436 scholars, and it is proposed to erect them as soon as funds permit. The class-rooms can be thrown into the hall, when occasion requires, by opening the folding doors.

The infants' school is separated from the main school, and allows of the more noisy exercises of the infant scholars without disturbing the rest of the schools.

The materials used for the portion of the church already built are Kentish rag, with Bath stone dressings, and the roof is covered with tiles. The new schools will be built of the same materials, and the tower and spire of Box-ground stone.

The contract for the church alone, exclusive of tower and spire, amounts to 3,136*l*.

The architect is Mr. T. Lewis Banks, of 23, Finsbury-circus, and 22, Lowther-street, Whitehaven.

FINCHLEY BOARD SCHOOLS.

These drawings form part of a set submitted in competition for the above schools, by Mr. Arthur J. Gale. The design was placed next in order of merit to the premiated ones.* The site was a somewhat limited one, and the whole of the school and class-rooms were required to be on the ground-floor. The class-rooms, moreover, were all required to have direct access to the central hall, which, consequently, has all its faces occupied by these rooms. These conditions arbitrarily governed the whole of the planning; and the results obtained in this competition from many competitors carry a step further the designing of school buildings on a principle never yet carried out in its entirety by the London School Board, nor, it is believed, in other countries. This system is the arrangement of a school so as to enable the classes, always sitting at their desks in the class-rooms, to be taught as separate classes or addressed by a speaker from the platform of the central hall. This system, if carried out rigidly upon the basis of the conditions of competition, involves a large expenditure per child. A modification of this is, however, here adopted, by which the classes all look towards the platform of the central hall, and, if desired, the class-room divisions can be arranged with double shutters to slide upwards with a curtain between, so as when opened to give a good view of the platform. The partitions between class-rooms and central hall are arranged to fold and slide back.

The entrances, with cap-rooms, are easy of access, arranged to divide the sexes (two entrances for each), and so planned that the boys and girls bringing infants can leave them at the infant school on the way in. The room for dirty children is conveniently placed, and has suitable conveniences for washing. There are four portions of the building with a second story, or first floor. The head-master's room is over the laboratory and overlooks the playground, as also do the male and female teachers' rooms, which are separate and easily accessible from the entrances. The cooking school is easily accessible and in an upper story by itself. The heating proposed was by steam radiators on an American plan, introduced into England by Messrs. Laydon & Co. in conjunction with the patentee. It is now at work in several London Board Schools. The ventilation was by natural inlets and outlet turret ventilators by steam coils.

The infant-school planning explains itself. All is on the ground-floor, and the school is in duplicate, one-half on each side of a centre-line.

The lighting is carefully arranged as to aspect throughout. The materials proposed for elevation were as follow:—Red brick, with stone dressings, and slate roofs; everything being arranged to reduce cost as far as possible in order to spend as much upon efficient planning and construction.

VALUE OF PROPERTY, LUDGATE-HILL.

THE block of property at the corner of Ludgate-hill and the Old Bailey, which is held on lease from the City Corporation for an unexpired term of 68 years, at a ground-rent of 520*l*. per annum, has just been sold to the tenant, Mr. Thomas Peacock, of the firm of Messrs. Hope Brothers, tailors, drapers, and outfitters, for the sum of 11,680*l*. The premises, which have a frontage to each of the two thoroughfares of about 30 ft. in length, occupy a ground area of something like 1,000 ft., and were rebuilt only a few years ago. Last week Messrs. Horne, Eversfield, & Co. sold at the Auction Mart the freehold properties, Nos. 66, 68, and 70, Worship-street, and 13, 14, 15, and 16, Queen-street, Finsbury, for 5,020*l*. The property is let at a rental of 250*l*. a year.

* Submitted by Messrs. Dunk & Gedon, architects, and illustrated in the last volume of the *Builder*, pp. 416 (view) and 421 (ground-plan).

J. SILBERNAGL'S STATUE OF RAFFAELLE.

VISITORS to the Vienna International Exhibition of Art in the summer of 1882 must have noticed in the façade of the Künstlerhaus, which contained the exhibition, in the series of marble statues of Michelangelo, Dürer, and Rubens, an empty niche, the vault of which bore in black letters the inscription "Raffaël." Inquirers were told that the sculptor to whom the execution of the statue had been confided, Silbernagl, was late with his work. Although the gypsum model,—praised by all but himself,—had been completed for more than a year, the artist, it is said, could not persuade himself that his task was finished. It was only after the close of the exhibition that the indefatigable artist laid aside spatula and file. His work, at which he had been labouring for two years and a half with all his power and enthusiasm, was at last completed. The representatives of art and of the press assembled before the gypsum model, entirely remodelled and brought to the highest perfection, to pronounce upon its merits, and to reward the sculptor by the unanimous appreciation which his work elicited.

Its execution in marble is approaching completion. The empty niche in the Künstlerhaus will be filled by the statue, 8 ft. 6 in. high, and Vienna will be richer by a work of art which will be one of its best art-treasures. Silbernagl has not, like Hahnel in his well-known statue in the Dresden Museum, represented the greatest genius of the fine arts as a youth. Without depriving face and figure of the essential attributes of youthful charm and elasticity,—on the contrary, emphasising them to the fullest extent,—he has given us not the disciple, but the master, Raffaele. The latter is shown in an inspired attitude, in the action of fixing, with crayon raised, received impressions, and of imparting palpable life to his ideas. His noble features are those which he himself has handed down to posterity; his figure, full of beautiful rhythm, is as little hidden by the rich folds of his cloak as the easily, yet proudly carried head of curls by the brette; he is entirely as he lives in our imagination.

J. Silbernagl is a hard-working artist, full of earnest and high principles of art. His works are already numerous, and many of them have made his name known beyond the frontiers of Austria. A peculiarly unrestrained, powerful treatment, tending towards the picturesque, strikes the beholder in all his creations. He keeps aloof of academic evenness and mannerism; notwithstanding idealism of conception, a healthy realism pervades his works, which gives full expression to characteristic traits and individuality. He possesses an independent spirit, creating out of his own consciousness, and lives and moves in his mythological and allegorical representations no less than in his historical figures and modern portraits, goes his own way unconcerned, and knows how to attain the desired effect fully by a powerful cast. Silbernagl's career might have been much more brilliant if his unbending Tyrolese nature had permitted him to acquire friends and patrons, if he had not from the first proudly disdained to rise by extraneous favour, instead of exclusively by his own genius. Thus he has had to work and fight hard from the beginning.

J. Silbernagl was born at Bozen, Southern Tyrol, in 1836, and, from his fourteenth year, was educated in the Trentine. In 1856 he went to the Vienna Academy, in order to prepare himself for an industrial art career, as the expensive study of sculpture, for which he showed early decided gifts, appeared unattainable to him, although his parents were not without means. But inborn genius soon asserted its way, and he entered the much-frequented atelier of the sculptor Melnicki. Years of hard living followed, until, in 1861, a recommendation secured to him his first independent order. The money earned was spent in a much-desired visit to Florence. But when he was so fortunate as to secure in the competition for the Vienna Arsenal Museum a prize, and with it an order for the execution of marble statues of the Field-Marshal Daun and Traun, he was able, with the means thus gained, and a stipend granted by the State, to again visit Italy, where he stayed three years. Works for the Vienna International Exhibition, as well as his participation in the great project for a Maria Theresia monument, occupied his





RAFFAELLE SANZIO.—HERR VON J. SILBERNAGL, SCULPTOR.

energies for the next few years. Other works proceeding from Silbernagl's studio are the monument to Landeshauptmann Gräbner at Bruneck, the carriage which symbolised the mining industry in the pageant on the occasion of the silver wedding of the Austrian emperor and empress, statues for the Vienna Hofmuseum, the University, the Rathhaus, and the Burgtheater, besides a number of portrait busts. At Leipzig, where several of the latter were exhibited, his works caused, as elsewhere, quite a sensation, and his bronze bust of Franz Liszt was acquired by a Leipzig art-lover. The project for a monument to Walther von der Vogelweide, designed in connexion with a fountain for his native town, Bozen, gained him new

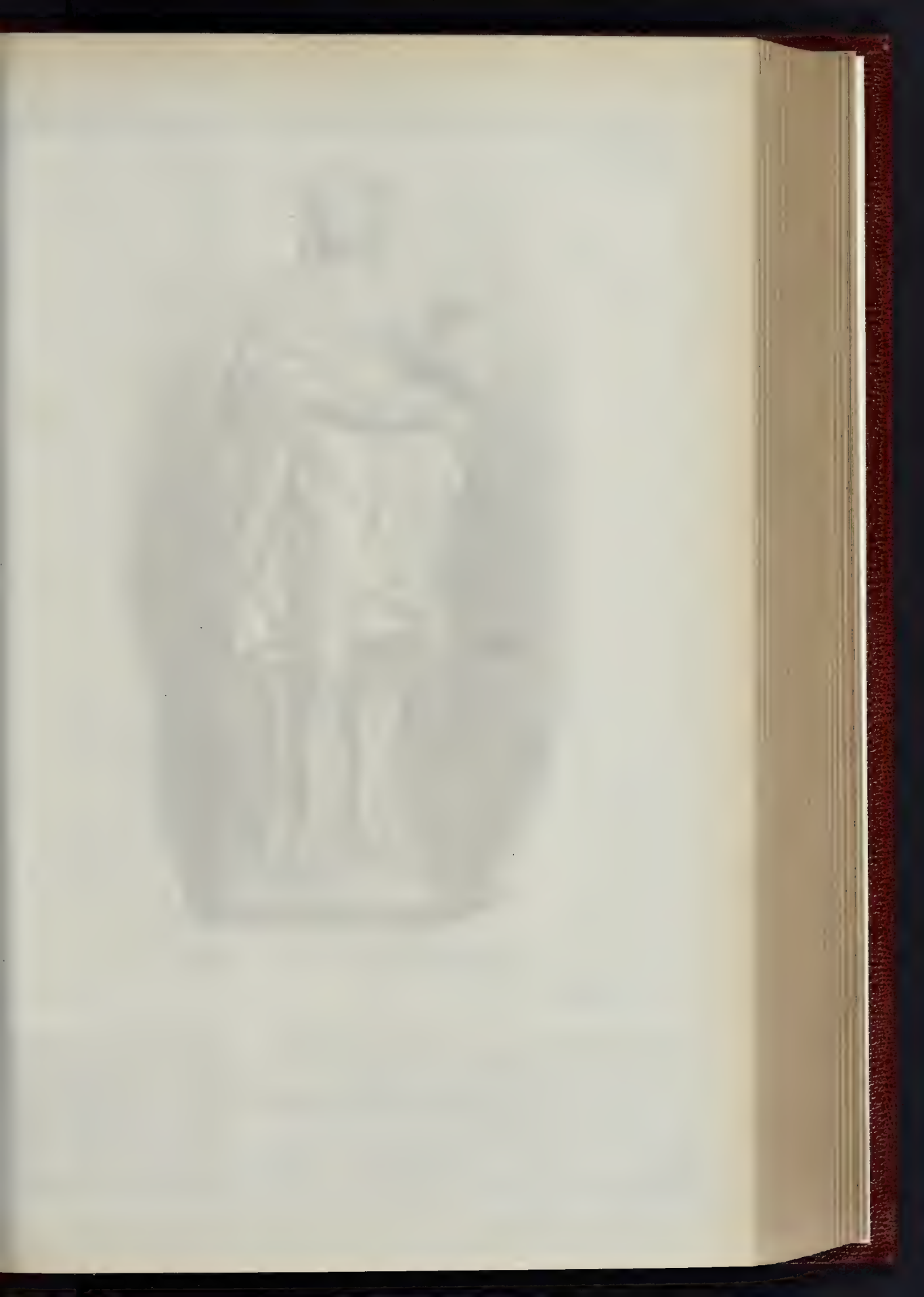
friends both in his home and at Vienna. Unfortunately, owing to disastrous floods which devastated Southern Tyrol last autumn, the execution of the monument had to be postponed, the funds intended for it being required to alleviate the misery caused by the floods. But there is very little doubt that, with better times coming, means will be found for carrying it out.

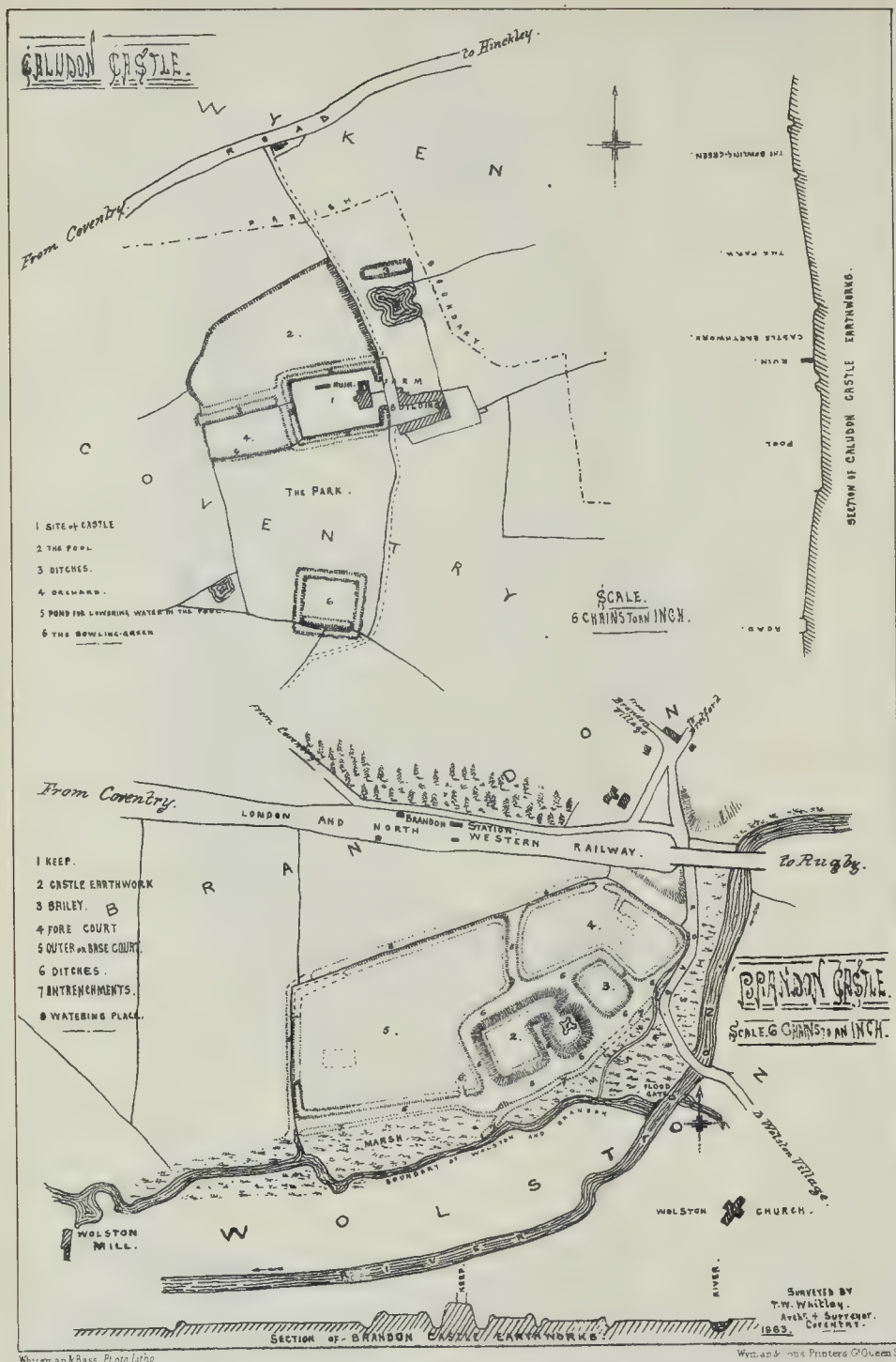
STABLE OFFICES, GRAFTON, CHESHIRE.

This drawing illustrates a block of new stable offices recently erected at Grafton, Cheshire. The structure is built of bricks with stone dressings, faced with Rusbon bricks and covered

with Staffordshire plain tiling, and the ventilator is executed in oak and lead. Accommodation is provided, in loose boxes and stalls, for hunters, hacks, and carriage horses, with work-horse stable, cow-house, and dung-court in rear. Groom and coachman's residences, with coach-houses, saddle and harness rooms, provender lofts, and other conveniences are also provided. The buildings are wholly fireproof, and the stalls and boxes are fitted up with pitch-pine and iron fittings of the most approved description.

The works are being carried out by Messrs. Laing & Son, of London, under the direction of Mr. John Birch, architect, of the Adelphi, London.

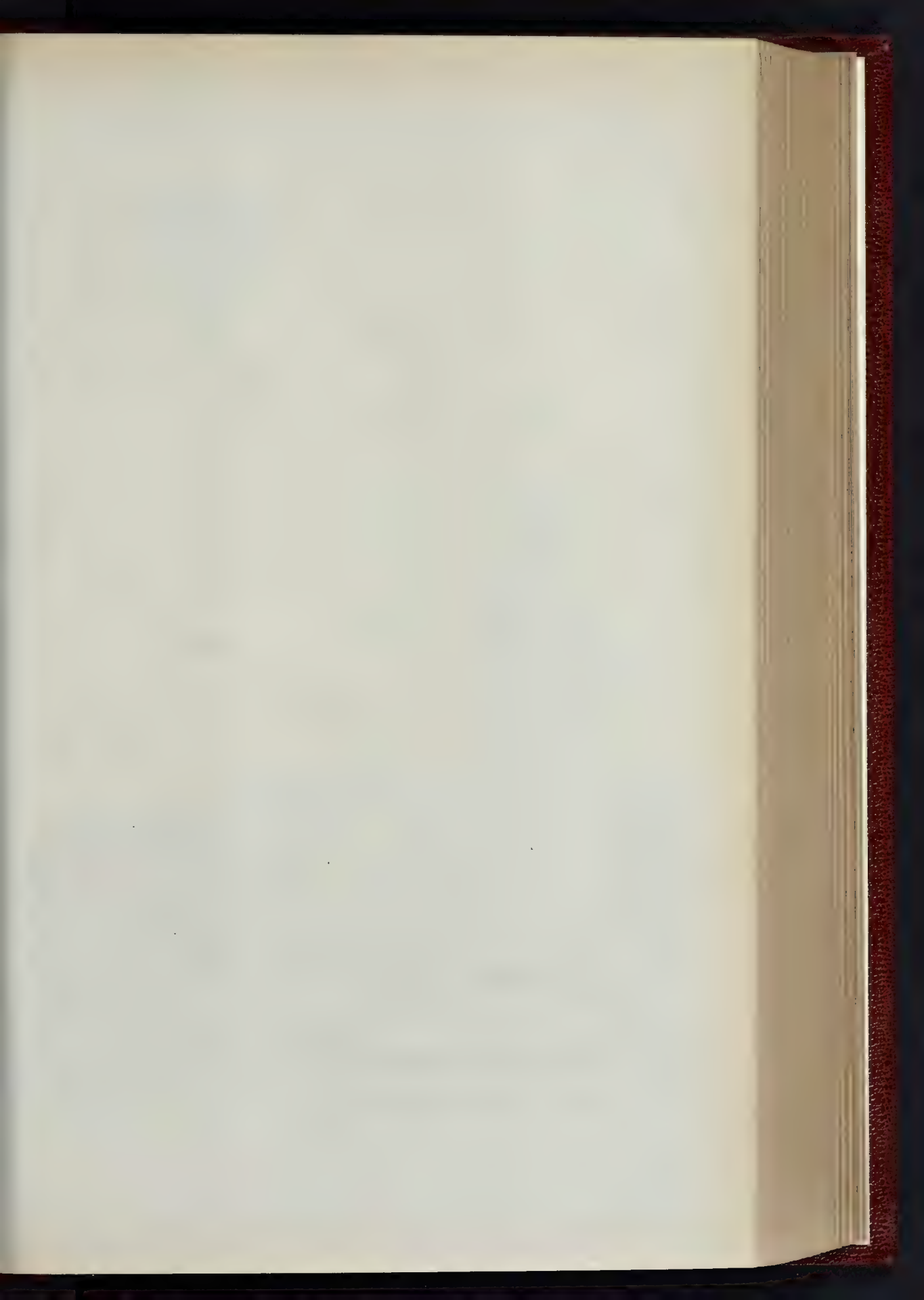




Whitlock & Bass, Photo Litho

Whitlock & Bass, Photo Litho

THE CASTLES, CAMPS, FORTIFICATIONS, AND EARTHWORKS OF WARWICKSHIRE

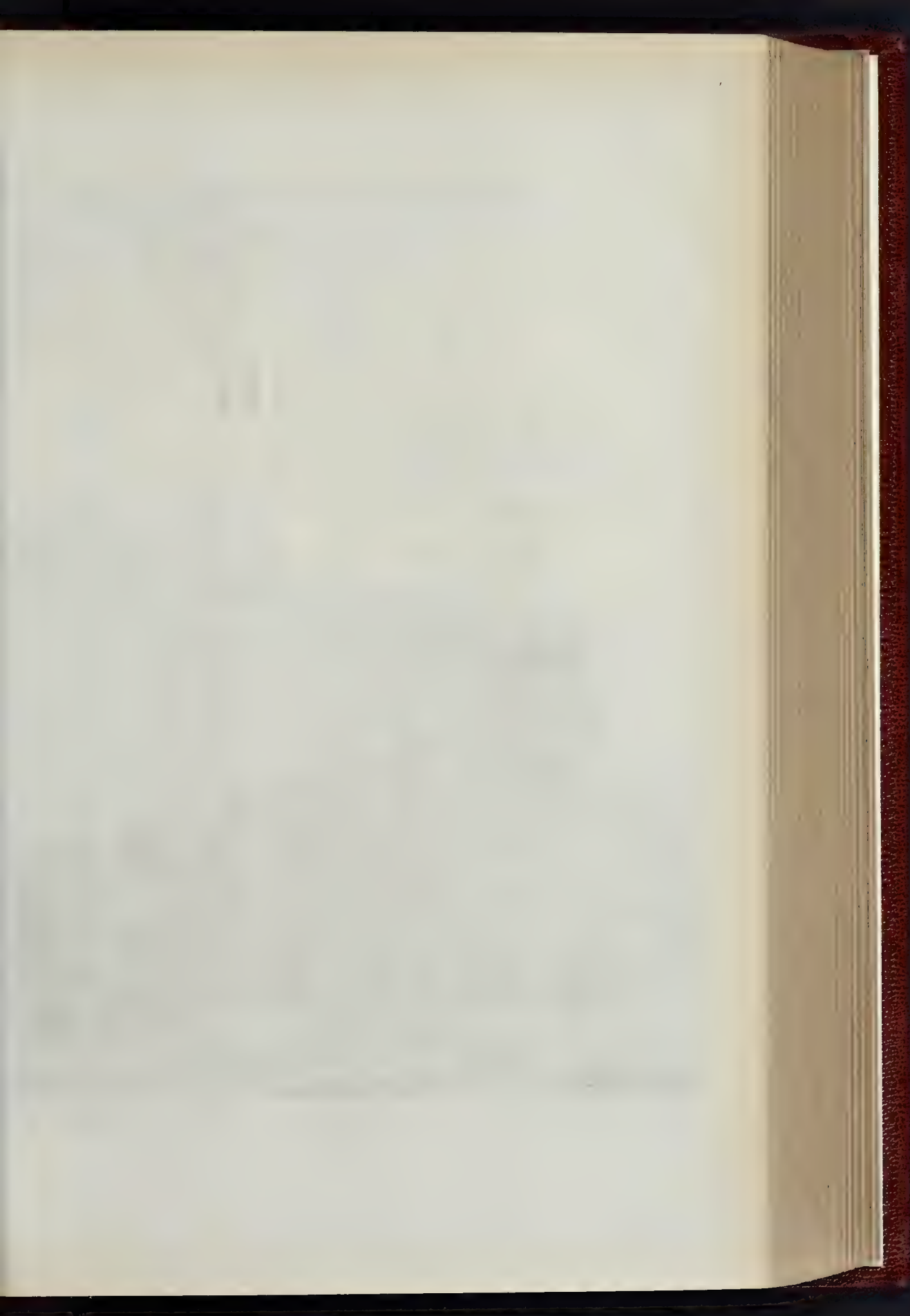




: Tarnham · Green · Congregational · Church :— T. Lewis Banks Architect —
— London & Whitehaven —

* F. Kell Photo Litho London E.C.

Wyman & Sons Printers Gt. Queen St.





THIS GARRATT DELT. 1883

HYDE PA

FROM THE "CASTLE" HYDE PARK, LONDON, E.C.



TRANSIONS, N.W.

C. EALES & SON, Arch^{ts}.

Wyman & Sons Printers G^o Queen St



-- Carl Gustav has written a book "Elevation & Intuition" and -- No. 800-679-1000 by Dr. Carl Gustav Jung's Institute, New York
House

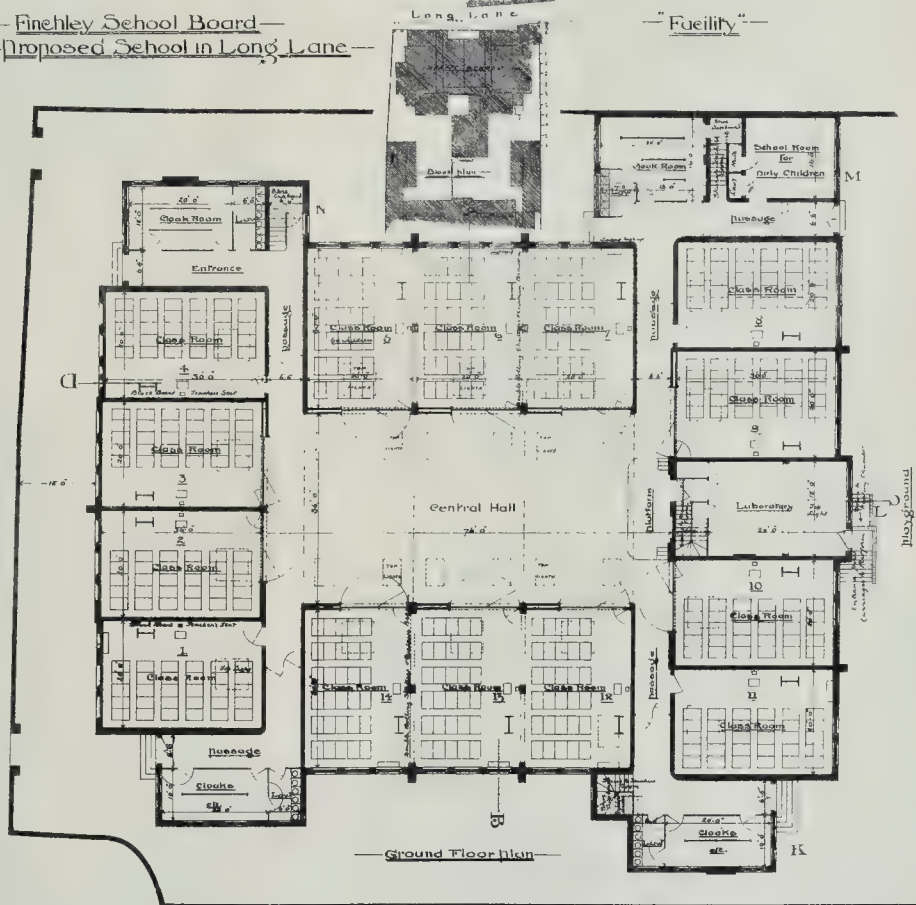
-- Elevation to Long Term --



--- Elevation to playground ---

— Finchley School Board —
— Proposed School in Long Lane —

—“Fueility”—



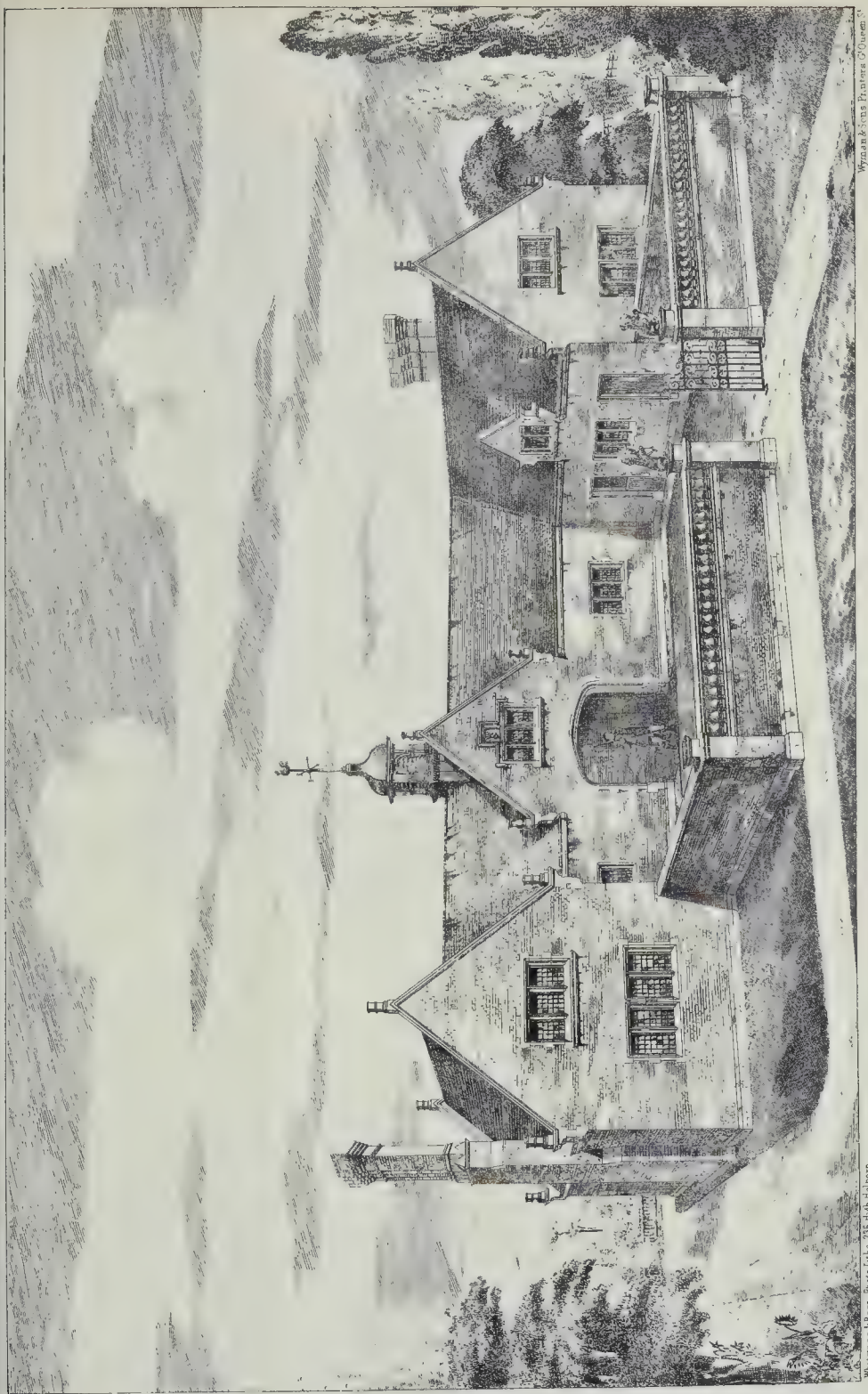
EL CONDER DEL

† Kell, Photo Lyne Castle - Holborn

DATE OF TEST

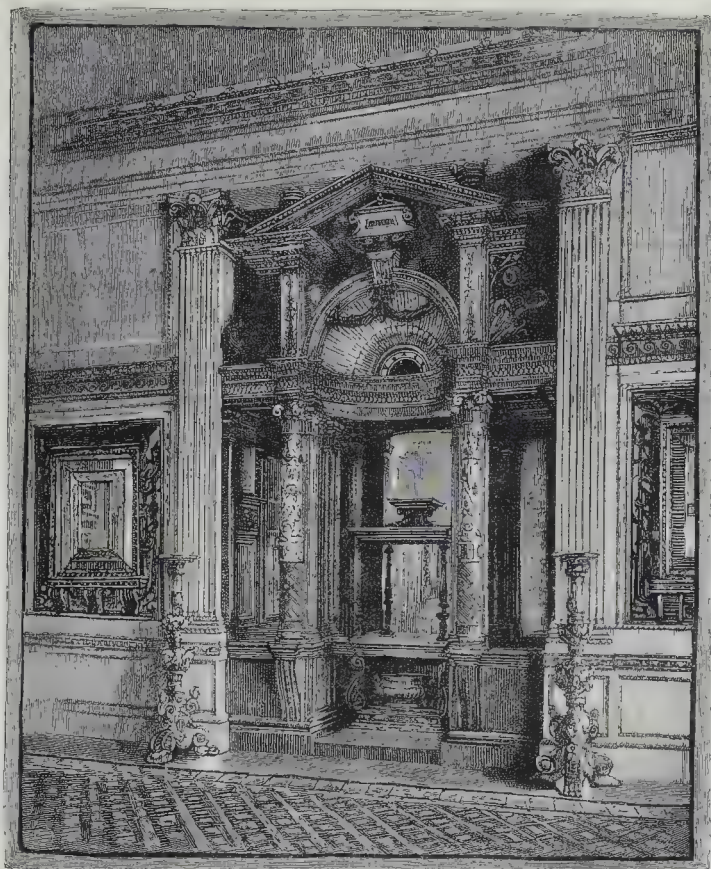
ARTHUR J GALE ARCHT

Wyman & Sons Printers G^d Queen S^t



STABLE OFFICES, GRAFTON, CHESHIRE.—MR. JOHN BIRCH, ARCHITECT.





DORCHESTER HOUSE: A SIDEBORD, BY ALFRED STEVENS.

From the "Magazine of Art" for August.

DORCHESTER HOUSE.

THE "MAGAZINE OF ART" FOR AUGUST.*

THE new number of the *Magazine of Art* is a good specimen of the serial. It includes, with an illustrated notice of Mr. Val Prinsep, A.R.A., a reproduction of his recent picture, "At the Golden Gate," and an appreciative account of Dorchester House, Park-lane, with six engraved views. We have before now had occasion to express the opinion that this is the finest modern house in London.

"The architect of Dorchester House," says the writer of the article in the *Magazine of Art*, "was instructed, amongst other things, to adopt as a central feature inside the house a staircase of large dimensions, surrounded on the first-floor by a wide corridor communicating with it by arches. This staircase, as one of the most beautiful and interesting portions of the house, I shall describe more minutely below. It is noticeable now, as giving a key to the external appearance of the whole. Round three sides of it, on the east, south, and west, the principal rooms are grouped; and the simplicity of the arrangement has enabled the architect to obtain an external effect of considerable grace and

dignity. In these days, when, under the influence of the Gothic revival, the dignity and repose of a simple design has almost ceased to be a thing striven after, when the grouping of large masses in grand proportion is despised, when the beauty of a plain wall-space of carefully-jointed ashlar work is not recognised, when too often the whole object of an architect seems to be to discover how far he can spread his ornament over everything (as a gold-beater might beat out a sovereign to cover a room), it is very refreshing to find the grandeur of rest in a modern building. The outside of Dorchester House, too, is both graceful and refined in design. There is, of course, nothing about it of striking originality. But in architecture striking originality is certainly not a thing to be sought after, and is seldom successful when found. Much of the success of the detail, both outside and in, is due to the fact that no expense was spared in putting up models of every portion before it was erected. The difficulty of knowing exactly what appearance a moulding will present when placed in position, and of estimating the corrections for perspective, for height, and for the various optical delusions which so strangely change the apparent shapes of many features, is so great that few architects entirely over-

come it. As in the case of the entasis of columns, the experience of former generations may teach us much."

We are enabled by the publishers, Messrs. Cassell, to reproduce the view given in the magazine of the sideboard in the dining-room by Alfred Stevens:—"This," says the writer, "is in many ways the most interesting room in the house. The whole of the design, and the execution of all the finer work, is by Alfred Stevens. Unfortunately, he did not live to finish it. Had he done so, judging by the parts that are complete, this room would have been the gem of the house. As it is, however, the general harmony is destroyed by the strong contrasts between the finished and unfinished parts, so that it is rather difficult to judge of the design as a whole. The wall-space is divided into compartments by Corinthian pilasters on plinths supporting the entablature and cornice, from which springs the coved ceiling. This ceiling, as it now is, forms no part of the original design, having been painted by Mr. Morgan after Stevens's death. The compartments of the wall are divided at about two-thirds of their height from the ground by an elaborately-moulded string-course running all round the room between the pilasters, forming a high dado, whilst

* London: Cassell & Co., Limited.

a low dado is formed by the continuation of the plinth mouldings. Between these the panels are filled with cut and engraved glass mirrors, surrounded by frames of dark wood elaborately carved and of great beauty, designed and executed by Stevens. The two most interesting features are the sideboard and the chimney-piece. The sideboard is shown in the illustration. It is very elaborate, but the ornament is never allowed to interfere with or hide the principal forms, but is rather used to give them greater prominence and strength. There is no want of vigour, although the style is one which rather tempts the artist to produce only delicacy and grace, which qualities, however, are not wanting." The depth of shadow in the recesses is effective, and the whole is well calculated to show off plate.

ON RECENT IMPROVEMENTS IN ARTIFICIAL LIGHTING,

AND THEIR BEARING ON THE PURITY OF AIR IN ROOMS.*

VARIOUS efforts have been made with gas burners to improve the combustion, and, indeed, the great improvements in the illuminating power of gas which, as announced at the testing stations, has taken place in late years, appears to be mainly due to the burners. For instance, experiments made by Mr. Humphidge showed that a gas which, tested by the burner used for that purpose before 1860, gave an illuminating power of 10·5 candles, afforded, with the improved more modern test burner, a light of 14·5 candles. The improvements largely depend upon regulating the pressure at which the gas is delivered, so that it shall not pass uncontrolled through the burners, but they also depend upon the temperature of the flame of the gas. For instance, it is well known that the union of the flames from two gas-burners produces a brighter light than the two gas-burners would give if the flames were separate.

The most practical efforts which have been made for combining the purity of air in a room with artificial light produced from gas may, however, be classed under four heads:—

1. The sun burner, in which the products of combustion are removed rapidly from contact with the air of the room.

2. The globe light, in which the fresh air is supplied from, and the products of combustion are removed to, the outside without any contact with the air of the room.

3. The regenerative gas light.

4. The incandescent gas light.

The sun burner has been in use for many years. It is practically a powerful ventilator which, by means of the great heat generated, draws a large volume of air away with the fumes of the gas, and thus it relieves the air of the room of the impurities caused by combustion, and at the same time removes other impurities which may be generated from other causes in the air of the room. This form of burner is, indeed, sufficiently powerful as a means of extracting the air from the room to enable it to continue to act even in the face of the counteracting draught of an open fire-place, which tends to draw the air up the chimney through every available opening; and it is consequently frequently used as a ventilating agent for the ventilation of crowded rooms. For this purpose, if it is to act efficiently, it requires to have its fumes carried up through a straight vertical tube direct to the open air. The localities in which it can be conveniently and satisfactorily applied are, therefore, limited to buildings whence this pipe can be carried straight up.

The globe light, on the other hand, has been designed for the purpose of preventing the products of combustion from mingling at all with the air of a room, but it does not provide in the way the sun-light does for the ventilation of the room at the same time. The principle of the best form of globe light is that it should be burned in a glass globe entirely separated from the air of the room, that is to say, that the air required for supporting combustion should be brought into the globe from the outer air and the products of combustion should be carried away into the outer air without mixing with the air of the room. One form of this arrangement is to bring in the fresh air by the tube which surrounds the tube which carries off the products of combustion, and thus to warm

the air on its way to the burner. Another form would be to admit the fresh air below and to carry off the products of combustion at the top. This form of light, as in the case of the sun-light, is limited in its application. It can be applied near an outside wall, or else in a room which is directly under a roof. If fed with fresh air from the room itself, and if a fire-proof flue were constructed in the ceiling leading into a vertical flue, this form of light can be placed in any part of a room; but in a room with an open fireplace, the counteracting effect of the draught in the chimney from the open fire would be very likely to draw back into the room the products of combustion from the globe light.

The regenerative gas-burner claims to be a hygienic invention, in that it produces a more perfect combustion, and diminishes the quantity of gas necessary to produce a given quantity of light. The form of globe light first mentioned may to some extent be called a regenerative gas-burner, because the air for combustion is supplied to the flame after being warmed by its passage round the tube, which conveys away the outflowing products of combustion. But the Siemens regenerative light was the first which can be termed practically a regenerative burner. As an instance of the advantage of the regenerative gas-burner, it may be mentioned that the Siemens burner exhibited at the Gas Exhibition at the Crystal Palace gave a light equal to nearly eight candles per cubic foot of gas burned, whereas, with ordinary burners from three to four candles per cubic foot of gas would be considered a good result.

The Siemens regenerative burner is an Argand burner, the flame from which is conducted centrally downwards, and heats a chamber through which the air to feed the flame travels concentrically upwards, being heated by contact with the walls of the chamber in its progress. The ventilation afforded by the burner is a great advantage. The products of combustion pass up a long chimney-tube, and may be conveyed away out of the apartment in which the burner is situated. The Siemens gas-burner, however, whilst very applicable to large spaces, or to street lamps, does not appear to have hitherto been made of a form very convenient for moderate-sized rooms and domestic purposes. The forms of regenerative burners which appear to be best suited to the requirements of an ordinary room are those designed by Mr. Clark and Mr. Grimston. The former are in actual use in the corridor of the Parkes Museum.

The Grimston and Clark burners are somewhat similar in construction, and the following description will suit both burners so far as practical purposes are concerned. The burner looks like an inverted Argand burner. The gas is brought down a central tube, and the products of combustion are carried away through a tube which lies round it, and the air required to feed the burner is brought through passages in this latter tube which are heated by the products of combustion in their course. The light is inclosed in a half globe, and the products are carried away into the outer air, so that the light does not injure the air of the room in which it is burned. A very remarkable feature about these regenerative arrangements is that the temperature of the outflowing products of combustion at the top of the tube is so low that the hand can be held over the top of the tube without any unpleasant sensation of heat. The photometric value of these burners is considerable, as they appear to produce a light of from five to six and a half candles for every cubic foot of gas consumed. They are quite a new development of gas-burners, and deserve the attention of all persons desirous of combining a pure atmosphere in the room with plenty of light.

Another adaptation of the principle of the globe gaslight is the Schönheyder sanitary stove, which combines the warming of a room with a gas light. The products of combustion are carried to the outer air, and in their passage the heat they contain is used for the purpose of warming fresh air, which passes into the room. Mr. Schönheyder, by this ingenious invention, has solved the problem of not only brilliantly lighting a room, but also of getting rid of the products of combustion, and utilising them in a most scientific manner to thoroughly warm and ventilate the apartment, and by means of it he secures an equable temperature and a good light.

The next form of burner to which I desire to call attention is also very novel, although

based upon the application of well-known natural laws. The illuminating intensity of a glowing body increases in a greater ratio than the temperature. Moreover, the heat which is developed by the combustion of gas is out of all proportion to the small quantity of hydrocarbons contained in it, and which, by their dissociation and the setting free of the carbon particles, are the source of the light produced. It has been even proved that the energy contained in gas can, by being converted into motive power and electricity, be made to produce more light than when burned direct from an illuminating burner, notwithstanding the loss which occurs in converting the heat of combustion first into motive power, then into electricity, and then into light. It is, therefore, evident that a much greater amount of light could be obtained from gas if the heat-development of combustion were better utilised. Acting upon these principles, M. Clamond has constructed a lamp. The Clamond lamp is nothing more or less than the Drummond lime-light made practically useful. Instead of using oxygen he uses atmospheric air, and instead of the zircon or lime cylinder, he uses a network of magnesia. Oxygen can, in almost all cases, be replaced by air, if the latter be strongly heated. M. Clamond, therefore, heats the air before it reaches the burner, and obtains a similar effect to that of oxygen. It is not easy to heat the air to a high temperature whilst it travels a short distance. The volume of air passing to the burner is six times that of the gas, and the heat-conducting power is small. In the construction of his burner, M. Clamond causes the air to play upon every part of a fireclay tube, which is heated externally by the combustion of the gas. A pressure of 200 millimètres of water (7·8 in.) was at first necessary to force the air through this tube, but by improving the construction of the burner, a pressure of 35 mm. (1·37 in.) is now found sufficient. In consequence of the large volume of air which is required, and of the pressure which is necessary to bring it in contact with the material for heating it, the air is delivered at a pressure through pipes laid by the side of the gas-pipes to the burner. The "wick," as the conical basket-shaped network of magnesia is called, which is heated by the flame to incandescence, is very cheap, and will last for about forty hours, so that it is only necessary to change it once a week, and it is easily replaced. It is supported by two crossed platinum wires, which are fastened to a brass ring having a bayonet joint. The light given by the glowing magnesia basket is perfectly steady, and of an agreeable yellow tone. If the wick be used longer than for forty hours, the light becomes bluish in colour, and approaches that of the Jablochhoff candle. Also by further use a portion of the magnesia is consumed away, but the small quantity of white dust thus produced is not at all unpleasant or harmful. The magnesia basket is situated at the bottom of the burner to prevent shadows, but the burner can work in any other position, and the light can be regulated by a tap to any desired intensity. The burner is made in two sizes. One size consumes 180 litres (6·3 cubic feet) an hour, and gives a light of 4·15 carcelles (about 37 candles), that is to say nearly 6 candles per cubic foot of gas; the other size consumes 500 litres (17·6 cubic feet), and gives, it has been stated, a light of 18 carcelles (about 162 candles). This would be equal to 9 candles per cubic foot, a result which requires to be verified. The burners give a much greater light-effect, in proportion to the gas consumed, than ordinary burners; but it is to be remarked that the ordinary illuminating power of the gas has nothing to do with the light of the lamps; it is the heat of combustion alone that produces it. It therefore follows that it is a matter of indifference whether gas of greater or less illuminating power be used. It would not be necessary with this burner to use gas-coals, but cheap coal might be used, and the cost of production considerably reduced. This burner requires that the air should be supplied to the burners through tubes from a pump; the air ought to be at a high temperature, and therefore should be applied on the regenerative principle. The light thus requires a degree of adaptation which is unnecessary with more simple burners; and moreover the necessity of replacing the magnesia basket every three or four days is, to some extent, an inconvenience.

A somewhat similar burner has been devised

* A paper by Captain Douglas Galton, C.B., read at the Parkes Museum on the 19th ult. See p. 111, ante.

by Mr. Lewis, but instead of using a magnesia basket as an incandescent medium he adopts a basket made of platinum. The gas is mixed with a large volume of air under pressure before its point of combustion, and the heat thus generated by what is practically a Bunsen burner produces the incandescence of the platinum. The platinum ought to have the advantage of durability as compared with the magnesia; but there is the objection to platinum that unless the combustion of the gas is very perfect, the carbon in the gas may cause the destruction of the platinum basket, and this occasionally happens. These incandescent lamps, even if burned in contact with the air of a room, present certain hygienic advantages. In the first place, the air required for combustion is brought into the room from the outside, in the proportion of six volumes of air to one of gas, and, therefore, the oxygen in the air of the room is not consumed for combustion. In the second place, the gas is consumed in a very perfect manner, so that the injury to the air of a room produced by the combustion is reduced to a minimum. These lights could be placed in any part of a room where ordinary gas-lights can be placed, and it is probable that from their hygienic and photometric value this class of light is destined at no distant date to replace ordinary gas-burners, to the great advantage of the purity of the air of a room.

The next form of light to which I would desire to call attention is the electric light. The luminosity of the electric light is due to incandescence, as is the case with other forms of light which I have mentioned. In the case of the ordinary electric light the carbon points brought into opposition become intensely incandescent at the points of contact, and these points can then be withdrawn for some distance from each other without interrupting the current or the light it produces. Between the carbon points an arc of glowing particles of carbon appears, the so-called Volta's arc of flame, which effects the conduction of the current at the point of interruption. This flickering arc of flame is far less bright than the carbon points themselves; the particles of carbon of which it is composed detach themselves from the positive pole, which is the hottest of the two, and fly across to the negative pole. As a result of this, after a short time the positive pole becomes shrunken and even excavated, whilst the negative preserves its pointed form. At the same time combustion of both poles takes place to a certain extent, owing to the action of the atmospheric air; and the positive pole, which is exposed to the destructive action of two agents, is more rapidly consumed than the negative.

The electrical arc light, with its dazzling brightness, is subject to fluctuations from the fact that the carbon points are continually wearing away; and the constant necessity for shifting them renders the arc light often unsteady. Moreover, it is not pleasing in colour; and it has been alleged against it that it produces a notable quantity of nitric acid, and is thus inimical to the purity of the air in a confined space.

Another form of electric light has, therefore, now superseded the arc light for rooms, viz., the incandescent light, as made by Swan, Edison, and others. In this form of light the electric current is employed to heat a thread of carbon so as to make it incandescent, and thus to use it as a source of light. For this purpose the carbon is inclosed in a glass globe, from which the air is extracted, in order that there may be no oxygen to unite with the carbon during incandescence and to destroy it. This form of light for rooms possesses none of the disadvantages of the arc light, and is, indeed, the most perfect form of light which can be imagined. The light so obtained may be placed anywhere in a room; it is cut off from all contact with the air of the room, and thus there is no possibility of the purity of the air being injuriously affected by it. The light is thus entirely independent of the ventilation. As hygienists we should always prefer this form of light to any other, and it is probable that eventually the electric light will supersede all others; but I venture to predict that the advances which have been made in illumination by means of gas will probably enable that material to hold its own for some time longer.

This concludes the series of lectures which were advertised on the occasion of the opening of the Parkes Museum. This series has embraced

several widely different subjects, but it has far from exhausted the various branches of hygiene which the Parkes Museum illustrates. The original founders of this Museum, as well as those who have recently re-arranged it in its present central position, have always had in view the necessity of developing its educational character, as much by means of lectures as by the exhibition of the best sanitary appliances.

The educational character of the Museum prevents it from being self-supporting. If it is to be an exhibition of the best or the most instructive sanitary appliances, the exhibition of articles cannot be made dependent upon a payment for space. The Council, therefore, appeal to the public to assist them in their undertaking by becoming subscribers to the Institution.

In the discussion which followed,

Mr. W. Defries referred to the difficulties experienced in supplying sun-burners (and other forms of gas-lights which extracted the air from apartments) with a sufficient quantity of air without causing draughts, to the discomfort of the occupants. With regard to the Lewis light and the Clamond light, described in the paper, he did not think they were likely to be adopted, entailing as they did the use of a double set of pipes and other complicated and costly arrangements. The Grimsdon and other gas-burners of the same type would be unsuitable and inapplicable in many situations, owing to their being necessarily fixed and immovable. With regard to electric illumination, he thought Captain Galton had been somewhat hard upon the arc light, but there were arc lights and arc lights, than some of which nothing could be better, either in point of steadiness or colour, for the lighting of large interiors. Some of the arc lights were at least as steady as sun-burners, while they did not cause draughts or heat. He was convinced that light for light the electric light was cheaper than gas.

Dr. Poore testified to the practical value of certain forms of gas-burner which discharged the products of combustion into the open air, and spoke of the evils caused by the use of bad gas-burners in badly-ventilated apartments. People who breathed a gas-contaminated atmosphere for many hours together experienced a feeling of lassitude and depression which often drove them to resort to "nips" of brandy or some other hurtful stimulant, and in this way want of proper ventilation was a first cause of much intemperance in drinking. In view of the difficulties at present in the way of the general use of the electric light, he was glad that great attention was now being paid to the question of improving gas-burners, and he hoped that architects and builders would for the future design and build dwelling-houses with a special view to the use of gas without detriment to the occupants. Why should not the provision of flues for taking off the fumes of gas be as much a matter of course as the provision of flues to fireplaces?

The Chairman (Sir Joseph Fayrer) in moving a vote of thanks to Captain Galton for his admirable paper, expressed the conviction that electricity would in a very few years supplant gas as a means of illumination, greatly, as he believed, to the health of the people. Incidentally, he observed that since the Museum had been re-opened on the 26th of May last, the number of visitors up to the time he was speaking had been 2,880, of whom 534 had attended the nine lectures which had been delivered.

The vote of thanks to the lecturer having been carried by acclamation, Captain Galton briefly replied, expressing his confidence in the future of the electric light, though he believed that it would be a great many years before it would entirely supplant gas, which would still have a great future before it for purposes of heating and cooking.

St. Alban's.—The apex stone of the cross on the western front of St. Alban's Cathedral was fixed by Sir Edmund Beckett, bart., Q.C., a few days since, in the presence of a large company. The extreme height of the cross is 109 ft. 2½ in. from the floor of the porch, and it is more than a ton in weight. It is expected that within two months the work of rebuilding the west front, which is being done at the sole expense of Sir Edmund Beckett, will be completed.

THE BUILDERS' ACCIDENT INSURANCE, LIMITED.

THE second annual meeting of this company was held on Thursday, the 26th ult., at the offices, 27, King-street, Covent-garden, Mr. Stanley G. Bird, the chairman of the board of directors, presiding.

The report of the directors for the year ending the 31st May, 1883, contains the following passages:—

"1. In presenting their second report and balance-sheet, the directors consider it a matter for congratulation that the reduction during the past year of the scale of premiums by 25 per cent., and the distribution of the sum of upwards of 800*l.* by way of bonus and rebate, has resulted, as they anticipated, in a steady and satisfactory advance in the company's business.

2. The experience gained from the result of the past year has enabled the directors since the 1st of June last to further reduce the scale of premiums by about 18 per cent.; and the rate is now only 4*s.* per 100*l.* wages.

3. The insurance for aggregate wages, which the directors since the commencement of last year have adopted with the view of meeting the difficulty arising from the fluctuation in the amount of wages paid at different periods of the year, appears to have worked well and met with general approval.

4. The directors still think it prudent to hold to their original design and work the company economically; for they feel confident that the mutual principle on which it is based will make its special advantages more and more manifest every year, and that therefore prefer to trust for any increase of business to the influence of those already connected with the company.

5. The company have issued 114 new policies during the past year, insuring an aggregate amount of 413,000*l.* per annum paid in wages, and they have received during the year ending the 31st of May, 1883, 227 notices of accident from members, of which 37 still remain for settlement.

6. The accompanying accounts show a total surplus of 3,800*l.*; but as this is chargeable with the payment of the above-mentioned unsettled claims for compensation, for which the directors set apart 600*l.*, the sum of 3,200*l.* remains as a balance. Out of this the directors set aside 2,000*l.* as a reserve fund; and they require, in addition, some 250*l.* in order to place all policyholders of the first year on an equitable footing. It will be for the members in general meeting to vote such an amount as remuneration to the directors as they may determine."

The balance-sheet shows a balance on the revenue account of 3,800*l.* 11*s.* 9*d.*, subject to payment of unsettled claims for compensation up to the 31st of May, estimated at 600*l.* The amount of compensation paid or provided for was 1,315*l.* 0*s.* 10*d.* The working expenses amounted to 1,140*l.* 1*s.* 9*d.* The total amount of premiums received from 1st June, 1882, to 31st May, 1883, was 6,931*l.* 15*s.* 8*d.*, or, deducting 1,661*l.* 11*s.* 4*d.* for time unexpired on premiums running at 31st May, 5,270*l.* 4*s.* 4*d.* The balances at bankers were,—South District, 598*l.* 16*s.* 7*d.*; North District, 323*l.* 16*s.* 4*d.*; making a total of 922*l.* 2*s.* 11*d.*

The Chairman.—It is my duty, and a pleasant one, to move the adoption of the report. I will not say anything on it now; but will merely formally move its adoption, because probably you will have some questions to ask.

No one asking any question, the Chairman accordingly moved, "That the report and balance-sheet as printed and sent to all members be received and adopted."

The motion was seconded by Mr. Geo. Burt, and carried unanimously.

The Chairman.—Since the meeting this time last year, I may say that the company has gone on very successfully. We are not a large company; we are essentially a mutual one. As you remember, at the last meeting it was suggested that we should return a bonus of 10 per cent. and a rebate also of 10 per cent. That has been done, and I believe it has given unlimited satisfaction to all those who were insured. But we have gone now a little further; during the last month the Board thought proper to reduce the premium again, and they have now reduced it to four shillings per cent. Of course, when the company was first started, we may say it was started in the dark; we did not know the business we were going into; we had no statistics to guide us; we could not get any information from the Registrar-General or any actuaries, or anybody who knew anything about it. We were not singular in that, because all the companies have been in the same difficulty, and they have only been waiting to avail themselves of the information which we were able to get through the National and

other Builders' Associations. They have been waiting for us to publish that information as some guide to them. I believe within a week or so after we started we were met by the opposition of the Employers' Liability Corporation, who started their business on almost the same figures as our own, showing we were not wrong in the calculations we had made, and in the premiums we started with; but experience has taught us since then that we might very fairly reduce the premium; and, as I have told you, we have made a return to the insurers of 20 per cent., but only an apportioned amount has been returned. The directors are of opinion, in which they are supported by the advice of counsel, that it is our duty to place those gentlemen who insured with us in the first year certainly in no worse position than those who insured with us in the second year, and that we ought now to return to them, and that, in point of fact, we are bound to return to them, the balance of the apportioned amount that was not paid to them when they reinsured. It will not take a large amount,—I think about 350*l.* will cover it,—but the distribution of the 350*l.* in that way will be merely doing an act of justice, which I am sure you will all agree ought to be done. We have reduced the rate of premium to 4*s.* per cent.; but although we have done that we find that we are closely competed with by other companies. The Employers' Liability Insurance Corporation, finding that we have reduced our rate, have also reduced theirs; but there is this to be borne in mind, that we are a mutual company. When we have found we have had a balance in hand, we have acted fairly towards each other, and we have returned the money, and if we have any further balance (and we think we can trade as reasonably as any other company) it will be returned to you, or it will be made up to you by a further reduction in the rate of premium. The working expenses of the company are really very small indeed. It might be said, Why not do what other companies do, and increase our business by advertising? But we feel it is very much better we should go on slowly, and work as we started, that is to say, as a mutual company and as a company working among our own trade and those connected with it; and that we should not try to extend the business to any very great extent, because extending by advertising really means a tremendous outlay, and means also a very large addition to our staff. Our staff here is not a very expensive one, and when I say "here" I mean here and at Liverpool too; and with our present staff we could do a great deal more work, and therefore we are most anxious that the builders themselves should make the company known among their brother builders. We have a great deal of opposition to work against, but if you will only just let your brother builders know the advantages of the company you will be furthering our interest, and in doing so will be benefiting yourselves. We have had a great many accidents during the year,—you will see by the accounts the amount we have paid. During the present year, up to within the last month, the builders, and this company more particularly, have been very much alarmed and threatened by the introduction of a Bill into Parliament by Mr. Burt and Mr. Broadhurst proposing to amend "The Employers' Liability Bill, 1880," by doing away with the clause which at present renders it compulsory for the injured workman to give the employer notice within six weeks of the time of his accident. If that obligation had been done away with, it would have acted very hardly upon builders, as it would have put it in the power of a man, after an accident, to hold his claim in *terrorem* over the builder, and at any time come forward and demand damages. He would know where to find his witnesses, whereas the builder, who is always employing different men, would not be able to bring up his witnesses, who might be at the other end of the world, and thus be unable to meet the charge by bringing up rebutting evidence. We felt this was a very important matter, and we tried all we could to prevent the bill becoming law, and I am glad to say, through the agency of the different builders' associations, we were enabled to influence different Members of Parliament, and, when the time came, Sir Joseph Pease was able to make out a good case, and the Bill was thrown out. We are much indebted to one of our colleagues, Mr. W. H. Cowlin, for the steps he has taken in starting a West of England branch in Bristol, and we hope that a good amount of business will result therefrom.

The Chairman then read and moved the adoption of the following resolution,—

"That the directors be, and they are hereby, directed to give effect to the resolution declaring a bonus, passed at the ordinary general meeting on the 25th day of July, 1882, in accordance with the opinion of counsel as to the rights of the members under the Articles of Association, and accordingly to pay those persons who have been underpaid the balance of the bonus and rebate which ought to have been paid to them respectively, pursuant to that resolution."

The resolution was seconded by Mr. F. J. Dove, and carried unanimously.

Mr. G. S. Pritchard next moved,—

"That the sum of 500*l.* be apportioned for the remuneration of the directors for their services during the past year."

This was seconded by Mr. W. Scrivener, and carried unanimously.

The chairman on behalf of himself and his colleagues thanked the meeting for the vote they had passed.

Mr. J. S. Jones proposed,—

"That the vacancies on the board caused by the death of Mr. Malone and the retirement of Mr. W. Gradwell be not filled up at the present meeting, but that they be deemed casual vacancies, and be filled up by the directors later."

This was seconded by Mr. J. C. White, and carried unanimously.

The chairman proposed, and Mr. A. Thorn seconded,—

"That Mr. Thos. F. Rider be elected a director in the place of Mr. W. J. Adamson, retired."

After some remarks from Mr. Hughes, the resolution was put to the meeting and carried.

Mr. Thorn moved and Mr. Cross seconded,—"That a vote of thanks be tendered to the referees, Mr. George Plucknett and Mr. Thos. Clay, for their services, together with an honorarium of ten guineas each."

This was carried unanimously.

Mr. Barnsley moved, and Mr. Patrick seconded,—

"That Messrs. Bunke and Cluse be re-appointed auditors."

This was carried.

Mr. Patrick moved, and Mr. Moslin seconded,—

"That the remuneration of the auditors be twenty-one guineas, including travelling expenses."

This was carried.

Mr. A. S. Harrison, in proposing a vote of thanks to the chairman, said that he could quite understand that it might be thought that a man who had so small a stake in the concern as he had should have left the duty to some one else having a greater interest, but he might venture to point out that it is to the small class of builders that this company gives the largest amount of assistance. The question of paying 400*l.* or 500*l.* in the way of a lawyer's bill is not a matter of very great concern to some of the gigantic operators present, but we smaller men dread being in the clutches of those who can easily swell up costs in the case of a trifling accident, making the costs themselves the most fearful item of the affair. Hence it is the small builder who should feel the warmest interest in the progress and success of this company, as doubtless, but for the insurance against these risks, there would have been innumerable cases saddled upon individual builders which the known strength of this company has prevented; and while I feel sure that the directors have met in a broad and liberal spirit all fair claims made against them, I feel sure also that they have been a bulwark of protection to all number of small builders who could have ill afforded the time or risked the expense of contesting legal actions, and hence I feel a debt of gratitude to this company for what it has done; though as yet it has done nothing personally for me, it stands as something that I may derive benefit from in the future. I have very much pleasure in moving,—That the best thanks of this meeting be given to the chairman for his very able conduct in the chair, and to the directors."

Mr. Barnsley, in seconding this resolution, remarked that he had always looked upon Mr. Bird for years past as quite a representative builder; he had done so much, and given so much time to the good of the trade generally, that he was quite sure he deserved their very hearty support, and he thought the time and attention he had given to the interests of this company had been very great indeed.

The Chairman having replied, the meeting terminated.

VISIT OF THE BRISTOL ARCHITECTS TO BATH.

The Bristol and Clifton Architects' Society, which sets forth, among other objects, that it is established "for the study of architectural antiquities," visited Bath on Saturday afternoon in order to see the recently-excavated Roman bath. The party included two of the vice-presidents of the Society (Mr. J. C. Moncrieff, A.R.I.B.A., and Mr. H. Masters; one of the patrons (Mr. T. S. Pope), the treasurer (Mr. G. E. Ford), and the hon. secretary (Mr. W. E. Hill). The Mayor of Bath (Mr. Handel Cossham), with Major Davis (City Surveyor of Works), received the party in the Grand Pump Room, whence, after some time spent in examining the cases of antiquities discovered in the course of the late excavations, a move was made for the Roman bath, where Major Davis explained, in a very interesting manner, the main features of interest to the architect and antiquary. From the bath the party were conducted over the entire bathing establishments of Bath.

At the invitation of the Mayor, the company partook of tea in the Mayor's room at the Guildhall, after which a vote of thanks to the Mayor was proposed by Mr. Moncrieff, seconded by Mr. Masters, and carried by acclamation. His Worship having responded, a similar compliment was accorded to Major Davis, on the motion of Mr. Pope, seconded by Mr. Hill. Major Davis having replied, the proceedings terminated. It was intended to look over Bath Abbey, but we believe the party found themselves unable to do so. The weather was fine and summerlike, and, altogether, a very pleasant afternoon was spent in Bath.

THE TILBURY DOCKS.

The Chadwick Marshes, on the banks of the Thames opposite Gravesend, have long been known as forming an area of solitary semi-waste, somewhat resembling the half-reclaimed delta of some great Continental river. All that is now changed. The hum of labour is heard from them instead of the cry of the wild fowl, and piles of bricks and stones and timber and metal are unshipped on their area. As many as 3,000 men are said to be employed by the contractors for the Tilbury Docks; and 3,000 men, with the admirable labour-saving machines to which the genius of the engineer has yoked the "drudging goblins" of the steam-engine, represent at least twice as many as in those days when every brick had to be carried up a ladder in a hod on the shoulder of an Irish labourer.

The site of the docks,—which is some 450 acres in extent, has been in the occupation of the contractors for rather more than a year; but much time was lost owing to the unfavourable weather that has intervened. But above a million cubic yards of earthwork have been removed, and the present rate of progress is said to be as much as 40,000 cubic yards per week. Two or three millions of bricks have been manufactured on the spot, and pile-driving and concrete-setting are making rapid progress.

It is a curious fact that at the moment when Manchester bids fair to attain her great object of the admission of ocean-going steamers to the very verge of her densely-packed factories,—the river accommodation of London should seem to be drifting seaward. The principle itself, both cases, however, is the same, however the application may vary in detail. This principle,—first laid down distinctly by the gifted and much-regretted Brunel,—is that the cost of sea voyage is, other things being properly allowed for, in an inverse proportion to the tonnage of the vessel. It is true that the *Great Eastern*,—which Mr. Brunel quietly described to the present writer as "a little one to begin with,"—has proved as yet rather a white elephant. But that is due, in the main, to the want of proper stabling for so royal an animal; and the *Great Eastern*, we now hear, is about to enter the service of the colliers. That there must be somewhere a limit to the economic size of a vessel we may admit. But that limit is as yet undecided; and most of the experiments of late have gone in the sense of extending it; although we are glad to find that the latest experience is in public of increasing the ratio of the beam, which has shrunk in many cases to the meagre proportion of one-tenth of the length of the craft, a proportion which is exhibited by no fish that swims, unless it be the eel. But with

the increase in size, and necessarily in draft, the question of access becomes more narrowed, and the experiment of the Tilbury Docks will show whether it be wiser to move the port of London seaward or no.

The new dock will have a depth of 35 ft. below high-water level of ordinary spring tides. It will have 15,000 lineal feet of quay berths, and be entered from a basin of 23 ft. depth of water. Four dry docks will have an aggregate length of 1,730 ft., and the simple and workmanlike expedient of putting additional gates to the locks or entrances, so that either a shorter or a longer vessel can be allowed to pass without undue waste of water, has been attended to carefully in the design. The electric light is about to be applied, so as to enable the more essential parts of the work to be carried on night and day. While from the point of view before referred to the new dock must be considered as a great experiment, it is one the outcome of which all must regard with extreme interest.

THE FIRE BRIGADE OF ROME.

CONSIDERING the treasures housed in the Italian capital, the question as to their protection from fire is one of more than merely local interest. According to a recent official report, the Fire Brigade of Rome forms one of the municipal institutions of the city, and is supported and controlled by the Communal Council. There were 263 fires in Rome in 1882, but none were very serious, and no lives were lost. Out of the above total, 133 fires arose through foul chimneys, and 5 through petroleum lamps. No fire occurred in a theatre in the year, and except that two mansions were burned down no buildings of importance were destroyed. Although it is a civil body, the brigade is organised under military discipline. It consists of a commandant, captain, doctor, sergeant engineer, band-master, and 12 other officers, 38 corporals, 8 trumpeters, 150 firemen on full pay, 120 on half pay, and 50 supernumeraries. The band consists of 40 men, who are exempt from day duty, but must take their turn at night. The supernumeraries are on trial for admission to the corps when vacancies occur. The circuit of the fire brigade extends to a radius of two miles from the gates of the city. Its duties include attendance at all reviews, and other functions. The members are also bound to be present at all public spectacles or festivals where fire may occur. They must likewise give their services in all cases where their knowledge and experience render them useful, such as the fall of houses, &c. The doctor of the corps must be present at all the work of the brigade, so as to afford immediate medical aid in case of need. The brigade does not yet possess any steam-engines. The service at theatres has lately been entirely re-organised, but the new rules have not yet been issued. Instruction in telegraphy is obligatory for every member of the corps.

For admission as supernumerary the candidate must be under twenty years of age, of good physique and character, not less than 1'60 metres in stature, able to read and write, and working at some trade, art, or profession, such as is calculated to fit him for the service of the fire brigade. Punishments consist in stoppage of pay from 50 centimes to 2 lire, and in heavier duties in proportion to the offence. Grave misdeeds entail suspension, degradation, or expulsion. A fund, consisting of fines and of the payments made by private persons who have engaged the services of firemen at shows, theatres, and the like, is devoted to furnishing rewards for meritorious services.

The uniforms of the men are provided at their own expense, each man paying a subscription of 4 lire per month for this purpose. Pensions are provided by a special fund to men who have served twenty-five years, and are fifty years of age. Compensations are also given in case of illness or loss of limbs incurred on duty, according to a fixed scale. Widows and orphans are entitled to these pensions and compensations in case of the death of the head of the family. Acts of distinguished courage may be rewarded by counting a year of service towards pension, and two years in case of severe injury sustained in the accomplishment of a deed of bravery. The fire-brigade have the right to requisition, by force if necessary, any horses, to whomsoever they may belong, of which they have urgent need. An equitable payment is subsequently made for the use of horses thus impressed. The brigade comprises

63 officers and 270 men. Their pay is as follows:—Commandant, 3,000 lire per annum; Captain Quartermaster, 2,400; Sergeant Engineer, 720; Doctor, 1,200; Band Master, 1,320; Head Farrier, 1,080; Head Trumpeter, 600; 2 Captains, 3,840; 2 Lieutenants, 3,000; 2 Sub-Lieutenants, 2,640; 4 Sergeants, 2,880; 38 Corporals, 22,800; 8 Trumpeters, 3,840; 150 men on full pay, 72,000; 120 men on half-pay, 28,800; making a total of 150,120 lire, or 6,004l. sterling.

THE ASSOCIATION OF PUBLIC SANITARY INSPECTORS.

A FEW weeks ago* we briefly reported the preliminary proceedings connected with the formation of this Society. At the meeting in question a provisional committee was appointed to draw up a code of rules and to arrange other matters to be submitted to a general meeting of members. This general meeting was held at the Holborn Town Hall on Saturday evening last, Mr. G. B. Jerram, Assoc.-M. Inst. C.E., Surveyor and Inspector of Nuisances, Walthamstow, in the chair. The minutes of the previous meeting having been read and confirmed,

The Chairman proceeded to deliver a short address, in the course of which he pointed out that it was decided, at the preliminary meeting referred to, that the acting members of the Association should consist only of those who held or had held public appointments as sanitary inspectors, inspectors of nuisances, &c. At that meeting a resolution was passed directing the provisional committee to consider the expediency of having another grade of members to be called "Associates," who should consist of persons taking an interest in the work of sanitary inspectors. It was suggested by members of the Sanitary Institute that any person holding a certificate of competency from them should be eligible as a member of the new association. Now (continued Mr. Jerram), we not only hold out the right hand of fellowship to those gentlemen, but to all others who may be interested in our work; and although we as public inspectors think that we ought to be strong enough to form and keep going an association of our own, and have different views as to the merits of a voluntary association having voluntary examinations and granting certificates,—thereby causing it to be inferred that only those persons having their certificates are competent to hold public positions, and that all the old officers are inefficient and do not understand their duties,—we shall, nevertheless, be very pleased to co-operate with all sanitary reformers, and shall be glad to hear words of wisdom and instruction from scientific men whose time and attention are wholly given to solve the problems of sanitation or means of maintaining and improving the health of the people. Again, this is an association of practical workers, whose every-day life is spent in combating the causes of disease, and whose duty it is to cause rapacious owners of property to keep their houses in a healthy condition, and to instil into the minds of the tenants the benefits of cleanliness and fresh air. Much has been said in the last year or two as to the benefits and advantages of so-called sanitary insurance associations, whereby householders and owners of property can have their houses inspected, and any sanitary defects pointed out, for a fee; but it is our duty, which we are doing every day, to inspect any house without charge, and to call upon the owner to at once remedy any defects of bad drainage, connexions of sewers with the inside of the house, bad or inefficient water supply, dirty cisterns, dirty rooms, back-yards, &c., so that in place of the fault of unsanitary dwellings lying at the door of public inspectors, it is at that of the owners or occupiers themselves, who can always have their complaints attended to on sending to the public officer in their district. But it has been stated that much ignorance exists as to the causes of sanitary defects. This is only too true, and therefore it ought to be our duty to inspect every house periodically, and to test and see if it is in a sanitary condition. I know I am treading on debatable ground in discussing how this is to be done, but I take it that such an association as this will tend, by the mutual interchange of the results of everyday experience, to help us all in our work, and thereby render the public a

service. It is also by such an association as this that we can strengthen each our individual position, and where, through the inactivity of any boards, the inspector is overworked, or is expected only to do little lest the landlords of small properties should have to spend money thereon, we can bring pressure to bear thereon, and thereby promote and insure greater efficiency in carrying out the stipulations of the various Sanitary Acts. The relative position of sanitary officers in the metropolis and in the country will be discussed. We hope to meet monthly and discuss papers on sanitary measures, contributed by our members or outsiders. There are no men who are, at times, so much abused as the sanitary inspectors, but the public must not forget that they are not independent in carrying out the requirements of the Sanitary Acts, but have to act under instruction; and here let me say that if the members of the Sanitary Institute, instead of casting a slur on the public sanitary inspectors and surveyors of the country, would try to use their influence to educate members of boards under whom the said officers act, to devise means to raise the qualification of governing members, and to keep the officers clear of local influence, then, no doubt, the Sanitary Acts would be carried out in their integrity (and not, as is too frequently the case, evaded), to the benefit of the health and prosperity of the community at large. I trust all public inspectors will see the great advantages that must accrue to them by joining such an association as this, and will not only be content to see their names enrolled with us, but will help us by their experience, and contribute papers and attend our meetings and discussions. And, of course, in the event of any epidemic, I trust we shall meet together to confer as to the best means to be adopted, and thus we should become a power whose deliberations would be taken into consideration by those in authority, much more than can be the case from an individual.

The Secretary *pro tem.* (Mr. S. C. Legg) having referred to the work of the provisional committee, said that he had sent out to urban and rural sanitary inspectors a large number of circulars relating to the work of the association, and up to the time of the meeting forty-two officers had expressed their willingness to join, and had paid the entrance-fee. Several other promises to join the association had been received.

The report of the provisional committee having been adopted, the meeting proceeded to discuss and adopt a code of rules for the governance of the society.

The meeting then proceeded to elect the Executive Council of the Association, with the following result:—

Chairman.—Mr. G. B. Jerram (Walthamstow).
Vice-chairmen.—Mr. T. Buckworth (St. Saviour's, Southwark), Mr. W. Kates (St. George's-in-the-East), and Mr. Rees (Birmingham).
Treasurer.—Mr. A. H. Lukes (Gravesend).
Hon. Sec.—Mr. S. C. Legg (Hackney).
Council.—Mr. W. H. Bond (St. Giles's), Mr. E. R. Boulter (Bexley), Mr. Brooks (St. James's, Westminster), Mr. Chamberlain (Fulham), Mr. S. P. Fisher (Camberwell), Mr. Valentine Harris (Wolverhampton), Mr. Lewis (Port of London), Mr. T. Mathews (Croydon), Mr. F. T. Poulson (Tottenham), Mr. Raymond (Poplar), Mr. G. S. Sherbourne (Chelsea), and Mr. T. Stace (Limehouse).

Mr. Harris, of Wolverhampton, Mr. Boulter, and the Chairman subsequently addressed the meeting, Mr. Harris referring to the necessity of co-operation between sanitary inspectors in their own interests as well as in those of the public. In the Midland Counties at the present time sanitary inspectors were endeavouring to induce the Local Government Board to recognise the claims of sanitary officers to the establishment of some recognised scale of superannuation. Sanitary officers were exposed to many dangers, from which they did not shrink, in the discharge of their onerous duties, and it was only right that when they grew old and worn out in the public service they should not be liable to find themselves entirely resourceless.

Congregational Church, Wimbledon.—The memorial stone was laid on July 18th by the Rev. Guinness Rogers, of Clapham. The church is designed in the Early Geometric style, and will seat 800 persons. Provision is made for adding side galleries. When this is done, the church will accommodate 1,150 persons. The architect is Mr. W. D. Church, South-place, Finsbury.

* See *Builder*, vol. xlv., p. 829.

OLD WINCHESTER HOUSE AND THE GREEK CHURCH, LONDON WALL.

NEW CITY BUILDINGS.

A LARGE portion of the site upon which Winchester House, Old Broad-street, at present stands, is about to be cleared preparatory to the erection of a new block of buildings, which will have extensive frontages to Old Broad-street, London-wall, Great Winchester-street, and Little Winchester-street. The taking down of the Greek Church is involved in the undertaking, and the work of demolition is now going forward. The Greek community some time ago erected a new church at Bayswater, and it is understood that the trustees received a large sum for the site of the building now in course of demolition, which has greatly increased in value since its erection, now more than half a century since. The whole of the buildings from the rear of the Greek church, in Little Winchester-street and Great Winchester-street, embracing the western or rear parts of Winchester House, are about to be taken down to clear the site for the intended new buildings, which will have a frontage to London-wall of about 50 ft. in length, the Little Winchester-street frontage being upwards of 180 ft. long, and extending in length from London-wall to Great Winchester-street. At present the frontage in Old Broad-street will not be more than about 70 ft. in length, the Winchester House frontage in that thoroughfare to the corner of Great Winchester-street being for the present retained owing to existing leases, but we understand that the ultimate intention is to clear away the whole of Winchester House and erect a new block to Old Broad-street in continuation of the modern buildings on the north side of Great Winchester-street. For the purpose of forming an internal connexion between the intended buildings a spacious corridor is in course of construction between Old Broad-street and Little Winchester-street.

Mr. J. Ebenezer Saunders, of Finsbury-circus, is the architect.

THE STATE OF VIENNA.

SIR,—The *Daily Telegraph's* Vienna correspondent mentions that the leading journals of Vienna last week stated that England had forfeited all sympathy by her alleged indifference to the danger of Europe from cholera. Having resided for some years in that fair city, which, for its architectural beauty and surroundings, will compare favourably with any other city in the world, I am in a position to endorse all that their correspondent has said respecting the sanitary condition of the Kaiser-stadt, and I may say, a good deal more. Vienna at the present time has, perhaps, the best water supply in Europe, coming as it does from the celebrated Kaiserbrunnen; but for all that, the sanitary arrangements of the houses and palaces are simply beyond description, in so far that so important a barrier to sewer gas as our ordinary water-seal trap on drains and soil-pipe connexions is almost unknown; the consequence is that such drains are in direct communication with their dwellings, and in many instances contaminate the cisterns, which, in the Schottenring and other fashionable abodes, are usually placed in what is termed the boden or roof. It is, therefore, certain that the occupants of such dwellings must naturally inhale the gases generated in the sewers. These sewers, as far as the house portion of them is concerned (for, technically speaking, they cannot be called drains), put our ordinary house-drains altogether in the shade; in fact, in this respect, England, as our American cousins would say, may "take a back seat"; and to our credit, too. The dimensions of these so-called drains are even larger than our old-fashioned chimney-flues, of notorious memory, which had to be swept by means of "passing the sweep himself together with his brush," through them. The connexions with the main sewer being almost level, and without adequate means for flushing, must necessarily give off foul odours dangerous to health. It is this state of things which tends to spread germs of disease of such virulent type as cholera and typhus.

The municipality of Vienna have certainly done wonders in improving the boulevards of the Ringstrasse, Stadtpark, and other well-known places; but the notorious Wienfluss, or periodical river, if I may term it so, which is somewhat similar to the river Ravensbourne in

Kent (except that the Wienfluss rises when the snow melts), must naturally give off the "vilest of stenches," owing to the sewage and other offensive matter being thrown in by the inhabitants, especially by those living in that quarter of the city known as the Wieden. The Viennese pride themselves in saying, "Es gibt nur ein Kaiser-stadt; es gibt nur ein Wien," which literally means there is no place like Vienna; but as far as their sanitary arrangements are concerned, they have little to boast of, and until the city undergoes a thorough overhauling in detail of the minor as well as the more important sanitary matters, all the precautions in the world will not prevent the spread of such an epidemic as cholera, should it happen to break out there. One great boon to the city would be the bridging over of the Wienfluss, which subject has been on the *tapis* for many years past, one of our own countrymen, in conjunction with a Viennese colleague, having laid before the Corporation a valuable scheme for covering up the Wienfluss and reclaiming the land, and extending the boulevards along the course of the river. There can be no doubt that such a great sanitary improvement is possible, and might be carried out at a very small cost if the municipality would only take up the matter in earnest. This, however, would only be one step in the right direction, but it would, undoubtedly, tend to diminish the evil and improve the health of the inhabitants.

JOHN SMEATON.

NEW FURNITURE WAREHOUSES IN BUNHILL-ROW.

Messrs. W. WALKER & SONS, whose extensive show-rooms and factory on the eastern side of Bunhill-row will be well known to many of our readers, have found it necessary, owing to increase of business, to erect a large pile of buildings on the opposite or eastern side of that thoroughfare. The new buildings, which have a frontage of about 200 ft. to Bunhill-row, and a total floor space of about three-quarters of an acre, have been substantially built by Mr. Sabey from the plans and under the superintendence of Messrs. Davis & Emanuel, architects. They contain a large, well-lighted, and lofty half-basement, ground floor (raised a few steps above the street level), and three floors above. As the eastern side of the new building fronts on to the extensive ground of the Honourable Artillery Company, while the western side fronts on Bunhill-row, the new buildings are admirably lighted, and the several floors constitute probably the largest series of furniture show-rooms in London. The basement and ground-floors are chiefly devoted to dining-room, billiard-room, and library furniture. The first floor is mainly occupied with drawing-room furniture and with wood chimneypieces and over-mantels, shown en suite with grates, fenders, tile-hearths, &c. Of wood chimneypieces and over-mantels, Messrs. Walker & Sons have probably the largest and most varied stock in London, all of their own manufacture, and all characterised by solidity and excellence of workmanship. This observation is equally applicable to the various branches of cabinet-work and furniture which are exemplified in these show-rooms. In point of design, we saw little or nothing to which exception could be taken. Every object made by this firm appears to be designed with a special view to fitness for the purpose for which it is intended, due regard being paid to the exigencies of material and to considerations of effect. The influence of "fashion" is, of course, observable, but while Messrs. Walker have on view a large and varied assortment of furniture in the Renaissance, Jacobean, and "Queen Anne" styles, these goods, for the most part, exhibit a tasteful reticence in design, being devoid of the extravagances and vulgarities too commonly met with in such productions. The second floor is mainly given up to bedroom furniture, while the third or top floor is used for the display of large carpets. Some good Oriental specimens were on view at the time of our visit. On this floor there is also provided a convenient kitchen and dining-room for the use of a portion of the staff. The remainder of the space on this floor is to be devoted to the warehousing of customers' furniture. Owing to the extent of the various floors they are divided by a party-wall, with double iron doors of communication. A large hand-power lift, by Waygood, runs from the basement to the top-floor of the building, there being a convenient gateway on

the ground-floor through which the lift works, thus facilitating the loading of vans, &c. The whole of the new building, we may add, is heated by steam on the high-pressure system. At the northern end of the new block of building, and completely cut off from the show-rooms by a solid party-wall, is a new timber store, four stories in height, specially constructed for the storage and seasoning of mahogany and other timber used for cabinet work. Beneath this timber store, but entirely cut off from it by a concrete floor, is a light and well-ventilated six-stall stable, approached by an incline from an adjoining gateway.

The erection of these new buildings has enabled Messrs. Walker & Sons to utilise the three upper show-rooms in their older premises on the western side of Bunhill-row for manufacturing purposes, the top floor being used as a workshop for upholsterers, the floor next below as a polishing-room, and the floor below that as a storeroom for "white" (i.e., unpolished) goods. The remaining space in this building is taken up by extensive show-rooms, the counting-house, &c. Behind are the long and lofty ranges of cabinet-makers' workshops, beneath which, on the ground floor, is the packing department.

From what we have said, some idea may be gathered of the extent of the business done by Messrs. Walker & Sons, who have also a house in Sydney, South Australia.

THE NEW STREET FROM OXFORD-STREET TO SHOREDITCH.

LARGE SALE OF BUILDING SITES.

ON Friday last week Mr. Robert Reid offered for sale, at the Auction Mart, by order of the Metropolitan Board of Works, twenty-three plots of freehold building land in Theobald's-road and Clerkenwell-road, comprising an area of nearly three acres, being a portion of the residue of property purchased by the Board for the construction of the new street from Oxford-street to Shoreditch. The property was described as having extensive frontages to Theobald's-road, Drake-street, Clerkenwell-road, Clerkenwell-green, Eyre-street, Hutton-wall, Great Safron-hill, Turmill-street, Red Lion-street, St. John's-square, St. John-street, and Albemarle-street. There was a very numerous attendance, the large room at the Mart in which the sale took place being much crowded. The property submitted was chiefly in the Clerkenwell-road, three only out of the twenty-three lots offered being in Theobald's-road.

The sale commenced with the offer of the three lots in Theobald's-road. The first lot, submitted was a corner plot, covering a superficial area of 2,543 ft., situate on the south side of Theobald's-road, with a frontage thereto of 54 ft., and a return frontage of 59 ft. to Drake-street. The lot also included a freehold house and shop, let at a rental of 45*l.* per annum. After a spirited competition, the lot was sold for 2,380*l.* The next two lots, containing together an area of 6,128 ft., were sold for 3,520*l.* The sale of the Clerkenwell-road sites followed, the first lot offered, containing an area of 6,152 ft., with three frontages, being withdrawn at 2,850*l.* The next lot, covering an area of 2,050 ft., having two frontages, and including two houses let to weekly tenants at rents amounting to 25*l.* per week, was sold for 1,030*l.* A plot on the south side of the road between Hutton-garden and Great Safron-hill, covering an area of 3,880 ft., was withdrawn at 2,175*l.* The three next lots, all on the south side of the road, and covering an aggregate area of 3,363 ft., realised 4,210*l.* Another plot on the south side of the road, containing 3,232 ft., and abutting on Farringdon-road, was withdrawn at 1,450*l.* The next three lots offered were the largest submitted during the day, comprising altogether an area of 42,973 ft. The first of these three lots consisted of a corner plot containing 14,208 ft., situate on the south side of the road, at the north-east corner of Turmill-street, having a frontage of 80 ft. to Clerkenwell-road, and 190 ft. to Turmill-street. The auctioneer, in submitting the lot, said that there was not a better site in London for the erection of warehouses. The first offer made was 6,000*l.*, and 9,000*l.* having been reached with no advance, the auctioneer observed that the sum which had been offered was only about one-half what the Board of Works paid for it. He intimated, however,

that it would be sold if there was no further advance, and the hammer ultimately fell at 9,000l. The two adjoining plots, containing respectively 18,052 ft. and 10,713 ft., were next sold for 11,400l. A plot on the north side of the road, containing 6,442 ft., with two houses and shops on Clerkenwell-green let at rents amounting to 100l. per annum, was withdrawn at 3,150l. The next four lots offered, all on the north side of the road, and containing in the whole 18,209 ft., were sold for 9,550l. For the next lot, being a corner plot, containing 4,583 ft., with three frontages to Clerkenwell-road, Albemarle-street, and St. John-street, there was a very close competition. The biddings commenced at 2,000l., and 3,600l. having been reached by advances of 500l. each, a gentleman present made an offer of 4,000l., at which sum the property was sold. The sale concluded with the disposal of three lots in Clerkenwell-road, St. John-street, and St. John's-lane, containing an aggregate of 14,140 ft., and which were sold for 6,150l. The entire proceeds of the eighteen lots sold amounted to 51,150l., and the five lots unsold, containing 23,571 ft., were withdrawn at 11,365l.

THE WIDENING OF PARLIAMENT STREET.

We referred a fortnight ago [p. 94] to the improvements proposed to be effected in Parliament-street and its vicinity by the Metropolitan Board of Works, in concert with Her Majesty's Government. It appears that the Board have this week decided to promote a Bill in Parliament next Session, empowering them to effect this and other metropolitan improvements. With regard to the Parliament-street scheme they have, we hear, expressed their willingness to undertake the improvement on the lines laid down by Mr. Shaw-Lefevre, the First Commissioner of Works, who proposes, we are told, not only the removal of the block of buildings dividing Parliament-street from King-street, but that the buildings on the west of King-street, extending along Great George-street for about 170 ft., should also be taken. The remainder of the houses in Great George-street would remain untouched; but, with the exception of these houses, the whole of the area between King-street and Delahay-street, northward to Charles-street, would be cleared away. Much of the space is already vacant,—the unoccupied land opposite the Local Government Board in Charles-street will be remembered in connexion with the explosion,—and other portions belong to the Government. There are no buildings upon the whole area of the slightest interest, and such as there are would not be of a costly character to acquire. Some yards and lanes unknown to the general public,—Boar's Head-yard, Gardiner's-lane, Delahay-mews,—wander about among the buildings. These would be superseded. King-street would be thrown some 80 ft. to the westward, and would in its new form have a breadth of 50 ft. Charles-street would be widened throughout its length to about 70 ft., thus giving a noble frontage on this side to the India Office pile, while a new street of 40 ft. in width would be carried in a line parallel with Great George-street from the new King-street to Delahay-street. Four most important frontages would thus be obtained,—one to the widened Parliament-street, one to the new King-street, one to the widened Charles-street, and one to the new road. On each of these there would be room for handsome and spacious buildings.

As to the financial aspects of the scheme, the Government, according to the statements of the First Commissioner's adviser, Sir Henry Hunt, possesses property on the land to be acquired purchased at prices amounting to 287,000l., and there is, in addition, a police station worth about 30,000l.—a total of 320,000l. The residue of the property, according to the same authority, is worth 420,000l. The total cost of the scheme would thus, in round figures, be 737,000l., while the value of the land with the new frontages would be 755,000l., leaving a clear profit by the transaction. The speculation would, however (says the *Times*), be a heavy one; and here comes in the aid which Mr. Shaw-Lefevre offers on the part of the Government. Instead of compelling the Board to buy the Crown property at the price fixed by arbitration and to pay for it in cash, the First Commissioner would let the Board take it at the prices given for it (unless they pre-

ferred an independent valuation), and would take in exchange so much of the new frontages as, in Sir Henry Hunt's opinion, would be equal to the aggregate value. The Board would thus be relieved of three-sevenths of the risk, being assured of a purchaser at a price which would yield a profit to the extent of 320,000l. out of a total of about 737,000l. The only condition Mr. Shaw-Lefevre imposes is that he should have a controlling judgment as to the character of the buildings to be erected on the new frontage to Parliament-street. The land purchased by the Government would, probably, indeed, be to a considerable extent taken in this position.

LINCOLN'S INN.

A PROJECT is on foot for presenting a memorial to the benchers to get an extension of Lincoln's Inn. The plan is to acquire the site on the north, from Chancery-lane to Great Turnstile. Between the garden and the buildings to be erected there will be a wide row or walk. As the Turnstile is to be widened into a street, the difficulty which, it is understood, was raised some time ago, with regard to ancient lights, is set at rest. There will be a large gate at the western end of the new row, and another at the eastern, in Chancery-lane, just opposite the frontage of Stone-buildings, which is now scarcely visible over a useless and ugly wall. An arched gateway, cut through No. 1, Stone-buildings, will render unnecessary the present gate in Chancery-lane, a little lower down.

BUILDING PATENT RECORD.*

APPLICATIONS FOR LETTERS PATENT.

- 3,573. L. A. Groth, London. Manufacturing slabs, blocks, &c., in hydraulic mosaic marble. (Com. by S. Paul, Bilbao.) July 20, 1883.
3,614. J. Heinemann, Hanover. Manufacture of artificial marble. (Com. by H. Rottie, Hanover.) July 23, 1883.
3,634. B. J. B. Mills, London. Hygienic joint for doors, windows, &c. (Com. by J. Couturier, Lyons.) July 24, 1883.
3,647. A. Mehan, Glasgow. Ventilator cowls, &c. July 25, 1883.
3,648. F. W. E. Braid, London. Fire-resisting doors or shutters. July 25, 1883.
3,650. H. C. Webb, Worcester. Attaching door-knobs to their spindles. July 25, 1883.
3,656. W. B. G. Bennett, Southampton. Automatic flushing apparatus. July 25, 1883.
3,661. E. Jordan, Cardiff. Street gratings, &c. July 26, 1883.

NOTICE TO PROCEED

has been given by the following applicants on the dates named:—

- July 24, 1883.
1,513. R. M. Ordish, London. Pavements. March 22, 1883.
1,569. A. Bailiff, Paris. Matter for incrusting metal to represent sculpture, &c. March 28, 1883.
2,693. J. A. Meguin, Liverpool. Graining or ornamentation of painted or coloured surfaces. May 30, 1883.
July 27, 1883.
1,532. A. C. Boothby, Kirkcaldy. Automatic flushing apparatus. March 24, 1883.
3,200. H. Burgin, Walthamstow. Inducing air from chimneys. June 27, 1883.

WORTHING.

THE following tenders have been received at the Surveyor's Office, Worthing:—

For spikes, pile shoes, and other ironwork, for sea defence purposes. Messrs. Rowson & Drew, 225, Upper Thames-street. Accepted according to schedule.

For re-roofing water tower:—

W. W. Sandell, Worthing.....	£218 0 0
A. Crouch, Worthing.....	207 0 0
J. Blaker, Worthing.....	197 0 0
E. Snewin & Son.....	189 0 0
W. Stanbridge, Broadwater.....	116 8 6

(Mr. Stanbridge's tender was accepted.)

For labour required in paving, kerbing, channelling, &c., of Victoria-road, Worthing:—

J. Blaker, Worthing.....	£73 9 0
F. Churcher, Worthing.....	73 17 4
J. Orett, Worthing (accepted).....	67 15 3

For 1,000 cube yards of flints (broken):—	
J. Searle, Worthing.....	4s. 6d. per cube yard.
E. Potter, Salvington.....	4s. 6d. "

(No tender accepted.)

* Compiled by Hart & Co., Patent Agents, 186, Fleet-street.

ARTISANS' GYMNASIUM HALLS.

SIR,—Although I am not of the builder's interesting craft, nor of the architect's noble profession, I find it pleasant to recreate my mind by a perusal of your instructive pages,—from the long and learned papers down to the short notes of general intelligence. In this way I found food for thought in your issue for the 14th ult., when, in noticing [on p. 65] the new block of artisans' dwellings (numbering nearly 1,000 rooms) to be erected in Soho, you pertinently remark:—"Cannot the Company give their tenants some rooms a little larger than they have done?" This suggests another idea,—the adding to these extensive blocks of artisans' dwellings a gymnastic hall, which could serve likewise as a hall for lectures, concerts, or any entertainment of an educational character. Such an addition would be invaluable, and as our architects, when "put upon their mettle," have not altogether lost their cunning in the matter of arrangement, doubtless, if put to it, they would find the way in future "blocks" so to economise space as to insinuate a gymnastic hall without interfering with the desired number of "Rooms to Let," while the educational advance in the artisans' dwellings system would be very marked. The practicability of the idea here suggested, I venture to believe, would not appear overstrained upon a careful inspection of the gymnastic hall from whence I now write, which very beautiful gymnasium is not only abundantly furnished with every first-class gymnastic requirement for strength and work, but is so arranged that the gymnasium can, in a few minutes, be completely cleared for lecture, concert, or any educational entertainment. By the same token, after any such entertainment, in a few minutes the hall could be made to re-assume its original purpose, that of a most elegant and completely-fitted working gymnasium. It is to be hoped that Sir Sidney Waterlow and those gentlemen acting with him, when next contriving shelter for the artisan body, will see what can be done towards advancing the artisans, physically and mentally, "on the premises." EDWIN ROFFE.

Herr Stempel's Gymnasium,
Albany Street.

LONDON IMPROVEMENTS.

SIR,—Your remark in your article on "Improving Edinburgh," in the issue of 21st ult. [p. 76].—"We think it is a decided mistake to improve one side of a street only." Any one looking at the new (now somewhat old) Clerkenwell-road, near the Holborn Town-hall, will most heartily agree with you. Though years have now passed since this important road was opened, in front of the brewery, where the public convenience if not safety is entirely disregarded, the old narrow pavement still exists, and only those who risk their clothes, if not their lives, dare, as very few do, to use it. This is a great scandal, surely, and raises the question whether our Metropolitan Board are too poor or too supine to cope with the evil, and give us a safe and decent footpath in this main road of a central part of the "Great City."

One would also like to know what and when something real is to be done to St. Martin's-lane? INTERESTED.

GILGWYN CHURCH, PEMBROKESHIRE.

THE Bishop of St. David's re-opened this little church on Tuesday, the 17th July, after a restoration which has practically amounted to a rebuilding, a small portion of the walls only being sound enough to retain. The simple parallelogram outline of the building, with its continuous roof, has not been changed; but the chancel porch, which has been marked outside by an ornamental cresting, and inside by an arched boarded ceiling, the nave roof being open up to the ridge, and plastered between the rafters. A new oak-framed porch has been placed on the south side, the entrance altered from the wall opposite; and a new oak-framed bell-aperture, in harmony with the porch, has been placed at the west end. The slates are from a local quarry; the window and doorway stonework from the Forest of Dean; and the encaustic tiles from Webb's Worcester Works; and the wrought-iron work from Messrs. Brawn, of Birmingham.

The accommodation has been raised from sixty-four to ninety-one,—the fittings being all new, of pitch-pine; the old richly-carved square Norman font-bowl being mounted on a new base.

The restoration has been principally due to the efforts of Mr. J. B. Bowen, of Llynwgwair, late

M.P. for the county of Pembroke, assisted by a grant from the Incorporated Church Building Society.

The contractors were Messrs. Thomas, Joshua, & Griffiths, of Kilgerran; and the architect was Mr. E. H. Lingen Barker, of Hereford.

ASPHALTE FLATS AND THE BUILDING ACT.

Sir,—I was rather surprised to see in your last issue that a District Surveyor had taken proceedings against a builder for constructing flats covered with Claridge's asphalt. About eleven years since I had a contention with the late Mr. H. Baker as to the necessity of a certain flat in his district being covered with *incombustible* materials, instead of zinc as specified, and the matter ended in my acceding to Mr. Baker's request by covering the flat with asphalt. Since that time I have known several instances of the use of the asphalt in flats, and consider that no better material can be used.

HENRY LOVEGROVE.

No. 25, Dudgeon-rose, E.C.

CHURCH-BUILDING NEWS.

Newbridge-on-Wye.—On the 12th ult. the new church which has been erected here at the cost of Mr. G. S. Venables, Q.C., was consecrated by the Bishop of St. David's. The church has been erected from the designs and under the superintendence of Mr. Stephen W. Williams, architect and county surveyor, Rhayader, and is dedicated to All Saints. The plan is that of a Latin cross, the transepts forming respectively the vestry and organ-chamber, the east end being a semi-octagonal apse, and the tower is situated at the north-west angle of the nave. The nave is 51 ft. 9 in. long, by 24 ft. wide; the chancel is 32 ft. long by 20 ft. 6 in. wide. The style adopted is Early Decorated of the latter part of the thirteenth century, or what may be otherwise described as transitional between the Early English and Decorated periods. The principal entrance is through the tower, under a deeply-recessed and richly-moulded arch carried upon shafts with carved capitals. The inner doorway is also recessed with bold moulded jambs, the mouldings carried round the arch. The tower is built in three stages, the lower portion forming the porch as above described, the middle stage being the ringing-chamber, which is approached from the porch by a newel staircase in a semi-octagonal turret on the western side. The upper or belfry stage has eight deeply recessed and traceried openings. The cornice of the tower, which rests upon a corbel table, is enriched with carved paterae, and from it springs a broad spire of Portland stone with moulded string-courses and spire lights, having engaged shafts with moulded bases and capitals. The total height of the spire from the ground line to the top of the vane is 104 ft. The nave and chancel roofs are covered with Ruabon red tiles. The walls of the church throughout are built of stone from a quarry near Trefon, Breconshire, situated upon the property of Mr. J. Williams-Vaughan. The quoins of the buttresses and the relieving arches over the windows are of stone from the Llanfawel quarries, near Builth. The whole of the tracery of the windows and external dressed stone work is of Portland stone. The interior is lined throughout with Corsham Down stone, from Messrs. Pictor & Sons' quarries, and in the nave there are bands of red Shellock stone, from the Grinshill quarries in Shropshire, between the inner and outer wall there is a 3 in. cavity, the walls being bonded together by means of galvanised cast iron ties. The whole of the masonry has been executed in hydraulic lime, from Abergarwh, in South Wales. The nave is lighted by means of five two-light traceried windows, three on the south and two on the north side, and there is a large west window of three lights with a richly traceried head. The roof of the nave is of pitch pine, and is of the hammer-beam type, with moulded braces curved and brought down from the collar beams and tenoned into the hammer-beams. The collar-beams are moulded, and enriched with battlements. The hammer-beams rest upon carved corbels, and spring from shafts of red Mansfield stone, with carved capitals and corbels of Beer stone. The pulpit is of Beer stone, forming five sides of an octagon, and springing from an octagonal moulded base; each face of the pulpit has a figure carved in high relief, standing under a trefoiled arch carried upon shafts of polished Devon marble with

carved capitals, the spandrels above the arches being also carved. The figures are St. Llyr, St. Paul, St. John-the-Baptist, St. Peter, and St. Ayan, the first and last named being the patron saints of the two adjoining parishes of Llanyre and Llanafan Fawr. The chancel windows are filled with stained glass, by Kempe, of London, and so also is the south-west window of the nave. The remainder of the windows are glazed in cathedral glass, in several lights, by Powell Bros., of Leeds, who also supplied a small stained glass window in the organ-chamber. The font is carved in Beer stone, with red marble shafts. The cover of the font is of wrought iron, by Jones & Willis, of London. The floors under the seats throughout have been laid with Warham's patent wood-block flooring, and the tile pavements are from Mr. Godwin's works at Withington, near Hereford. The seats of the nave are of pitch pine, and the choir-stalls of oak, panelled and moulded with open traceried fronts. The ends of the choir-stalls have been filled in with very handsome panels, which have been carved by Mrs. Lister Venables, of Llysidiann. The lectern was carved at Munich. It represents an eagle with outspread wings standing upon a globe which rests upon the carved capital of a rich banded and carved shaft, springing from a moulded circular base with claw feet. The heating apparatus was supplied by Mr. Porritt. The contractors were Messrs. W. Bowers & Co., of Hereford, and the work was under the management of Mr. Mansfield, the junior partner of the firm. Mr. Alfred Meredith was the foreman of the works. The font and pulpit were supplied by Mr. Clarke, of Hereford, who also executed the whole of the carving. The cost of the building, including the special gifts, was, we believe, about 4,000l.

Brighton.—On the 13th ult. the new Church of St. Matthew, Kemp Town, Brighton, was opened for service. The church was begun in July, 1881, and is situated in Sutherland-road. When completed, in accordance with the designs of the architect, Mr. John Norton, of Old Bond-street, London, it will be an imposing structure, giving seating-room to 1,200 persons. At present, however, it will only seat 1,000. The contract, which was accepted by Mr. J. T. Chappell, of London and Brighton, was for 10,000l., but several matters have to be left in abeyance. The work to be temporarily left unfinished will be the upper part of the lower and spire, the gallery at the west end, a children's gallery at the eastern part of the chancel, the reredos, and the carving of the capitals of the columns in the nave. The height from the ground to the top of the spire will be 170 ft., but at present the lower is only 73 ft. high, the roof ridge being 83 ft. The walls are massively built of concrete, faced externally with "snapped" flints, with deep courses of red moulded bricks under the lean-to eaves of the side aisles and main roof, and stone dressings; the roof being of slates with ornamental ridge tiles. The building is carried upon arches, and the basement will form a playground for the children who will attend the school intended to be erected to the north-east of the church. The main entrances are by the west porch and tower; the porch being entered beneath what will be an elaborately-carved arcade, surmounted by a large window of five lancet-shaped lights and a wheel-shaped window at the top, both framed with stone, in keeping with those in the aisles and chancel. All the windows are glazed in patterns with cathedral glass. The walls internally are faced with pink-tinted red bricks. The arches of the nave are of moulded red bricks, supported on columns of Douling stone. There are seven arches on each side of the nave and chancel. The columns supporting the arches are round, but relieved by an ornamental band midway between the plinth and capital of each. The nave is 70 ft. long by 36 ft. wide; and the chancel (the roof of which is panelled with stained wood) is 36 ft. wide by 30 ft. in depth; the side aisles being 10 ft. wide. On the north side of the chancel will, as previously explained, be erected a children's gallery, which will be entered direct from the proposed schools by a light bridge; avoiding the necessity of the children passing through the church. The pulpit, which is to be carved in stone by Messrs. B. & W. Bennett, monumental masons and sculptors, of the Lewes-road, Brighton. The base is arcaded, and the body ornamented with Venetian mosaic panels, the designs being of a floral character, in red and green upon a gold ground, the work

of Mr. Davison, of London. The passages between the seats, which are stained pine benches on a wooden floor, are paved with red, buff, brown, and black mathematical tiles, and the church will be lighted with bracket gasoliers, supplied by Messrs. Hart, of London, and warmed, when necessary, by Grundy's heating apparatus. During a heavy thunderstorm which passed over Brighton on Sunday, the 15th, the church was struck by lightning, considerable damage being done. The lightning struck the cross on the east side over the chancel, taking it completely off and carrying with it a portion of the coping.

Books.

Familiar Lessons on Food and Nutrition.

By THOMAS TWINKING. London: David Bogue. This is the first section of a comprehensive hand-book to the Parkes Museum of Hygiene, and deals with the organic and inorganic components of food, of the physical properties of water, and its relation to food; of wholesome and unwholesome food, its comparative digestibility, and modern expedients for preserving animal food from decay, &c. A second part is promised, which shall, by the aid of the knowledge which the first conveys, conduct the inquirer through the museum, and render all its exhibits intelligible and instructive; and a third part, which shall summarise the two former, and bring into a practical shape the whole science of dietaries, or Dietetics.

It seems strange that, at this stage of the world's history, it should be taught such elementary truths as the necessity of personal cleanliness, and the selection of simple and nutritious foods. But the need arises from the very completeness of that artificial life which goes by the name of civilisation. The instinct of the savage directs him to the most suitable of the simple foods within its reach; but it requires the wisdom of a philosopher to select from amongst the numberless viands at his command those which are best suited to his well-being. "Fads" of all sorts obtain a hearing, and are successful in proportion to the plausibility with which they are advocated; and there is no surer way to counteract many mischievous fallacies on the subject of food than the dissemination of sound teaching, such as may be found in this little book. It is certain to meet with a wide success.

Old Furniture. London: Wyman & Sons.

A COLLECTION of plates issued as supplements to the *Furniture Gazette*, and dedicated to the subscribers to that periodical. The examples are well drawn and engraved, and will prove useful to cabinet-makers and upholsterers generally. Some of the designs are so good that we are disappointed at not learning more of their history. "Carved buffet, sixteenth century," leaves us little in the dark as to whether it is only in the manner of that time, or a veritable example of old work. In some cases the particulars are given, and the fact only serves to throw a little (perhaps unjust) suspicion upon the others. The value of the plates is increased by the addition of larger details of the quaint sixteenth and seventeenth century mouldings; many of the examples are all that furniture should be,—plain, homely, comfortable, strong, and elegant, and the "trade" could not do better than take these as models for their modern work. The now fashionable Sheraton and Chippendale styles are not overlooked, and the whole subject is treated in a catholic spirit. It is a hopeful sign of the times that so trustworthy a guide to good and artistic work is brought within the reach of all who have need of such.

Electric Lighting. By URQUHART. Edited by E. C. WEBB. London: Crosby Lockwood & Co.

This book is issued under date the 1st January, 1883, and professes to be a complete record of the history of electric lighting. The author has had the assistance of Messrs. Siemens Bros., the Edison Company, and others, in the compilation and revision of the work, and the whole has been carefully edited by Mr. Webb. The illustrations are numerous, and clearly drawn, and the subject is presented in a studiously simple and non-technical form. The lighting of buildings has a chapter devoted to it, and the cost of the various systems is

Gone into in detail, and a preference is expressed for the incandescent lamps, such as are in use at the Savoy Theatre and elsewhere, over the arc light, for ordinary domestic purposes. Statistics as to the lighting of the Thames Embankment close a clearly-written and valuable treatise.

Saw-Mills. By Mr. POWIS BALE, M.I.C.E. London: Crosby Lockwood & Co.

The object of the writer is to place at the service of the public the result of a long experience in the economical conversion of timber. He is favourably known by a former work on "Wood-working Machinery," of which we were able to speak approvingly. This is a companion volume, in which the administration of a large sawing establishment is discussed, and the subject examined from a financial standpoint. Hence the size, shape, order, and disposition of saw-mills, and the like, are gone into in detail, and the course of the timber is traced from its reception to its delivery in its converted state. The author rightly insists upon the importance of small savings of time and labour, and upon the important bearing they have upon the output in relation to the working expenses. Plans for various sized saw-mills, and their accessories, are given in illustration of his advice, varied and adapted to the varying nature of the work to be carried on. Tramways and travellers are utilised freely, and the greatest care is taken to provide for reducing the bulk of the timber directly it is delivered on the premises, either by land or water carriage, as the case may be. Copious instructions are given for the suitable arrangement of shafting, and its subsidiary gearings, and, indeed, no point of importance is left untouched. From the high speed necessary for the performance of this kind of work, the machinery is exceptionally dangerous to the workmen and others, and ample precautions are suggested for minimising or removing these dangers. The need of such a book as this is well brought out by the fact that the author lately saw several machines in a mill cutting mouldings from rectangular pieces of wood, and therefore wasting nearly 50 per cent. of both material and labour: they should, of course, have been reduced to a triangular section by suitable saws. Such a thing could not have occurred in America, where every possible nicety in such matters is observed. That the author has brought his work to the present date is shown by the apparatus for stopping engines by electricity, which he describes and illustrates. Although, on the whole, water-power is at the present time the most economical agent, a great future is predicted for electricity in this connexion,—and the writer suggests once again what may soon become a fact of modern life, viz., the provision in great towns of a central electrical depot, whence power can be laid on at will, for any desirable purpose, just, indeed, as gas is let out now for lighting. The important question of foundations for machinery, and the means by which its vibration may be counteracted or reduced, forms an interesting chapter, and the importance of care and knowledge in this part of the construction of mills is amply shown. Any reasonable cost in ensuring the rigidity of the foundations is held to be well spent. The work contains chapters on the selection and preservation of timber, a table of different woods and their uses, and is closed by a useful glossary of the timber and saw-mill trade technical terms. We could not desire a more complete or practical treatise.

Newfoundland. By J. HATTON and Rev. M. HARVEY. London: Chapman & Hall.

This book is the result of a somewhat unusual experiment in historical and descriptive writing, inasmuch as it is the joint work of two authors, the one a resident in Newfoundland, who has provided the bulk of the materials, and the other the well-known author of "Journalistic London," who has supplemented the material so supplied by independent researches at the British Museum and elsewhere, and has worked the whole up into a presentable shape.

This system may have its advantages, the substantial accuracy of the narrative is guaranteed, and it is presented to us in effective literary form,—but the system has also its disadvantages. The facts are apt to suffer a little in translation, and descriptions of scenery at second-hand have an artificial ring. There is too much of the conventional about it to be quite satisfactory, of "grim rocks frowning upon

angry billows," &c., and too little genuine local colouring.

The subject is treated methodically and conveniently arranged in sections. 1. The history of the colony. 2. Its physical geography and topography. 3. The all-important subject of the fisheries. 4. Its agricultural resources. 5. Its mineral resources. 6. Population, government, &c.

The historical section will probably be found to be the most generally interesting, and is, indeed, full of incident. The mariner who discovered and secured for England "a claim to the whole coast of America, from the burning sands of Florida to the ice-bound shores of Hudson's Bay" was permitted to prosecute his investigation at "his own proper costs and charges," and on the success of his enterprise was rewarded by his Sovereign with the sum of 10l. It is true that 10l. was equivalent to 40l. of our money,—but surely even that was "little enough for a continent."

Sir Humphrey Gilbert, Sir Walter Raleigh, and other great names are connected with the fortunes of Newfoundland,—and the names borne by the divisions of the island are suggestive of England. In explaining, however, how "Avalon" came to be allotted to the portion of the island conceded to Lord Baltimore, the author surely gets his facts a little mixed. He says, "Joseph of Arimathea arrived at Avalon (afterwards Glastonbury) in Somersetshire and there founded a church on the site of which the great abbey of St. Albans was subsequently erected. Here stood the ancient Roman town of Verulam!" Mr. Hatton may see reason to modify this astounding sentence in a second edition.

Notwithstanding the somewhat lofty strain adopted by the author, the scenery does not appear to be very remarkable for grandeur or beauty, although there are atmospheric phenomena of extreme loveliness; the "silver thaw" which clothes the trees with glittering jewels, and in the sunshine is like a glimpse of fairyland (or the Drury-lane pantomime), and the Aurora Borealis, the splendour of which cannot be exaggerated. The aborigines have quite disappeared before the march of the white man. They would appear to have been very low in the human scale, having no idea of religion,—their language even being destitute of any word to express the almost universal notion of a deity. For ages Newfoundland was hardly,—nay, cruelly,—used; but now it is on the high road to the position it deserves amongst the English colonies. Railways are in working, or in course of construction, mineral wealth of all sorts only awaits the advent of the capitalist for its profitable winning. The country is "endowed by nature with possibilities of great agricultural wealth, and has fertile belts second to none in the new world," and to the sportsman the inducements are or should be irresistible. The cathedral at St. John's is one of Sir Gilbert Scott's best known works, and the Roman Catholic Cathedral is equal to it in importance, though different in style: with these exceptions, architecture is,—as one might have supposed,—almost as scarce as the famous Norway snakes. The principal town is supplied with abundant water of absolute purity. These are signs of a healthy public life, and we may confidently predict for this ill-used colony a speedy development and a brilliant future. The first newspaper was founded in 1805. It still holds its ground, although it has numerous rivals; St. John's alone having two daily papers and six others, and similar enterprise is shown by neighbouring towns.

The book is illustrated by some indifferent cuts, and a few portraits of Sebastian Cabot, and his companions and successors. They do not much help the reader to a knowledge of the country, and would be well exchanged for a good map, of which the book is unfortunately destitute.

Annals of Almondbury. By Canon HULBERT. London: Longmans.

The parish of Almondbury is situated in the West Riding of Yorkshire, the romantic scenery of which has been destroyed by the exigencies of manufacturing industry, its valleys being "filled with factories and smoke wreaths." The present church dates from 1522, and is as uninteresting a subject for the historian as one could wish. The author appears, nevertheless, to have an unbounded affection and admiration for it and all its belongings. It was restored, he fondly writes, to "its original grandeur" in

recent years, when the builder unfortunately "lost" the "sanctus bell," and there is something quite touching in the way the author refers to the "lofty tower," 70 ft. 8 inches high!

The vicarage, built in 1844, is as devoid of architectural interest as the church, and, with the exception of one or two old halls of the latter part of the sixteenth and early years of the seventeenth century, the parish has nothing very much of interest to show a stranger. The half-timbered portion of Penay Hall is picturesque, and the detail good. The writer of the book has, by the aid of very minute descriptions of unimportant matters, and of copious catalogues of tombs and monuments, and their inscriptions, &c., and other small beer-chronicles, filled 600 octavo pages, and made a book of goodly bulk. It can, however, only pretend to a local interest. Of the drawings with which it abounds, we had rather say nothing. The subjects were sometimes trying ones to the artists, no doubt. The preface expresses obligations to a whole crowd of contributors both by pen and pencil, and there is over all clear evidence of the work having been a labour of love. The author believes that the result will be "creditable to the locality to which it relates," and so in a sense it will. For the rest, the portrait of the Canon, which faces the title-page, is brimming over with a serene self-satisfaction which we would not for the world say one word to disturb.

VARIORUM.

HOWITT'S "Visits to Remarkable Places" (Longmans, London), has been published as an abridgment of the well-known larger work, published some forty years ago. No attempt has been made to bring it down to date. It is a reproduction of the account of scenes and the impressions they made upon the author, visited long years ago. Many of the places,—Stonyhurst College, to wit,—have been altered out of all recognition, and many others are greatly changed. The book has, nevertheless, a certain interest, for many of the scenes described have not been materially altered. Of the literary merits of these essays favourable judgment has been pronounced long ago by competent authorities, and confirmed by a sustained popularity of nearly half a century.

Miscellaneous.

Royal Archaeological Institute.—On Tuesday the summer congress of the Royal Archaeological Institute was opened at Lewes, under the presidency of Lord Chichester. The members were publicly received by the Mayor and Corporation, who presented them with an address, welcoming them on their first visit to that ancient borough, in the neighbourhood of which they would find much to interest and instruct them, and much from which they would be able to instruct others. The Mayor, in his speech, expressed the regret that was felt at Lewes at the loss of the former president of the Institute, Lord Talbot de Malahide. Lord Chichester then read his presidential address, dwelling on the great uses of archaeology as the handmaid of history, and recapitulating many of the places of interest which the Institute was to visit. The company, under the guidance of Mr. Clark and the Rev. Mr. Stephens, afterwards proceeded to reconnoitre the castle, the battlefield of Lewes, and the Priory, and afterwards perambulated the walls of the town. Mr. Stephens read a paper on the battle of Lewes. In the evening Mr. Freeman opened the historical section with an address. The day was very fine, and the members of the Sussex Archaeological Society mustered in large numbers to meet their brethren from London.

Peel-Grove Burial-Ground.—In the House of Commons, on Monday evening, Sir J. M. Garel Hogg, in reply to Mr. F. Buxton, assured the Hon. gentleman that there was no intention whatever to allow a road to be constructed through the Peel-grove Burial-ground, Bethnal-green. An application was recently made to the Metropolitan Board of Works for approval of a plan of such a road, but the Board was of opinion that the appropriation for building purposes of a burial-ground, where human remains were interred in large numbers, should be opposed by every possible means, and the application was accordingly refused.

Re S. Moass & Son, Exeter, General Contractors.—A meeting of the creditors of Mr. John Moass, trading under the style of S. Moass & Sons, general contractors, Exeter, and also joint contractor with Thomas Redway, of Exmouth, Devon, contractor for the erection of a mansion and buildings at Rousdon, Devon, was held on Wednesday at the Grand Hotel, Bristol. Mr. Mann, London, was voted to the chair. The creditors were represented by Mr. E. T. Collins, of the Bristol Merchants' Association, and the Receiver, Mr. R. Southcott, Exeter. The statement of accounts filed in reference to the joint estate showed liabilities to unsecured creditors amounting to 6137. 19s. 3d.; to creditors fully secured, 6,424. 2s. 11d.; estimated value of securities, 15,000l.; surplus to be carried to contra, 8,575l.; creditors for wages, 25l. On the other side, the actual assets showed a surplus over creditors fully secured of 8,575. 17s. 1d., which, after paying the creditors in full, would leave a surplus of 7,933. 17s. 10d., a moiety of which was carried to the separate estate of John Moass. The separate statement showed liabilities to creditors unsecured, 2,977. 11s.; creditors fully secured, 5,563. 2s. 4d. Estimated value of securities, 6,468l. 8s. 11d.; surplus, 905l. 6s. 7d. Creditors for preferential claims amounted to 40l. 7s. 2d. Among the assets were—stock-in-trade, utensils, &c., 328l. 5s. 5d.; book debts, 436l. 15s. 10d.; estimated to produce 300l.; furniture, 61l. 12s. 6d.; surplus over securities in the hands of the creditors, 905l. 6s. 7d. The debtor attributed his position to the difficulties which had arisen in regard to the contract with Sir Henry Peck, bart., M.P., in the erection of the mansion and buildings at Rousdon, and in consequence of which he was unable to make any offer. It was resolved to liquidate the estate.

Improvements by the Metropolitan Board of Works.—The Metropolitan Board of Works, sitting in camera on Tuesday, arrived at important resolutions in regard to the powers they will seek from Parliament in the next session. It has been unanimously determined to ask the sanction of the House of Commons for the construction of a low level bridge across the Thames immediately eastward of the Tower; and Sir Joseph Bazalgette, the Board's engineer, has been instructed to prepare designs for this in substitution for the plans for a high level bridge which he submitted some months ago. It has been resolved also to seek powers to construct two great tunnels under the river, easily accessible for all kinds of traffic. The points selected for the construction of these important works are Shadwell and Blackwall, and the designs for them are already completed by Sir Joseph Bazalgette. As regards the streets improvements, the widening of Parliament-street is a work which the Metropolitan Board of Works express their readiness to undertake on the lines laid down by Mr. Shaw-Lefevre. What these lines are we mention elsewhere. The question of the improvement of the means of access to the new Law Courts stands over for further consideration. Of the eight or nine millions sterling estimated to be required for these great undertakings, the Metropolitan Board ask for powers to raise about one-half by an extension of the period of the coal and wine dues.

New Italian Houses of Parliament.—We learn from the *Deutsche Bauzeitung* that there will soon be a competition for new Italian Houses of Parliament at Rome. A committee has been appointed, with instructions to select a suitable site, and, at the same time, to make arrangements for the competition. The committee had to report last month, and plans are to be sent in by November next. The committee includes two members of the upper and two of the lower chamber, and two persons appointed by the Ministry of Public Works, as well as the Syndic of Rome and the President of the St. Luca Academy, the chairman being the Prime Minister. The most likely sites for the buildings are the Convento dei Capuccini, in the Piazza Barberini, and the Villa Ludovici.

Proposed New Street Openings in the City.—Certain new openings for the purpose of affording a better and more direct means of communication between the important business centres of Austin Friars, Great Winchester-street, Throgmorton-avenue, Telegraph-street, Copt-hall and Warfords courts, Tokenhouse-yard, &c., are projected. A memorial to the land-owners for co-operation in the matter lies for signature at the office of Messrs. Steer, Lawford & Co., 3, Drapers'-garden.

The Choice of a Sword.—The deputation from the subscription committee, consisting of Baillie Wilson and Mr. Wm. Auld, waited upon Sir Archibald Alison at his residence, Woodville, Colinton, near Edinburgh, for the purpose of obtaining his assistance in selecting the most appropriate of the designs for the sword in the public competition, the committee being unable to decide upon the best amongst so many meritorious drawings. The designs, fifteen in number, and all claymores, had been previously forwarded to Woodville. After a careful study of the collection, the design marked "E 943," submitted by Messrs. George Edward & Sons, of London and Glasgow, was chosen.

Britannia Theatre.—The requirements of the Metropolitan Board of Works as to exits, fireproof floors, ample staircases, &c., have been carried out at the Britannia Theatre, Hoxton, under the directions of the owner's surveyor, Mr. H. Lovegrove, of 26, Budge-row. The iron-work and fireproof floors, &c., have been executed by Mr. A. D. Dawney, and the general builder's work by Mr. E. Conder, of Hawthorn-street, N.

Mr. James Newton, late of the Market Tavern, York-road, King's-croft, now of Hertford House, Queen's-road, Finsbury Park, has purchased the site of the Winchester Hall Hotel, at the corner of Northwood-road, Archway-road, Highgate, and has let the contract to Mr. Sutton, builder, Canning-town, Essex, for the sum of 6,834l.

An Old Devonshire Mason.—The *Western Morning News* for the 31st ult. records the death of Joseph Train, a mason, of French-street, Teignmouth. He was the oldest inhabitant of that pleasant Devonshire watering-place, and would have been 100 years of age next October. He was born in the neighbouring village of Chudleigh.

The Parcels Post Service.—Messrs. Clark, Bunnett, & Co., Limited, have been instructed by H.M. Office of Works to erect iron buildings for the new Parcels Post Office service at Lewes, Maidstone, and Tunbridge Wells; also one of their patent lifts at the Station, Ashford, Kent.

TENDERS.

For additions, &c., to the Royal Academy. Mr. R. Norman Shaw, R.A., architect. Quantities by Messrs. Franklyn & Andrews—

Ashby & Horner	£24,543 0 0
Kirk & Randall	23,576 0 0
Ashby Bros.	23,408 0 0
Dave Bros.	23,405 0 0
Conder	23,382 0 0
Booth Bros.	22,745 0 0
Holladay & Hansen ..	22,558 0 0
Perry & Co.	22,103 0 0
Rywaters	21,945 0 0
Shaw	20,183 0 0

For the erection of artisans' dwellings and rebuilding Three Commas public-house, Rotherhithe-street, S.E., for the Rev. Thomas Sedger. Mr. George Sedger, architect. Quantities by Mr. George Mattress—

Martin Wells	£2,860 0 0
W. & H. Castle	2,859 0 0
J. Hunt	2,563 0 0
A. White & Co.	2,467 0 0
Langmead & Way	2,448 0 0
H. L. Holloway	2,370 0 0
O. Miller & Son	2,300 0 0
Everard	2,184 0 0

For two-stall stable and loose-box, harness-room and loft over, covered yard, with coachman's living-rooms over, coach-house with billiard-room over, for Mr. Young, of Coombe Ararat, New Malden, Surrey. Mr. Thomas Lockwood Howard, architect, 7, John-street, Bedford-row. Quantities supplied—

H. Thorn, Malden	£271 10 0
J. Sanders, Malden	467 0 0
Lo Gassick & Co., Balham ..	463 0 0

For the erection of the Miller Memorial Hospital, Greenwich-road. Messrs. Young & Hall, architects. Quantities by Mr. Morgan H. Young—

Dove Bros.	£24,375 0 0
Hall, Beddall, & Co.	2,284 0 0
Kirk & Randall	4,093 0 0
Tongue	4,084 0 0
Jerrard	4,074 0 0
A. & F. Smith	3,870 0 0
G. Hall	3,860 0 0
H. L. Holloway (accepted) ..	3,700 0 0

For rebuilding shop and warehouse on the Plain, Harwich, for Mr. J. Self, Messrs. Whitmore & Reeves, architects, 14, Devonshire-square—

J. Cardus, Acton	£253 0 0
Saunders & Son, Dedham	490 0 0
J. H. Butler, Harwich	450 0 0
S. T. Newton, Harwich (accepted) ..	445 0 0

For alterations, repairs, and painting at the School for the Sons of Missionaries, Blackheath. Mr. J. E. Saunders, architect—

Plummer	£210 0 0
Staines & Son	298 0 0

For new sewer, High-street and Holloway-hill, Highgate. Mr. T. De Courcy Meade, engineer—

Dunmore, Highgate-road	£1,274 19 61
Dunmore, Crouch End	1,266 16 0
Piszev, Hornsey	925 0 0
F. A. Jackson & Son, Finsbury Park ..	869 0 0
McKenzie, Williams & Co., South Place, Finsbury (accepted)	698 0 01
.....	Withdrawn.

For rebuilding the Bull and East public-house, Highgate-road, for the Lion Brewery Company. Mr. Francis Edwards, architect—

Jerrard	£2,550 0 0
Ashby & Horner	2,538 0 0
Lo Gassick & Co.	2,475 0 0
Mark Patrick, & Co.	2,460 0 0
Ansell	2,407 0 0
Langmead & Way	2,345 0 0

For the erection of villas at Denecross, near Edenbridge, Kent. Mr. S. W. Haughton, architect, East Grinstead—

Contract No. 1. For one villa—	
J. Waters, Forest Row	£1,432 11 0
J. & F. Penn, Pembury	1,050 0 0
Head & Wallis, Lingfield	1,047 0 0
Salter & Son, Forest Row	1,030 0 0
Sales Bros., Edenbridge	995 7 8
W. Pledge, East Grinstead	827 0 0
A. Foster, East Grinstead	810 0 0
Goodwin Bros., Edenbridge	810 0 0
.....	* Accepted.

Contract No. 2.—For two villas, &c.

J. Waters, Forest Row	£2,536 11 0
Penn Bros.	2,074 0 0
Head & Wallis	2,008 0 0
Taylor & Son	1,965 10 0
Salter & Son	1,930 10 0
Goodwin Bros.	1,880 0 0
A. Foster	1,567 0 0
W. Pledge	1,531 17 0

For alterations to business premises, London-road, East Grinstead. Mr. S. W. Haughton, architect, East Grinstead—

J. G. (Exors. of)	£235 0 0
W. Pledge	291 0 0
A. Foster (accepted)	287 0 0

For construction of new road, laying in drains, &c., at East Grinstead. Mr. S. W. Haughton, surveyor, East Grinstead—

W. Pledge, East Grinstead (accepted) ..	£225 0 0
---	----------

For private street improvements in the township of Uxbridge, Contract No. 15, consisting of the sewerage, &c., of Queen's-road, Windermere-road, Manor-avenue, and Back Church-road (South), for the Barton-upon-Irwell Sanitary Authority. Quantities supplied by the engineer, Mr. John Price—

S. Holt, Miles Platting	£244 1 5
Williams & Whittaker, Hixton	84 3 5
J. Oakes, Kearsley	728 0 0
S. Cowburn, Hindley	722 0 0
Snap & Sons, Eccles	670 10 6
T. Willard, Chorlton-upon-Medlock ..	654 10 8
J. Randall, Wastley	613 10 11
E. Bird, Chorlton-cum-Hardy	595 0 0
W. H. Worthington, Rusholme	590 15 5
N. Taylor, Hulme	570 10 0
G. Unsworth, Moss Side	565 5 0
.....	* Accepted conditionally.

For private street improvement in the township of Hixton, Contract No. 16, consisting of the sewerage, &c., of Princess-road, for the Barton-upon-Irwell Sanitary Authority. Quantities supplied by the engineer, Mr. John Price—

S. Holt, Miles Platting	£473 19 6
Williams & Whittaker, Hixton	429 13 2
S. Cowburn, Hindley	418 0 0
M. Moss, Hixton	398 0 0
Snap & Sons, Eccles	395 5 8
J. Oakes, Kearsley	387 16 4
J. Randall, Wastley	381 0 0
M. Taylor, Hulme	333 11 0
E. Bird, Chorlton-cum-Hardy	338 0 0
T. Wallace, Chorlton-upon-Medlock ..	336 16 8
W. H. Worthington, Rusholme	327 19 9
.....	* Accepted.

For the erection of five shops in Uxbridge-road, Shepherd's Bush, for Mr. Miles Gawthrop. Mr. E. Tomlinson, architect, Gunnersbury Station, London. Quantities supplied—

G. Parker	£5,850 0 0
J. Barnes	5,800 0 0
J. Dorset	5,144 0 0
N. W. Putman	4,970 0 0
J. Boarder	4,740 0 0
Howell & Sons	4,350 0 0
G. Lyford (accepted)	3,850 0 0

For the rebuilding of No. 24, Albert Embankment, for Mr. T. S. Price. Messrs. Lander & Beddells, architects and surveyors—

Fish, Prestige, & Co.	£2,063 0 0
Edridge & Gee	2,050 0 0
R. B. B.	1,990 0 0
Willis & Son	1,920 0 0
Downs	1,898 0 0
Tyerman	1,897 0 0
Shephard	1,895 0 0
Nightingale	1,893 0 0
Ford & Sons	1,878 0 0
Good	1,852 0 0
Mattick Bros.	1,857 0 0
Marsland	1,855 0 0

For additions and alterations to "Park View," Thurlow Park-road, W. Dulwich, for Mr. A. C. Rich, Messrs. Habershon & Fawcener, architects—

Leafay	£832 0 0
Hooper	782 0 0
W. Groom (accepted)	743 0 0
Pile	697 0 0
Creed	619 0 0

For alterations and additions to premises, No. 33, Old Broad-street, for Mr. F. Statham Hobson. Mr. R. E. Taylor, architect. Quantities by Mr. W. Bailett.

Asby Bros.	£554 0 0
R. Conder	3,623 0 0
E. Lawrence	3,490 0 0
J. & J. Greenwood	3,380 0 0
W. Shurmer	3,384 0 0
J. R. Hunt	3,365 0 0
Langmead & Way	3,210 0 0

For the erection of Sherbrook-road schools, for the School Board for London. Mr. E. R. Robson, architect.

F. & F. J. Wood	£14,363 0 0
M. Gentry	14,200 0 0
Dove Bros.	14,094 0 0
J. D. Hobson	14,000 0 0
Peto Bros.	13,970 0 0
J. Oliver	13,910 0 0
Patman & Fotheringham	13,844 0 0
Higgs & Hill	13,840 0 0
J. Grover	13,830 0 0
G. S. Williams & Son	13,776 0 0
M. Manley	13,703 0 0
J. Smith & Son	13,683 0 0
J. H. Tarrant & Son	13,650 0 0
W. Shurmer	13,645 0 0
F. Higgs	13,523 0 0
W. Scrivener & Co.	13,462 0 0
W. Sheppard	13,284 0 0
W. T. Niblett	13,170 0 0
G. W. Gomm & Sons	13,146 0 0
Longmire & Burge	13,119 0 0
Langmead & Way	13,100 0 0
Stimpson & Co.	13,096 0 0
Atherton & Latta	13,060 0 0
Perry & Co.	12,950 0 0
E. J. Jerrard	12,913 0 0
W. Aldrey	12,923 0 0
Clarke & Bracey	12,900 0 0
A. Thorne	12,799 0 0
W. Brass	12,785 0 0
G. H. & A. Bywaters	12,761 0 0
H. Hart	12,760 0 0
Lathey Bros.	12,759 0 0
W. & E. Croaker	12,760 0 0
C. W. Reading	12,690 0 0
W. Downs	12,685 0 0
W. Bangs & Co.	12,677 0 0
J. T. Chappell	12,666 0 0
Asby Bros.	12,632 0 0
T. Boyce	12,621 0 0
J. Marsland	12,609 0 0
J. Hearle & Son	12,585 0 0
G. T. Pritchard	12,584 0 0
C. Wall	12,539 0 0

For the erection of Risinghill-street schools, for the School Board for London. Mr. E. R. Robson, architect.

Clarke & Bracey	£13,592 0 0
Dove Bros.	13,010 0 0
W. Larter & Son	12,889 10 0
J. Outwater & Son	12,852 0 0
Asby Bros.	12,552 0 0
J. Marsland	12,523 0 0
J. Morley	12,494 0 0
Lathey Bros.	12,477 0 0
G. S. Pritchard	12,473 0 0
H. Hart	12,464 0 0
J. Oliver	12,309 0 0
W. & E. Croaker	12,299 0 0
Longmire & Burge	12,213 0 0
Patman & Fotheringham	12,173 0 0
W. Downs	12,138 0 0
J. D. Hobson	12,049 0 0
W. Sheppard	12,049 0 0
G. H. & A. Bywaters	12,045 0 0
W. T. Niblett	12,002 0 0
Perry & Co.	12,003 0 0
W. Scrivener & Co.	11,982 0 0
J. Smith & Son	11,972 0 0
C. W. Reading	11,964 0 0
W. Aldrey	11,945 0 0
F. Higgs	11,925 0 0
G. S. & Williams & Son	11,925 0 0
T. Boyce	11,921 0 0
J. Hearle & Son	11,915 0 0
M. Gentry	11,910 0 0
Stimpson & Co.	11,871 0 0
W. Shurmer	11,789 0 0
W. Brass	11,742 0 0
Langmead & Way	11,698 0 0
Atherton & Latta	11,688 0 0
Wall Bros.	11,580 0 0
J. Grover	11,573 0 0
B. J. Jerrard	11,543 0 0
J. R. Hunt	11,317 0 0

For the erection of Neale-street Schools, for the School Board for London. Mr. E. R. Robson, architect.

Dove Bros.	£7,915 0 0
Lathey Bros.	7,693 0 0
J. Grover	7,631 0 0
Stimpson & Co.	7,603 0 0
M. Gentry	7,576 0 0
Longmire & Burge	7,575 0 0
G. H. & A. Bywaters	7,546 0 0
W. T. Niblett	7,531 0 0
W. Aldrey	7,490 0 0
W. Bangs & Co.	7,440 0 0
Atherton & Latta	7,408 0 0
Perry & Co.	7,360 0 0
S. J. Jerrard	7,333 0 0
J. Oliver	7,377 0 0
Clarke & Bracey	7,357 0 0
Langmead & Way	7,273 0 0
M. Manley	7,270 0 0
F. Higgs	7,270 0 0
J. Smith & Son	7,193 0 0
W. Brass	7,158 0 0
W. Shurmer	7,146 0 0
W. Scrivener & Co.	7,127 0 0
W. Larter & Son	7,114 0 0
G. S. Williams & Son	7,051 0 0
J. Marsland	7,025 0 0
G. S. Pritchard	6,981 0 0
J. R. Hunt	6,983 0 0
Wall Bros.	6,914 0 0

For enlargement of Chickland-street schools for School Board for London. Mr. E. R. Robson, architect.

R. L. Wood	£23,105 0 0
H. Hart	2,030 0 0
J. R. Hunt	3,008 0 0
W. T. Niblett	2,302 0 0
J. D. Hobson	2,300 0 0
G. S. Williams & Son	2,303 0 0
G. W. Gomm	2,267 0 0
Perry & Co.	2,265 0 0
F. & F. J. Wood	2,241 0 0
Clarke & Bracey	2,243 0 0
S. J. Jerrard	2,231 0 0
Dove Bros.	2,223 0 0
W. Larter & Son	2,218 0 0
J. H. Tarrant & Son	2,212 0 0
Lathey Bros.	2,213 0 0
Asby Bros.	2,200 0 0
J. Grover	2,200 0 0
W. Downs	2,198 0 0
M. Manley	2,198 0 0
Langmead & Way	2,196 0 0
Patman & Fotheringham	2,178 0 0
G. S. Pritchard	2,173 0 0
C. Wall	2,167 0 0
J. & J. Greenwood	2,150 0 0
W. & E. Croaker	2,150 0 0
W. Brass	2,145 0 0
J. Marsland	2,136 0 0
J. Outwater & Son	2,116 0 0
G. H. & A. Bywaters	2,107 0 0
W. Scrivener & Co.	2,104 0 0
Wall Bros.	2,100 0 0
J. Oliver	2,089 0 0
J. Hearle & Son	2,088 0 0
W. Bangs & Co.	2,080 0 0
J. T. Chappell	2,061 0 0
W. G. Larter & Son	2,061 0 0
W. Shurmer	2,045 0 0
W. Tongue	2,048 0 0
Stimpson & Co.	2,020 0 0
T. Boyce	2,015 0 0
Atherton & Latta	2,008 0 0
C. Cox	2,007 0 0
F. Higgs	2,000 0 0
J. Smith & Son	2,036 0 0
M. Gentry	2,490 0 0

For enlargement of Ann-street School, for the School Board for London. Mr. E. R. Robson, architect.

R. L. Wood	£210,780 0 0
Clarke & Bracey	10,218 0 0
Dove Bros.	9,664 0 0
H. Hart	9,641 0 0
Patman & Fotheringham	8,496 0 0
G. H. & A. Bywaters	8,418 0 0
W. Tongue	8,357 0 0
J. T. Chappell	8,300 0 0
T. Boyce	8,147 0 0
M. Manley	8,116 0 0
Lathey Bros.	8,087 0 0
W. T. Niblett	8,072 0 0
W. Scrivener & Co.	8,019 0 0
Langmead & Way	7,936 0 0
G. W. Gomm & Sons	7,908 0 0
G. S. Williams & Son	7,893 0 0
S. J. Jerrard	7,873 0 0
J. Marsland	7,878 0 0
W. Shurmer	7,866 0 0
Asby Bros.	7,847 0 0
G. S. Pritchard	7,796 0 0
W. Brass	7,780 0 0
F. Higgs	7,729 0 0
Peto Bros.	7,700 0 0
M. Gentry	7,683 0 0
J. D. Hobson	7,683 0 0
Stimpson & Co.	7,640 0 0
J. Smith & Son	7,619 0 0
Wall Bros.	7,597 0 0
J. R. Hunt	7,586 0 0
W. Bangs & Co.	7,580 0 0
J. Grover	7,482 0 0

For painting, repairs, &c., to Rushmore-road schools, for School Board for London. Mr. E. R. Robson, architect.

Goodman	£239 0 0
Nightingale	493 0 0
Guiver	495 0 0
Robey	415 0 0
Sargent	353 10 0
Vigar	343 4 0
W. Shurmer (accepted)	342 0 0

For painting, repairs, &c., to Haggerston-road schools, for School Board for London. Mr. E. R. Robson, architect.

Goodman	£449 0 0
Smith	437 0 0
Wall Bros.	397 0 0
Pritchard	392 0 0
Grover	383 0 0
McCormick	351 0 0
W. Shurmer (accepted)	333 0 0

For painting, repairs, &c., to Haggerston-road schools, for School Board for London. Mr. E. R. Robson, architect.

Green	£297 0 0
Pritchard	567 0 0
Williams	520 0 0
Atherton & Latta	512 0 0
Grover	498 0 0
Wilmet	478 0 0
Sargent	397 0 0
W. Shurmer (accepted)	387 0 0

For alterations and additions to No. 23, Stanley-gardens, Notting-hill. Mr. F. W. Hunt, architect.

Kinnmont & Son	£1,747 0 0
Dewar	1,626 0 0
Macey & Sons	1,621 0 0
Cowland & Co.	1,618 0 0
T. W. Haylock	1,608 0 0
Lapthorne & Co.	1,576 0 0

For the erection of workshops and wood-chopping sheds, at the Brentwood Industrial Schools, for the School Board for London. Mr. E. R. Robson, architect.

Robey	£1,097 0 0
F. & F. J. Wood	1,088 0 0
W. Wood	1,010 0 0
Cox	950 0 0
Atherton & Latta	938 0 0
W. Shurmer (accepted)	891 0 0

For repairs, painting, distemping, &c., at Christ's Hospital, Hertford. Mr. H. S. Legg, surveyor.

Smart Enfield	£282 0 0
Ginn, Hertford	365 0 0
Eakins, Hertford	354 0 0
W. Hobbs & Son, Enfield	333 0 0

For the restoration of Rishanges Church, Suffolk. Messrs. Arundell & Tarte, 30, Gt. James-street, Bedford-row, architects.

Skuffham & Ramping, Eves	£238 4 3
W. Sindall, Cambridge	588 13 8
J. Crowe, Stowmarket	576 14 0
G. Grimwood, Weybridge	467 12 1 1/2

* Accepted provisionally to the extent of £320.

For building a new chancel to St. Paul's Church, Knowbury, Salop. Mr. Edward Turner, Bowling-green-street, Leicester, architect. Quantities supplied.

Wall & Hook, Brimscombe	£1,050 0 0
Grosvenor, Ludlow	1,030 0 0
Thrall & Payne, Leicester (accepted)	960 0 0

For alterations and additions to the Chippenham Hotel, Shirland-road, Paddington, for Mr. H. G. Lake. Mr. H. Taylor, architect. Quantities by Messrs. New & Son.

Allen & Sons	£1,125 0 0
Godden	830 0 0
Temple & Foster	770 0 0
Schlatter	690 0 0
F. Mark	686 0 0
Thomas & Butland	683 0 0
Varden & Son	594 1 0 1

For the erection of two houses for the working-class at Wilmot-street, Blackfriars, for the Trustees of Brown's Estate. Mr. W. Hewson Less, architect, 27, Doughty-street, Mecklenburg-square.

Morby	£2,735 0 0
Hoare	2,505 0 0
Axford (accepted)	2,494 0 0

For the erection of a house on the Wykeham Park Estate, Primley, Surrey, for Mr. A. C. Fair.

Adkins, Surbiton	£2,560 0 0
Martin, Wells & Co., Aldershot	2,300 0 0
S. W. Haylock, London	2,063 0 0
G. Kemp, Aldershot	1,890 0 0

For the completion of transepts and chapels to St. Joseph's Church, Elm-grove, North Brighton, for the Rev. N. Y. Broder. Mr. Joseph S. Hanson, architect, 27, Alfred-place West, South Kensington. Quantities by Mr. Henry Smith, 8, John-street, Adelphi.

Light, Portsmouth	£3,353 0 0
E. Whittingham, Newport, Salop	3,700 0 0
Webber & Walker, Brighton	3,684 0 0
J. Lopley, Crawley	3,628 0 0
J. Pyeman, London	3,038 0 0
Goddard & Sons, Farnham	2,994 0 0
M. & E. Evans, London	2,838 0 0

For new warehouse for the British Xylonite Company (Limited), High-street, Homerton. Messrs. Searle & Hayes, architects.

W. Shurmer (accepted)	£1,894 0 0
-----------------------	------------

For coffee-tavern, Woodford. Mr. J. E. Lewis, architect.

Robson	£248 0 0
Knight	754 0 0
Wells	750 0 0
Hoskin	727 0 0
Corman	717 0 0
W. Shurmer	684 0 0
Ranger	677 0 0

For alterations to Highbury Coach Factory, Upper-street, Islington, for the London General Omnibus Company Limited. Mr. Lanham, architect. Quantities by Mr. Bolton.

Niblett	£1,450 0 0
Haynes	1,300 0 0
Parker	1,179 0 0
Dearing & Son	1,171 0 0
Evans	1,150 0 0
Garrud	1,145 0 0
Richens & Mount	1,128 0 0
Jackson & Todd	1,049 0 0

For alterations and painting to the White Hart, Southampton-street, Camberwell, for Mr. Norton. Mr. Walter Graves, architect.

J. O. Richardson	£239 0 0
Ward & Lambie	209 0 0

For alterations and additions to No. 44, Talbot-road, Baywater, for Mr. J. A. Graves. Mr. Walter Graves, architect.

J. O. Richardson	£213 0 0
Langmead & Way	183 0 0

For fittings to No. 3, Bon Marché-buildings, Brixton, for Mr. George Meadows. Mr. John Groom, architect.

J. O. Richardson (accepted)	
-----------------------------	--

ILLUSTRATIONS.

Cloisters recently Discovered at Würzburg	182
Thorpe Buildings, Bradford.—Mr. T. C. Hope, Architect.....	184
Poplar and Bromley Tabernacle.—Mr. W. Allen Dixon, Architect.....	186
Agriculture: Terra-Cotta Group.—By Messrs. Stiff & Sons	181
The Walls of Nuremberg	189
Liverpool Eastern District Post Office (Plans, 1883).—Mr. Henry Tanner, Architect	191

CONTENTS.

The Effect on Architecture of Liability to Earthquakes	171	The Walls of Nuremberg	180	Unhealthy Condition of a Building Estate in Camberwell	199
The West Front of St. Alban's	172	Liverpool Eastern District Post Office	180	Building Patent Record	200
A Description Form for Competing Architects	178	Artisans' Dwellings at Horseay: the Knot Park Estate	181	Boston's Manhole Covers for Sewers	203
State Rules for the Building of French Schools	173	Notes from the West	185	National Association of Master Builders	200
Oriental Explorations	174	The Discovery of Gas	186	The Chronicle, Richard of Cirencester	201
Some Recent Foreign Works on Hygiene	175	The New Observatory at Vienna	186	How Surveyors Differ	201
The Wellington Monument	176	The Royal Archaeological Institute: Meeting at Law	187	Water Companies' Charges: E. John & The Grand Junction	201
The Great George-street Site, Westminster	176	British Archaeological Association	187	Waterworks Company	201
Embossed Ornamentation	177	Edinburgh Architectural Association: Session 1882-83	188	Provincial News	201
Lithuanians	178	The New Shire Hall, Shrewsbury	188	Church-building News	201
Architecture in Holland	178	The External Use of Plaster Casts in Building	189	Stained Glass	202
The Protection of Iron against Rust	179	The New Reichstag Building at Berlin	189	Books: Ross's "Mechanical Drawing" (Sampson Low); Put-	
The Roman Tower at Cologne	179	Separate or Sub-Contracts in Building Matters	189	nam's "Open Fireplaces" (Tribner & Co.); Scott's "Irrigation	
Cloisters recently Discovered at Würzburg	179	A New Wing to Marlborough College	189	and Water Supply" (Grosby Lockwood & Co.)	202
Poplar and Bromley Tabernacle	180	The London Pavilion, Tichborne street	189	VARIATIONS	202
Thorpe Buildings, Bradford	180	The Metropolitan Railway Company's Surplus Lands: Expected	189	Ventilation of Public Buildings	202
A Terra-Cotta Group for Calcutta	180	increase of Value	189	Miscellaneous	202

The Effect on Architecture of Liability to Earthquakes.

THE fatal and destructive earthquake in the island of Ischia, of the magnitude of which each day brings further accounts, recalls, to those who had any experience of its effects, the yet more fatal catastrophe which desolated Calabria early in 1858. We are writing with personal experience only of the fringe of this terrible earthquake, which is said to have cost the lives of 30,000 Italians. Potenza, in the province of Basilicata, which is called the home and cradle of earthquakes, was the central point of disturbance in 1858; and the speed at which the shock travelled was estimated, after careful

inquiry, at 775 ft. per second; or nearly half the velocity of sound in the air. At Naples itself but little damage was done. But this was due, rather to the solid excellence of the work of the Italian architects than to the feeble nature of the shocks, which continued through an entire night. The first was the most severe of these shocks, being followed almost immediately by the *replica*, or return shock, which is always the most dreaded part of the disturbance. Some idea of the intensity of the action at Naples may be formed from the following brief account. The writer was seated in a large saloon in a palace in Naples, which had formerly been that of the Spanish viceroys, and which is close on the shore of the bay. About nine o'clock in the evening, when some of the citizens were at the opera, the first shock came, without any premonitory symptoms. Its violence was, to some extent, to be measured by the amplitude of the oscillations of a large chandelier, depending from the ceiling, which swung through an arc of more than 90°. And as to duration, there was enough time to rise, to cross the room, and to go out on to a terrace overlooking the bay, while the noise and vibration continued. On arriving at the edge of the terrace, the observer had to cling to the railing for support, as the whole building rocked like a ship at sea. And the walls in the lowest story of the palace in question are 17 ft. thick.

The houses of Naples were emptied by the

shock, the entire population, in every condition of dress and undress, pouring out into the streets, where they remained for the remainder of the night, the nobles and wealthier inhabitants sleeping in their carriages. And yet it was said that only one stone was shaken from its place in Naples. There was one point to which the natives flocked with interest on the next morning to see how far art had withstood the fierce anger of nature. It was the gate of a *porte-cochère*,—that of the Palais de Justice, if we rightly remember,—where a wide and delicate head of masonry stretched over the gateway almost like a piece of textile work. The stone hood was uninjured.

In these regions, built on tufa, and thus in almost organic connexion with the sources of volcanic energy, the architect has to gird up his loins in order to take his part in a very serious struggle. A house in Naples is estimated to last for 100 years, undergoing in that time two pretty complete renovations. Of the solidity of the work an idea can be formed from the thickness of those 17 ft. walls of which we have spoken. They, indeed, are exceptional, but not so exceptional as might be imagined. Walls of a thickness of 3 ft. and 4 ft. in any building of considerable size, of fifty or sixty years old, are rarely undisfigured by seams which tell of past earthquakes. The Royal Palace at Caserta, a masterpiece of Vanvitelli, and built with little regard to expense, is disfigured by not a few vertical seams, which bear witness to the violence of the shocks which, at different dates rent, but could not overthrow, the noble structure. We are not aware that any such local differences in the effects of the shock were witnessed in Naples in 1858 as was the case in Lisbon in 1755, owing to the different conductive powers of different geological formations. But for the whole circle of the bay, which measures some twelve miles straight across from Naples to Sorrento, the movement of that night elevated the ground by about 8 in.,—a level which it maintained at all events for five or six years thereafter.

It is quite easy to understand how, in a locality subject to such disturbances, the normal proportions of houses are of quite another strength from those with which the English architect is familiar. And there are two or three peculiarities to which it is well to direct attention. The responsibility of the architect, or of the builder, is of a much more serious nature in Naples than with us. It extends, by common law, so as to cover maintenance for a definite time; and thus the builder, for his own sake, builds strongly. Thus brickwork, as we have it, is unknown to Naples. Most of the buildings are of stone or tufa, and when *matrone*, or brick, is used, it is in the form of the flat Roman bricks, or rather tiles, of which we have some instances in the remains of Roman work in this country, and of which the strength and durability are extraordinary.

Mattons is more costly than the tufa generally used for internal work in Naples, and it is also considered more durable. In the third place, there is no doubt that the mortar used by the Italian builder is far better than any commonly used in England. And this is the more worthy of attention, because, as has been before noticed in the *Builder*, the principle of making mortar is contrary to that generally adopted by English engineers and architects. Probably no one in our day has studied the question of masonry more carefully than did I. K. Brunel. His designs for the bridges and other works on the Great Western, the South Wales, and other railways to which he was engineer, were exceptionally light and bold; his aim being to employ a small bulk of the very finest work, in preference to a larger bulk of ordinary work. To this end his specifications were drawn with a care that was never wearied; his great energies continually bringing out fresh editions of his normal masonry specification. The mortar was prescribed to be made with fresh slaked lime, mixed while yet hot, and any mortar not used in the course of the day in which it was mixed was to be removed from the work by the contractor. The lime was also the subject of very careful provisions.

In Southern Italy, on the contrary, the lime is slaked a year, or by preference two years, before it is made into mortar. The first thing done on commencing a building is to dig a pit into which as much lime as is thought likely to be required for the work is cast, and covered with water. It is so kept, as far as possible, under water during the whole progress of the work,—being dug out as a damp paste for mixing with sand prior to use. As to the excellence of the result there can be no manner of doubt,—any more than as to the apt and ready skill of the Italian masons, who have all the facilities at their command that we usually regard as in the province of the carpenter. The centres of arches, for example, instead of being built of wood, and lagged, are roughly and rapidly built of stone, and smoothed over with earth or clay, to receive the permanent arch stones. We have seen in a week or two after one of those local earthquakes at the foot of Mount Vesuvius,—which did much more damage in that part of Campania than did the wasted energy of the Potenza earthquake of 1858,—the cracks in the houses soldered up, the broken lintels replaced, and a large building that looked a hopeless ruin restored to a habitable condition in a few weeks, by the industry of the Italian masons. And of the confidence which this craftsman puts in his work, the excellence of the mortar no doubt is not the least determining condition.

Professor Palmieri, the seismologist, or earthquake doctor, has been writing to give his opinion that the catastrophe at Ischia was due to subterranean subsidence rather than to earthquake proper. And Mr. Mallet, M.Inst.C.E.,

who made a special study of the phenomena of the earthquake of 1858, of which we have spoken, maintains that all earthquakes are the effect of such subsidence. We cannot ourselves, having witnessed repeated earthquakes of more or less activity, subscribe to any doctrine that attributes these alarming phenomena to so simple a physical cause,—a cause, moreover, which is not only hypothetical, but not very easy to explain on its own account. That there is something of the nature of the electric shock in the earthquake, we think most physicists who have any experience of the sensation caused will hold. We desire to speak with all modesty, and that the more so from our only very recent acquaintance with the fact that electricity, as a source either of light or of motion, is now known to be convertible into heat or other forms of motion. Thus, that an internal shock, such as that produced by the fall of the roof of a great cavern, might arrive at the surface of the earth as an electric disturbance, is quite in harmony with what we know of what is now called dynamo-motor power. But then our experience of mines, tunnels, salt works, and the like, is rather opposed to the notion of any such internal cavities forming themselves under the action of water. It is possible that the different conductivity of different geological strata, of which we have witnessed with our own eyes the very evident proof that is to this day presented in the streets of Lisbon, may, if carefully studied, throw some light on this question. Subsidence is not a new phenomenon; and in cases like those of the thick coal-seam of Staffordshire, and the salt-veins and brine-pumpings of Cheshire, a much greater amount of subterranean erosion is at work than we can in any way attribute to the percolation of water in any part of the globe. But though houses are ruined, districts made bare and waste, and lakes formed by subsidence in Staffordshire and in Cheshire, we have no earthquakes there. On the other hand, to witness, after a series of shocks, whether occurring in a few minutes or extending for some days, a displacement such as that of the Bay of Naples, or the effects of the more violent local shocks which rent nearly every house at Torre del Greco, Torre Annunziata, and Bosina, and that threw out a spring of hot water that ran for three weeks, betokens, we imagine, some far more violent energy than the subsidence of the roof of an unknown cavern. The terror that the earthquake causes, not in mankind alone, but in the whole animal kingdom, is a special feature of these terrific visitations. The idea that this terror is caused by any process of reasoning is one not to be entertained by any who have experienced it. That there is something akin to electricity in the shock of the earthquake is, we think, proved, among other things, by the nature of the panic instinctively caused in man and beast by even the slightest shock. In the case of an earthquake slightly felt in Wiltshire, some ten years ago, our own attention was roused by the violent terrors evinced by a pair of Australian grass parakeets. We had not noticed the shock, but we did note the time thus fixed; and on the following day the newspapers gave accounts of a shock of earthquake felt in that part of England at the precise moment indicated by the terror of the birds.

THE WEST FRONT OF ST. ALBAN'S.

As was noted in our last number, the cross at the apex of the central gable of the new west front which has been added to the Abbey was fixed a few days since, and there remained last week little more than the completion of the gable over the central porch, in front of the west window, to render the new front complete. The scaffolding, which was then still standing, though it somewhat interfered with the comprehensive view of the whole front, left room to see most parts of it well enough. We presume it is to be understood that Sir Edmund Beckett, who has defrayed the whole cost of the work, makes himself responsible for the architectural design; at least, it is publicly credited to him, and as we do not hear the name of any directing or consulting architect mentioned, he must be saddled with the architectural responsibility unless he declines it.

We regret, on every ground, to feel compelled to say that the result is fully as unsatisfactory as we from the first feared it would be. Our opinion is an entirely dispassionate one. Although thinking that Sir Edmund Beckett

has on many occasions been guilty of great discourtesy towards and misrepresentation of the architectural profession, and that his own apparent opinion as to his capacity to set everybody right on matters connected with architecture is absurdly exaggerated and overweening, and has been often expressed in a manner studiously offensive to the feelings of other people, we have never denied his remarkable acquirements, nor have we taken part in the violent attacks upon him which have been made by some members of the profession in relation to this business. One or two of the latter, on the contrary, we fear, put themselves in the wrong by a want of tact and temper which they probably regretted afterwards. Nor can we be accused of having shown any bigotry in regard to the proposed alterations at the Abbey. Sir Edmund Beckett certainly could not afford to say so, as we happen to know that he directly appealed to our evidence in regard to the dilapidated and dangerous state of the old roof, in order to carry the Committee with him in deciding to have a new one. We objected to the altered pitch of the roof, as the restoration of what had long since passed out of memory, and an unnecessary disturbance of the lines of the building as they had been familiar to generations of men, and also because we foresaw from the first what has actually come to pass, viz., that the fact of the high-pitched roof being restored would be used as an argument or excuse for at once restoring the west end to correspond with it; and we had reason to fear that at this juncture such restoration would be likely to get into hands not competent to do justice to it. That something would have had to be done to it before very long, in any case, every competent witness must have seen. The anti-restoration purists who made such demonstrations about the value and beauty of the "Perpendicular" west window unquestionably talked all at random. The window was not a very valuable specimen of the style in the first instance, and it had been much patched up and knocked about, and was in a bad condition, though there was no immediate occasion for its removal. Whether, whenever the removal and renewal of the west window did become necessary, it would have been necessary or desirable to renew or restore the whole west front, is a much larger question, involving the whole subject of restoration and its artistic morality. The front had undoubtedly become a very heterogeneous collection of patchings, not without its historical interest, but entirely devoid of architectural effect or unity. One thing at least, however, was certain; that to design and build any new front in keeping with the building and in harmony with its associations was a very difficult task; that if the front was to be an original and new design, characteristic of the present time, it called for no ordinary power in architectural design; if it was to be an archaeological design, professing to revive what might be presumed to have been formerly there, it required the fullest knowledge of Medieval building and of Medieval detail to carry out such a restoration adequately.

Upon this head, however, the legal custodians of this great building appear to have had no scruples whatever. It seems to have been sufficient to them that an influential inhabitant of the neighbourhood undertook to supply the money, and assured them that he was able to supply the brains also. Now, against any man acting as an amateur architect in the case of a new building erected for his own pleasure, we have little or nothing to say; or at least we need be said. He may produce an ugly building, which is matter for public regret certainly, but not a matter in which, unless in very extreme cases, the public can have a right to interfere; he may produce an inconveniently planned and extravagantly expensive one; but that is his own loss, and no one need trouble about it. But the case is very different with a great historic building like St. Alban's Abbey, which is a kind of national property. Surely the custodians of such a building were at least bound, in the common duty of properly discharging their trust, to have asked for some proof of a man's ability to make an important architectural addition and alteration to the building, beyond the fact of his possessing a long purse and an overweening self-confidence. What public proof had Sir Edmund Beckett given of such capacity? Absolutely none, beyond his own repeated assertions that archi-

ects were all ignorant pretenders, and that he himself knew more about the matter than any of them. In regard to practical building, we are quite ready to credit Sir E. Beckett with a good deal of the knowledge which he says he possesses; though even in regard to this branch of architecture we strongly suspect that a good deal of his claim to be listened to is rather theoretic than practical in its basis. But in regard to the archaeological and artistic side of architecture there has never, so far as we know, been any claim made that he should rank as an authority; hardly even (wonderful to say) by himself, except that we believe he has incidentally asserted that he was practically the designer of one or two of Scott's leading churches, Doncaster especially. How far this is true we are in a position to know well from Scott's letters in our own possession; but in any case Sir E. Beckett has left us an unanswerable contradiction to all such claims, unfortunately, in his west front at St. Alban's. Scott carried restoration too far, and did some things with which we certainly could not sympathise; but whatever modern additions to Medieval work he made were at least penetrated by knowledge of the style, and were in most cases as like Medieval work as modern hands and tools could make them. The present addition to St. Alban's Abbey, on the contrary, is a coarse piece of second-rate modern Gothic, which in almost every detail shows incapacity to realise the feeling or style of the original work. The caps and other mouldings are like coarse imitations of the originals; the carving is in some places so vulgar that it is difficult to understand how any man able to carve at all could have executed the "Early English" caps, for instance, of the north-west porch, with the specimens of original caps in the interior of the porch within a few feet of him, or how any educated man could allow such work to be done in such a situation. The one fine point in the total effect is that which was inevitable from the old lines of the building,—the deep recessing of the west window between the buttresses, and the gable of the centre porch rising in front of it. This would produce a fine effect, by mere force of mass and shadow, with whatever detail. But, apart from this, the general look of the whole front may, perhaps, be best indicated by saying that it is very much the sort of Gothic which one sometimes meets with in competition designs for the larger class of Dissenting chapels,—effective, in a showy way, but totally devoid of refinement. The place of the old Perpendicular window has been taken by a badly-designed but elaborate and pretentious Early English Geometric window, with details some of which are very much out of keeping, even if they were better carried out, with the predominant style of the western portion of the building. The centre porch is the best part, a deeply-recessed porch with "dog-tooth" ornament, pretty profusely used. The upper portions at each side of the centre are decorated with wall-arcading, of the former existence of which there was ample evidence in the old walls, but the work is clumsily designed and executed. The lower part of the design is the most curious and irrelevant jumble of details that could well be imagined, and which are indescribable without an illustration; the extremities of the front rise into two big turrets suggestive of "Dissenting Gothic" as aforesaid, or, perhaps, rather of what might be done at the quiet refined mouldings on the south side of the clearstory, and then come round to this *ciard* piece of work planted on at the end, affords a contrast almost exasperating. We presume Sir E. Beckett thinks it very fine, and believes that in doing this at his own expense he has done a meritorious piece of work. If he really thinks so we can only say we are heartily sorry for him. But we can hardly have the same feeling towards those who allowed this to be done, and who seem to have thought that the mere willingness to spend his own money was sufficient to give a man who had no proper qualifications for the task a right to do as he pleased in such a case. They are very much to blame. They were responsible for the building, and if they knew no better themselves, they were bound at least to take advice from those who did. The result is that one of our greatest and most interesting buildings has had an addition made to it which is little better than vulgar, and which will be an annoyance and an amazement to future generations.

If those who are concerned in this affair think themselves aggrieved by our way of speaking of it, we shall be happy, to use a phrase once current in society, to "give them every satisfaction," in the most reasonable and practical manner, by publishing an accurate view of the front as now executed, and leave our readers to form their own judgment as to the justice of our comments. Probably the majority of them will be of opinion that our criticism was much too mild for the occasion.

A DESCRIPTION FORM FOR COMPETING ARCHITECTS.

LAMENTING, as we always have, the amount of time, labour, and thought annually wasted by so many members of the architectural profession in competition drawings from which a small proportion only of the profession can be benefited; and desirous always, so far as is possible, within the lines of the apostolic limit, "as much as lieth in you," to contribute towards lightening the labours and assisting the progress of the younger and rising members of that profession especially, it has occurred to us that there is one point in which a considerable amount of labour might be saved in a perfectly legitimate manner, to the advantage of future competitors, by a very simple institution, which we will proceed briefly to describe.

The sites and the requirements of buildings may (in fact do), as every one who has given any attention to the subject will admit, vary considerably. The site for a proposed building may be of almost every conceivable mathematical or non-mathematical shape,—square, oblong, parallelogrammatic, rhomboidal, trapezoidal, cycloidal, and so on (not that we are by any means at the end of our adjectives of definition, but that, above all things, we would not be tedious), and the possibility of "permutations of n things" which may be placed upon each site is theoretically infinite, and practically very extended. Nor can one place any limit to the imagination of Town Councils, Committees, and other such learned bodies, in regard to the possible uses of a building site, and the amount and variety of accommodation which may be required to be arranged for on it. Hence it arises that the shapes, dispositions, and details of competition plans are endless. But (and now we come to the point) with each set of plans it is customary for the competing victim to send a "description," sometimes called a "report," setting forth his own views about his design. Now, those whom a taste for light literature has led to the perusal of these documents must have been struck by the very prevalent similarity, both in matter and manner, which pervades them, at all events in their general statements. Nor ought we to wonder at this. The object of all such treatises is the same, viz., to persuade the committee that the particular set of plans to which it is attached is the best and most desirable for their purpose of all that have been, or that may, might, could, should, would, or ought to have been submitted; and human beings inspired by precisely similar objects are likely enough to be impelled to use very similar language. But what a waste of human labour, time, penmanship, is involved in this repetition of the same story by (in a large competition, say) fifty different scribes. Or, if the better thoughts of the ambitious competitor lead him, like Captain Grose, to "prunt it," what a disproportionate expense in typesetting, even for the number required to send two copies to each member of the committee, over and above the initial labour of writing it out for the printer. Now, nearly all this labour might be avoided, and a great annual saving of time and money secured to large numbers of the profession, by the drawing up and printing, for sale by all respectable stationers, of a skeleton form embodying the main heads required in a competition report, leaving a few blanks to be filled in where any special words or statements become absolutely requisite for special cases.

Example, the proverb says, is better than precept; and, therefore, at the risk of seeming presumptuous, and subject to whatever valuable suggestions for improvement may reach us from various readers in regard to the provisions or the wording of our proposed form, we beg to subjoin a sketch for a model form, as follows:—

"Description of the Designs submitted under the Motto —.

To the Chairman and Committee of —.

Gentlemen,—In submitting for your favourable consideration the plans and designs signed —, we can say with confidence that in regard to plan, arrangement, and practical convenience they will be found to embody in all points the requirements set forth in the instructions issued to competitors. The position of the principal rooms and departments in relation to one another, and to the external entrances, as laid down in your instructions, has been carefully attended to. Thus the — will be found in close contiguity to the —, and the — offices close to the — entrance." [Here insert the names of those rooms or departments which are actually in accordance with the instructions; to insert those which are not is to waste the time of the committee, and may even be called bad manners, since, as Lord Chesterfield says, "the whole truth should not be spoken at all times, and in all places."]

"The question of Style has received our most thoughtful consideration. Believing that — is a town [village] with a great future before it," [strikes out the word 'town' or 'village' as necessary], "we are of opinion that the union of architectural dignity and effectiveness with suitability to the requirements of modern life, and the special objects of the building will be best ensured by the adoption of the

Egyptian
Greek
Roman
Hindu
Ancient Persian
Romanesque
Byzantine
Early English
Early French Gothic
Tudor
Mongolian
Italian

Venetian Gothic
Lombard Gothic
Venetian Renaissance
Florentine Renaissance
Early French Renaissance
Elizabethan
Louis XIV.
Queen Anne
Japanese
Chinese

style" [run the pen through all except the one selected], "which has the advantage not only of being highly effective in this climate, but of being one of the most economical of all styles of architecture, and presenting a larger proportion of effective window space than any other style; while it is peculiarly suitable in the present case, owing to its harmony with [contrast to] the style of the adjacent buildings and the general architectural character of the town [village]. The advantage of such harmony [contrast] in ensuring that great desideratum, unity [variety] of architectural line and effect, will be at once appreciated.

"A glance at the plans and sections will suffice to show that every portion of the available space has been thoroughly turned to account, while the arrangement of the corridors, staircases, and entrances is such as to ensure the utmost privacy [give easy access to the public]; the various departments are all, internally, placed so as to be completely isolated from [in direct communication with] each other; an arrangement, the value and convenience of which will be at once perceived.

"It is proposed to warm the entire building by
Stoves burning smokeless fuel
Open fire-places
Steam circulation
Hot-water at low pressure
Hot-water at high pressure
Gas."

[Strike out, as before, all except the system to be selected]. "We confidently recommend this method, as at once the most efficient and economical, and that which brings the heating system more easily and completely under control than any other.

"The subject of ventilation has received the most careful attention. On this head reference is requested to the sections, on which the points of entrance and exit of air, and the direction in which it will circulate in the various apartments, are fully indicated by arrows. N.B.—More arrows can be added if thought desirable.

"The question of cost has been carefully considered, and, reckoning this at — per cubic foot, we find that the whole can be executed for —l. —s. —d." [The statement of the cost per cubic foot, it may be observed, should always be inserted, as it gives an idea of exactitude, and shows that the estimate has not been assumed at random. It is, however, a proper and fitting concession to the susceptibilities of a building committee, not to alarm or annoy them before the time by an unnecessarily high

estimate, and therefore a sum per cubic foot about 25 per cent. below the actual probable cost should be inserted in the first instance. To keep too close to the prose of mere facts in such matters shows a want of enterprise, and but for the stimulus to the imagination of building committees which is given by this poetical use of figures many successful buildings might never have come into being at all.]

"In conclusion, should you do us the honour to entrust us with the commission you may rest assured that no pains and attention will be spared on our part towards completely and successfully carrying out the building.

"We are, gentlemen, your obedient servants,

"THE AUTHORS OF THE DESIGN.

(Signed) —."

Now, there is the outline of a form of "report" applicable to almost any competition, which can be printed and sold wholesale at a trifling cost, and whenever a description is wanted to accompany any competition drawings the architect will have nothing to do but just take one of these forms out of a drawer, fill up a few blanks, and strike his pen through a few words, and address it to the committee. We hope we have suggested a method which may really prove a valuable saving of time to many competitors. We retain no copyright in our idea. Any one is welcome to apply it. We are actuated only by a desire to be of use to the large number of those who risk time and labour on architectural competitions, and to shorten and simplify at least one portion of their task.

STATE RULES FOR THE BUILDING OF FRENCH SCHOOLS.

EVER since the Franco-German war the French nation has felt keenly the necessity of improved education, both mental and physical. The various Governments, which have succeeded each other in such rapid succession, have not allowed this worthy sentiment to lie dormant. In the course of seven years, from 1875 to 1882, nearly four thousand new schools were built, and much has been done to improve the establishments already in existence. At the meetings of the various scientific societies, at national and international congresses, in fact, on every possible occasion, educational questions have been raised. But in all this great anxiety was manifested not to sacrifice the body to the mind; and quite as much has been said and done with respect to the physical development of children as with respect to their ordinary education. Nor does this apply only to boys. Legislators and reformers have alike realised that the greatness and independence of France depends not only on the strength of its future soldiers, but also on the health of the mothers of future generations. Many efforts, therefore, have been made to improve the sanitary régime both of girls' and boys' schools. This naturally involves the great questions of light, furniture, ventilation, and drainage. Unfortunately, it is in the last-mentioned detail that the least progress is noticeable. This is a fault inherent to all French affairs, and the Ministry of Public Instruction is not specially to blame in the matter. On the contrary, this administration, instead of relying on routine and the bureaucrats in its service, boldly instituted a technical committee to draw up a set of rules which were to govern the construction of new schools.

Among the architects who formed part of this committee, we recognise the well-known names of Viollet-le-Duc and Émile Trélat. The committee was entitled *La Commission des Bâtimens Scolaires*, and was appointed by the Ministerial decree of the 17th of June, 1883. After the lapse of some time, after many discussions, inquiries, and experiments, the following were the general principles agreed upon:—

In the first place, the site selected for schools should occupy a central position. It should be situated on an open or well-aired spot, of easy and safe access; but away from all noisy, unwholesome, or dangerous factories, &c., and never nearer than 100 metres to a cemetery. The superficial measurement of the ground should never be less than 500 metres, and should be reckoned at the rate of not less than 10 metres per pupil. The position of the building must be determined according to the climate and special sanitary conditions of the locality. The school must be kept apart, when, as is often the case in France, the same building is used as the Town-hall, or seat of the Municipal Council. In that case, it would be

better to hold the school on the ground floor, while the Municipal offices occupied the first floor, with a totally separate entrance. No wall built with quarry stone must be less than 40 centimètres (16 in.); and in brick, less than 35 centimètres (14 in.) in thickness. Any material of too porous a nature, such as badly-baked bricks or sandstone, must be rigorously excluded. For the roofs, slate is recommended in preference to any sort of metallic covering. Each group of scholars, boys, girls, and the very young children, must all be kept distinct, the one from the other, and no one establishment should hold more than 750 children, namely, 300 boys, 300 girls, and 150 little children in the crèche or *salle d'asile*. In no case is a class to consist of more than fifty pupils, and in schools where there are several classes the number is restricted to forty. The size of the class-rooms must allow to each pupil a minimum space of one and a quarter to one and a half square metre, while the contents of the room must equal at least five cubic metres for every person. Its shape should be rectangular. The *unilateral* method of lighting is to be adopted where there is sufficient light, where the proportional distance between the heights of the windows and the width of the rooms is suitable, and where there are openings on the opposite side which can be utilised to establish a thorough current of air and to admit the sun's rays in the absence of the pupils. When these conditions cannot be realised, the lights may be *bilateral*; but, though in this case, the light would be admitted on both sides, measures must be adopted so as to render the light coming from the left more intense than that admitted from the right hand side of the class-room.

The last clause in these rules will seem the most novel to the English reader. The question of admitting the light from one side only was first raised by the Society of Public Medicine and Professional Hygiene, and has been earnestly debated for more than four or five years. But the Government Commission, appointed by the decree of the 1st of June, 1881, to inquire into the causes of shortsightedness among children at school, would not discuss the rival merits of *unilateral* and *bilateral* light. They only insisted on the amount, and did not investigate the question of conflicting lights, of shadows, &c. This Commission simply decided what should be the smallest portion of sky to be seen from the least-favoured place in the class. For this purpose the eye must be placed on a level with the table, and then, measuring from the top of the window downwards, at least thirty centimètres of sky should be visible. With respect to illuminating at night, the Commission would multiply as far as possible the number of candles or lamps, but does not insist on their being placed in any particular position. The ideal would be a separate light for each desk.

With respect to the size of the windows, they should present a total surface equal to the total surface of the tables or desks. Cornices on the ceiling, where dust and germs are likely to accumulate, are not allowed; and all angles are to be abolished; the corners of the rooms rounded off. The walls are to be covered with a smooth, even substance, paint or enamel, and the wainscoting is to reach a height of about 4 ft., and should be made of wood, or some substance covered with good cement. The floors must be of hard wood, laid on some bituminous substance. The stoves employed to warm the class-rooms must have a double covering, be well protected by iron railings, and supplied with air from the outside, or in any case be so contrived as not to interfere with the ventilation.

The rules concerning drainage are altogether unworthy of our present knowledge of hygiene. For instance, the stipulated number of closets is fixed at three for the first hundred pupils and only two extra closets for each additional hundred pupils. This is even below the standard of our common lodging-houses, which harbour the dregs of the population. According to our law a closet must be provided for every twenty lodgers. Thus, twelve closets would suffice for a French school with 500 pupils, while in an English common lodging-house, containing the same number of inhabitants, there would be twenty-five closets. In size the closets must measure at least a metre in length and 70 centimètres in width. It would be difficult to make them smaller! The seat must be of stone, the floor impermeable and slanting, so that the liquids may run to an aperture placed under the seat but giving into the pan and over its hermetically-closed valve. It is not, however, neces-

sary to have any valve whatsoever if a ventilating shaft can be so contrived that the current of air will go downwards from the closet into the drain-pipe. These rules, though far from responding to our principles of drainage, are, nevertheless, greatly in advance of what has been done. Such a thing as a valve that can hermetically close a pan is almost unknown in France. As a rule, there is no valve, no trap, the materials fall straight down into the cesspool, and the gas generated in the cesspool, comes straight up into the closet; and we may consider the pupils fortunate if such a closet is not placed just by the side of the dormitory. As for a system of ventilation drawing off the gases, its action would not always be reliable, and such a contrivance has only been proposed in some of the newest projects.

The Society of Public Medicine issued some model regulations which are far more practical and to the purpose. These rules have not, it is true, the force of law; but as the majority of the architects, engineers, and doctors who take an active part in promoting sanitary reform belong to this society, it is to be hoped they will, of their own initiative, see that these principles are applied in all the buildings with which they are concerned. A paper on this subject had been submitted to the Society by Dr. E. R. Perrin, Member of the Commission on Unwholesome Dwellings, and Dr. Rivet, Medical Officer to the Ecole Normale of the Department of the Seine, drew up the rules in question. These were adopted and published by the Society for the guidance of all persons concerned. Among the general measures that can be immediately applied the suppression of cesspools is suggested. A movable receptacle is proposed as a substitute to the cesspool, but this must be changed very frequently. In boys' schools separate urinals, at least three for every hundred pupils, are recommended. There must be also, at least, three closets for every hundred pupils, constructed according to the regulations of the Commission, and which we have described above, excepting, however, the detail with regard to stone seats. The wooden seat and several rules to prevent the boys standing thereon are advocated in preference.

As, however, it is the universal practice in France to stand and not to sit on the seats, the best way to enforce this reform will be to imitate the system employed at the Ecole Monge, a model high-class school in the west end of Paris. This is a very simple method. A neat wooden margin about 2 in. to 3 in. wide surrounds the rim of the pan. On this the boys are absolutely obliged to sit, for there is no broad seat on which they could stand. Closets thus constructed do not look very elegant, but are much more clean; the pan, the fittings, are all exposed to the air, and there is no place where dirt and dust can accumulate without being seen. This expedient is warmly advocated by the Society, and it also urges that a Moule earth-closet should be employed wherever a proper water-closet is impracticable. Further the Society demands that in every school an attendant should constantly watch over the closets. These measures the Society of Public Medicine insists must at once be enforced. It further advises the adoption, wherever the surrounding circumstances will permit, of the *système diviseur*. This means the use of a metallic receptacle which allows the liquids to escape to the sewer, while the solids are retained and removed once a week. Enamelled pans of hardware or of iron are recommended with an automatic hermetical valve. Also there should be a syphon to the drain pipe.

For France these are novel and useful doctrines, but there will be some difficulty in finding plumbers capable of carrying them out. The dangers of sewer-gas are only understood by a few specialists, the public at large have no knowledge whatsoever of the question, and it is never discussed by the popular papers. We fear, therefore, that it will be no easy matter to carry out even the very modest reforms proposed,—so far, at least, as drainage is concerned. In other respects, the most notable improvements have been realised; for instance, in the 20th Arrondissement of Paris, two schools, for 1,110 children, are in course of construction, according to the Toilet system. Each pupil will have 7 cubic metres of air, and in class-rooms, measuring more than 1,000 cubic metres, fresh air warmed to 16° C. will be pumped in at the rate of 1,500 cubic metres per hour. Again, the Communal school in the Avenue Duquesne,

built by M. Leroux, architect, and member of the Commission on Unwholesome Dwellings is a great amelioration. The land at his disposal was of a very irregular and inconvenient shape, still the result attained has given general satisfaction. In this school the closets are in the yard, thoroughly apart from the main buildings. The seats are of cement, and there is a ventilating shaft, with a gas-burner, to draw away the bad odours. At Créteil, in the suburb of Paris, there is also a model school. In this case we find, within a large garden, the boys' school, the girls' school, the crèche, the town-hall, and even the fire-engine station; yet all these services are separated from each other.

All these prescriptions apply to day-schools, and they, of course, embrace by far the largest number of scholars; but the Government Commission have also issued some rules affecting the construction of dormitories. These are generally very similar to hospital wards. At the Ecole Monge a wooden partition separates each bed. Though this division does not reach the ceiling, still it interferes considerably with the circulation of the air and multiplies enormously the number of angles and corners where dust accumulates. For these reasons, and, perhaps, also from motives of economy, the example of the Ecole Monge has not been followed. The Commission on School Buildings has, however, decided that the dormitories must not be very large, that in no case must they contain more than thirty beds. Windows on both sides of the dormitory must admit light and air. The floor must be of wood, the ceiling four metres from the floor, and the width of the dormitory about 7-50 metres. The beds should stand at least a metre apart from each other. The Commission still adheres to the old and unwholesome French fashion of curtains. It even adds that where curtains do not hang round the beds they should be separated, as at the Ecole Monge, by wooden partitions. This is a regulation which is diametrically opposed to all sanitary experience. A bed should stand out by itself. There should be nothing under, around, or above. Whatever air there may be in the room should have the freest possible access to the bed so as to oxidise all impurities and prevent the sleeper breathing his own breath again. It is surprising that these principles, which will be found in any elementary book on hygiene, should remain ignored by the Commission. Nevertheless, and whatever the faults and shortcomings so easily discernible in rules propounded by the Commission, there is evidently a praiseworthy effort on the part of the authorities to improve the hygiene of schools. With this is combined a notable increase in the attention paid to gymnastics, exercise, swimming, personal cleanliness, and diet. Under such circumstances there should ensue a notable amelioration in the health and physique of the rising generation in France.

ORIENTAL EXPLORATIONS.

CONSIDERABLE anxiety is expressed by English Orientalists and archaeologists at the present unsatisfactory state of British explorations in Western Asia. But a few years ago the two chief agencies, the Palestine Exploration Fund, and the Trustees of the British Museum, were actively engaged in their work, with full and satisfactory powers, and now neither of these are able to resume their work owing to the refusal of the Porte to grant the necessary firmans. The ignominious way in which the Palestine Exploration Fund were hurried out of Eastern Palestine last year, and the rich crop of difficulties placed in the way of Mr. Rassam about the same time, would seem to indicate that the action of the Porte in regard to these permits was largely influenced by the action of the Government in Egypt. Soon after his appointment in 1877, Sir Henry Layard obtained for the Trustees of the British Museum a firman which practically gave Mr. Rassam a roving commission over the whole of the Tigris-Euphrates Valley. This firman was of such a character that the explorer was able to carry on work in Armenia, at Toprak-Kala, on the shores of Lake Van, where he discovered the Temple of Khaldi, built by King Rusa; in Assyria, at Nineveh, and Nimrud; and in Babylonia, at Babylon, Birs Nimrud, Abo Hubba, and other sites. Shortly before his recall Sir Henry Layard was able to get a further extension of the permit until the spring of last year, and the result has been a great and important increase of our Babylonian col-

lection. Some thousands of inscribed tablets have been sent to England, and valuable additions have been made to the knowledge of Babylonian art and architecture hitherto so scanty. Towards the close of the time covered by the firm however, great difficulty was experienced in carrying on the work, owing to the interference of local authorities, and now that a renewal of the permission is asked for it is met with evasive answers, if not a refusal. It would seem that there is a decided political phase in the matter, for while applications by Lord Dufferin for firmans for the Palestine Exploration Fund, and the British Museum, met with the usual Oriental treatment, and are consigned to the oblivion of an infinite to-morrow, the requests of other nations are readily conceded. It is this that has caused so much anxiety to English archaeologists, as at the present time the French Government have obtained a firman, not only renewing the former permit granted to M. de Sarzec over the Villayot of Bursu, but extending over other portions of Babylonia, and it is feared, over Aboo Hubba, where Mr. Rassam has made such brilliant discoveries, but where so much more remains to be done, and older and still more important antiquities lie buried. The importance of our continuing the work on this site is very great, so great that we cannot afford to lose it without an effort. It is one of the oldest cities in a land of ancient cities, extending back more than thirty-seven centuries before the Christian Era, and containing, as shown by a discovery made within the last few days, contemporary inscribed records of its earliest inhabitants. But 100 chambers have been opened out of the 300 or 400 which lay buried beneath the mound. The tablets and inscriptions recovered reveal a most important and encouraging fact as to the condition of the treasures there. It is found that, as the cases of tablets which were packed on the spot are now opened, the tablets which are of the legal and commercial class have been recovered from the ruins in batches, which comprise tablets dated in the same regal years of the kings. This, in addition to greatly facilitating the study of the inscriptions, also shows most clearly that the record chambers of this temple and palace had not been subject to the same violent disturbance as had the libraries at Nineveh and Babylon, where the documents were scattered in chaotic confusion, and broken in many fragments. The examination of the collections which Mr. Rassam has made shows that a large number of much older records still await unearthing, and as we have the right of first finder, and place our collections in a museum open to all the world, it is to be hoped that archaeologists will not rest content with an incomplete collection. But the complaint which we may thus make in regard to Aboo Hubba applies also to other sites in Babylonia, to Babylon, Borsippa, Tel Ibrahim, &c., where lie buried most priceless records, in rescuing and removing which we rob our Turkish National Museum or local collection. In the same way, and on the same grounds, has the Palestine Exploration Fund a just claim to support. The regions east of Jordan are almost *terra incognita*, and yet they are hurried out of the land where they are doing good work not only to the benefit of science, but to the Turkish Government themselves, by supplying them with the most perfect map that can be produced; and in the face of this, firmans of most broad and open character are granted to the Austrian and German Government Commissions in Asia Minor and Western Armenia. It is hoped, therefore, that all who are interested in the continuation of a work so important to all branches of research will endeavour to bring pressure to bear on the authorities both here and in Constantinople, so that the work may be continued.

A New Cottage Hospital for Trowbridge. The foundation-stone of a new cottage hospital, a gift to the town of Trowbridge by Mr. Jesse Gouldsmith, son of the late Mr. Gouldsmith, of Clifton, was laid on Saturday last. The building and site are both given, and we understand the liberal donor will also endow it. The erection will likewise include a soup-kitchen, and the total cost will be about 3,000*l*. The stone was laid by Mrs. George Llewellyn Palmer, daughter of Mr. Gouldsmith, to whom the committee presented a silver trowel and ebony mallet, suitably inscribed.

SOME RECENT FOREIGN WORKS ON HYGIENE.

WE in England are rather disposed to regard our Continental neighbours as singularly behind hand in sanitary matters. At this season of the year especially, when the discussion as to the scene of the annual holiday is occupying the minds of so many, one is constantly hearing of the dangers of the Continent referred to as if there were no similar dangers at home. While, to some extent, it is true that an absence of attention to questions of hygiene constitutes a large feature of foreign existence, at the same time it must be admitted that nowhere has the question in all its bearings received more careful study than abroad. Many eminent professors have devoted their attention to the subject and have greatly advanced a science which, till within a generation or so, was but in embryo. Societies of hygiene and health societies exist in large numbers on the Continent, while the congresses of late years held at Paris, Turin, and Geneva have evinced the general interest felt in the question, every advance of which constitutes a calculable gain to humanity. How much, however, yet remains to be done, our statistic tables amply show. Frightful as has been the recent calamity in the lovely island of Ischia, its victims, as has been truly said, but barely exceed the number of those who almost every week in our island die by disease or causes which might have been prevented by due attention to the hygienic precautions prescribed by science. So directly beneficial are the results of advance in this direction that it seems indeed singular how slow is the advance made. We should, therefore, receive with especial attention any works which, dealing with the subject in a practical manner, enable those interested to realise the progress made and to appreciate the nature of the researches so far pursued, or which still remain to be prosecuted.

The interesting exhibition organised by the Health Society, held only a few months since, and the attention given to the question of hygienic clothing, show how practically the matter is at length being dealt with. Now, though this portion of the question is not exactly within the limits of our pages, yet it must be remembered that a house is after all little but another form of clothing, another of the means we adopt to protect ourselves against the inclemency of our climate. This our chief effort we endeavour to carry out to the best of our ability, and with some tolerable degree of success, so skillfully, indeed, in many cases that, were it not for the kind and beneficent action of nature, there are not a few of us who would probably succeed in asphyxiating ourselves in our own rooms. The results of the experiments of Herr Pettenkofer, the eminent German hygienist, as set forth in a comparatively recent work of his, "*Populäre Vorträge*," would, however, tend to show that, happily for humanity, the efforts to completely isolate itself from chill are aided by what might at first sight appear to be a serious inconvenience, the porous nature of the materials with which the walls of our houses are built, this permitting a free and positively perceptible circulation between the outer and inner air, tending largely to lessen the dangers of the excess of moisture which would be attendant on existence in unventilated apartments occupied during any lengthened period. The porous character of ordinary building materials can be determined in a most simple manner. Herr Pettenkofer, in his experiment, takes a cylinder of dry mortar about 6 in. long and an inch in diameter; when this cylinder, covered with wax,—except at each end,—is held to a candle and blown through, the flame can be seen distinctly to flicker, thus completely proving the porous nature of the mortar, when dry; wetted, it becomes perfectly impermeable, and the damp, once lodged in the pores, is much more difficult than the air to get rid of. In ordinary weather it will be found that the walls of our houses carry on regularly the good work of ventilation, clearing the air of the house of the moisture with which it is charged,—moisture arising from the human breath, and other causes,—and allowing it to slowly evaporate into the outer air. To assist the action porous building materials should, in fact, be especially employed.

In a work recently published in Belgium by M. Putze, professor of Hygiene at the University of Liège ("*L'Hygiène dans la Construction des Habitations privées*," Brussels, 1883), some interesting experiments are detailed re-

specting the relative degree of porosity of various building materials: brick coming foremost, followed in due order by limestone, freestone, and, lastly, sandstone. The pores of a baked brick, we learn, occupy no less than 25 per cent. of its whole bulk, but in an unbaked condition as much as 60 per cent. Plaster, from its compactness, is almost the least permeable of all materials. It may be mentioned, however, of the porous nature of bricks that they naturally are more easily wetted. Much, however, remains still to be ascertained in this direction, and research is being pursued by several eminent hygienists abroad. Dr. Layet, professor of hygiene at Bordeaux, who is prosecuting (so a writer states in a recent number of the *Revue des Deux Mondes*) a series of experiments on the subject of the relative porosity of building materials, obtains his data by subjecting his specimens (placed under a bell) to the action of coal-gas, the length of time to light which as it issues from a tube attached to the stone or brick determining the degree of the porosity of the material. M. Poincaré, professor of hygiene at Nancy, places his specimens, all reduced to a similar size, into water, and their difference of weight enables him to ascertain their relative porosity. His experiments, it would appear, go far to show the inefficacy of most existing protective varnishes, and so-called hydrofuges.

It is this power of retaining the moisture which has always rendered the occupation of newly-built houses so dangerous. Water filling the pores both of the brick, or stone, and mortar, all ventilation is effectually arrested, while the conductivity of the wall being increased by its condition, the loss of interior warmth, which tends to flow outwards, is considerable. The determination of the quantity of moisture retained by newly-set-up building materials, is one of the points to which Herr Pettenkofer has turned his attention. Taking for his purpose a house erected on collars, with a ground-floor and two stories, each consisting of five rooms and a kitchen, and reckoning that such a house would require some 800 tons of bricks, Herr Pettenkofer's experiments lead him to the conclusion that these retain at least forty tons of water; the mortar, though far less in bulk, retaining an equal amount, a total of some eighty tons of water being thus obtained,—no small amount to be got rid of. The methods that have been attempted to dry newly-built houses are, as our readers are aware, innumerable. Those, however, are alone worthy of any attention which combine the use of heat and plentiful ventilation to ensure rapid evaporation. In Paris it is customary to light in the centre of the room a large coke fire, which, with open windows, proves an efficacious and easily applied method. In some countries, however, severe police laws regulate the occupation of newly-erected houses, experts being called in to determine the condition of the walls, which, tapped with a hammer, reveal to the experienced ear how far the wall is dry. The work of M. Putze enumerates, however, several other methods by which the proportion of water existing in building materials can be determined, the conditions naturally largely varying according to situation and circumstances. Authorities do not yet even agree as to the proportion of moisture which can be retained without danger to health, some setting it down at 20 per cent. Pettenkofer, however, urges that 4 to 5 per cent. should be considered as the limit. The question,—as truly remarks M. Radau in the paper to which we have already referred,—requires research of a much more serious character than has so far been devoted to its details.

The sweating of walls, and the stains which constantly appear on their surface, even when apparently dry, is another point to which professional attention is constantly drawn. Chemistry has attempted to explain the matter by the suggestion of chemical action, but Pettenkofer has most satisfactorily, we think, disposed of the question. He shows, in the first place, that the wall apparently dry is only in reality so at, and near, its surface, and the stains arise from the condensation of the atmosphere on the cold wall caused by a change in the temperature, either natural or by the lighting of fires. Hence it is evident that complete aération is the sole remedy, and the use of porous materials must necessarily assist this action. This natural action of the ventilation, which is

ensured by the use of porous material, can, however, be largely arrested by the covering of the wall, experiment proving that whitewash is the least preventive of these coverings, then distemper, then glazed paper, then ordinary paper, and, lastly, oil colour, which most successfully checks the beneficial action of the imperceptible air-currents which pass through the walls of the house. It will be seen, therefore, that the efforts usually made to stop out all communication with the outer air are based on an erroneous principle. The healthy state of the atmosphere we breathe in our apartments would be soon vitiated by an excess of moisture were it not that the excess is carried off by the action of nature in favouring a natural system of evaporation and ventilation through our walls and floors, which latter are of as equally permeable character,—a feature which should duly be considered by every architect. The soil on which he builds his house has always been urged upon him as a matter for consideration. The porous nature of earth, capable of being saturated with, retaining, and exhaling noxious gases, is familiar to all; this point, therefore, must be remembered by the architect, as the air from sub-soils has a distinct tendency,—especially in winter, when the fires are lighted,—to ascend into the house, it having been calculated that there may easily exist in a room as much as 10 to 15 per cent. of subterranean air. The infiltration of coal-gas may therefore, as Mr. Radan shrewdly points out, impregnate the soil of a street, and thus penetrate with fatal consequences into our houses. The air confined in vegetable earth contains a very large share of carbonic acid. Pettenkofer and other authorities agree that this augments in proportion to the depth from the surface. We do not exactly know,—remarks the writer we have already quoted,—in what manner the soil and sub-soil intervene in the etiology of certain endemic diseases; it is a question open to discussion. But we must approve of those hygienists who counsel that all houses should be rendered independent of the ground either by being built on air-chambers, or by the use of complete air-proof flooring.

THE WELLINGTON MONUMENT.

We have several times spoken, in language of the strongest condemnation, in regard to the injury done to the noble monument by Stevens in St. Paul's Cathedral, owing to the unsuitable, and, indeed, for purposes of sculptural effect, almost ruinous position in which it has been placed, and we are, therefore, glad to see that some degree of public protest is being made about it, and that the daily papers have begun to discover that it is a subject for paragraphs; and, as it is only the last and outside wave of an artistic agitation that ever reaches, in this country, the shores of newspaper paragraphy (if we may coin the word) we may conclude that there is a pretty strong and wide-spread feeling about it in the artistic world. But it is an extraordinary thing that in England not only are we liable to such huge mistakes as this of the misplacing of the Wellington monument, and thereby spoiling one of the most successful works of art of modern times; but even when people come to their senses and wish to put the thing to rights, they often seem unconscious of the proper reasons for doing it, and, as in this case, leave out the most obvious and emphatic ones. Here is a memorial, signed by a number of persons interested in art, praying for the removal of the Wellington monument to a position under one of the nave arches, as originally intended, and for its completion by the equestrian figure which was intended to form the culmination of it (a point which was separately considered in our last); a memorial laying stress on the fact that the monument is too cramped a position, and that the wooden screen of the Consistory Court hides it considerably from view from the nave, and yet not a word is said about the greatest defect of all in the position, viz., that the ideal figures, which constitute the most important portion of the monument artistically, can only be seen either against the window-light, or, in a very fore-shortened manner, from a position immediately under them within the screen of the Consistory Court. The disadvantage to a grand group, like that of "Valour and Cowardice," of being viewed from a position where the spectator has to hold his head back and look up at the sole of "Cowardice's" foot, is obvious enough to every

one; but the more serious mischief is that, when we look from a greater distance from the nave, though the figures are then visible over the screen, they are seen against the light, presenting, consequently, only silhouettes to the eye, with no light to show the modelling on the side next the spectator. There never was such an absurdity heard of as to place sculptural groups under such a light; no spectator would dream of doing it, and that Stevens should willingly have acquiesced in it is simply impossible; and, if this had been brought out properly in the memorial which has been sent to the Premier, the case of the memorialists would have been twice as strong as it has been made to appear. We sincerely hope, notwithstanding this curious and characteristic omission, that the memorial will have the desired effect, and that we may soon be cleared of the discredit of placing our most successful modern monumental work in such a position that half its merits are lost.

THE GREAT GEORGE-STREET SITE, WESTMINSTER.

"Ho, like to a high-stretch late-string squeak, 'O, sir, 'Tis sweet to talk of kings, . . . At Westminster
Your ears shall hear nought but kings, your eyes meet Kings only; the way to it is King-street."

DONNA, *Satire*.

CERTAIN communications that have lately passed between the Metropolitan Board and Her Majesty's Commissioners of Works tend to solve a long and much-vexed question. The determination of a site for the new Admiralty and War Offices at Spring-gardens disposes of the project to erect them on what is known as the Great George-street site. The latter is thus left free for other purposes to be agreed upon between the several authorities concerned. By the nature of the case the Board of Works are necessarily charged with completing the widening of Parliament-street, which must be accomplished sooner or later as an important metropolitan improvement. Meanwhile, the Crown has become possessed by sundry purchases, and at a total cost of some 287,000*l.* of a large portion of the area under review; the police-station there is valued at 30,000*l.*; and the remainder of the property is said to be worth 420,000*l.** The Government therefore stand as vendors of land to the Board under circumstances which, whilst involving considerable outlay, will probably result in no great loss to the national funds, and are favourable in many respects to the Board themselves. For taking the whole cost of the entire purchase as say, 737,000*l.*, the value of the ground with its fresh frontages may be fairly assessed at 755,000*l.* It would appear that Mr. Shaw-Lefevre is willing to let the Board purchase the Crown property for the price it has cost, namely, 317,000*l.*, taking in exchange so much of the new frontages as he may be advised shall strike a balance between that sum and one which the Board could legitimately obtain from the ordinary vendor. The latter, it appears, have informally agreed to fall in with the Government scheme. Briefly outlined the Commissioners' proposals for appropriating the ground itself are as follows:—to throw back the western side of Parliament-street so as to form an alignment with the Colonial Office, and to move King-street, widened to, say, 50 ft., westward to its present course. This, with the concomitant demolition of part of Great George-street (at its eastern end) would provide a fair area for a block of buildings, whether clubs or Government offices, between Charles-street and Parliament-square. At the same time it is contemplated to widen Charles-street to about 70 ft., and construct an altogether new thoroughfare, 40 ft. in width, parallel therewith to join the new King-street with Delahay-street. So thorough would be such a re-adjustment of the streets in an unusually interesting locality that we may conveniently take the opportunity to give a brief sketch of its history and antecedents.

It is generally supposed that the widening of Parliament-street was but in effect to restore to this quarter the open space that had so long existed, as was only belatedly, in the immediate vicinity of two royal palaces. But so far from this being the case the noble vista which confronts the spectator from its more elevated end at Charing-cross was within the last 130 years

closed in at Whitehall by the Cockpit or "Hobbin's" Gate and the gabled houses before the gallery which connected that gate with White Hall. The gate was pulled down in 1750, having been latterly in use as a State Paper Office. Two thoroughfares lay beyond; the narrower, with the Privy-garden and Bowling-green on the left, communicating by way of Brewer's-yard with Derby-court* and Cannon (Chanel) Row and so to the Woolstaple. King-street, the wider thoroughfare, which dates from the time of Hubert de Burgh, branched off at the Earl of Rochester's house, since occupied by the Board of Trade. Passing towards New Palace-yard these were joined by Petitioner's-alley, Stephen's-alley, White Horse-yard, and Clinker's-court. From Cannon-row, Todd's-wharf, Bonnet's, Derby, and Manchester courts gave access to the river. The last-named commemorates a house of the Montagues, Earls of Manchester, and Dorset-court that of Anne Stanhope, second wife of the Protector Somerset, wherein Anne Clifford, Countess of Dorset, was born 1590. Along the northern end of King-street, to the west, were the Cock-pit and Henry VIII.'s tennis-court, and here against Downing-street† stood the high gate, erected by King Henry VIII., and pulled down 1723. Hence there ran out of King-street into Duke and De La Hay streets several courts and streets,—Duffin's-alley; Axe-yard‡, so-called from the brewery of that name mentioned in a document 23rd Hen. VIII.; Sea-alley; Bell-yard and Crown-court (since Crown-street); Charles-street, home of Ignatius Sancho the play-loving negro; Gardner's-lane, leading into Bowman's; and Cherry Tree-courts; Antelope-alley and the Blue Boar's Head and George yards. What is now Parliament-square was represented by Union-street, Bell-alley, Little Sanctuary, with Dean and Bow-streets. Bow-street turned into Thieves or Thieving-lane which communicated with Broad Sanctuary by Green's-alley. Curving westwards Thieving-lane met Long Ditch (Princes-street) at Broken-cross between the Aquarium and Westminster Hospital. This, the oldest subscription hospital in London, had been first established in Petty France, next in Chapel-street, then in James-street. A plot of ground was subsequently purchased of the Government for 6,000*l.* in Broad Sanctuary,—site of the ancient Sanctuary cruciform church, and subsequently of Westminster Market. The pestilent and miserable purlieus of Green's-alley and the two Angel-courts only enhanced the perplexities of Thieving-lane. That street derived its name, says Slow, "for that thieves were led that way to the Gate House while the Sanctuary continued in force." To take them through the Sanctuaries when passing from King-street to Tothill-street would be to give them their freedom. An extensive clearance in this undesirable quarter and around St. Margaret's Church was effected in the period 1807-8, when St. Margaret's-street, which had been made out of St. Margaret's-lane by the removal of the old Fish-yard and "Heaven" and "Hell" was further improved, and Dirty-lane, its continuation towards Lindsey House at Millbank, became Abingdon-street.§ Several picturesque Elizabethan houses came down, but their destruction proved a gain in every other respect, since they contributed in an eminent degree to the notoriety so long attaching to Westminster. The north-western entrance into New Palace-yard, King Richard III.'s Gate, stood until the year 1706. Westminster Bridge, after nearly nine years building, was opened in 1747, the strong round tower and water-gate having been destroyed for its western abutment. In 1750 George Inn-yard was converted into Great George-street, and the Woolstaple into Bridge-street. On the making of Parliament-street, two or three years later (pursuant to the Act 29 Geo. II., c. 38), the Market which stood at what is now its south-western angle was transferred to the site of the "Quaker's" tavern by the present Sessions House. The Gate House, about

* Derby-street, named after the town mansion of William sixth earl of Derby, which was surrendered to Parliament temp. Charles I. In the house died, 1648, John Pym. During the next reign it was the Admiralty office.

† From Sir George Downing, secretary to the Treasury, 1667.

‡ Since Flindyer-street (1766), from the ground-landlord, Sir Samuel Flindyer, bart. Here lived Sir Wm. Davenant and Pepys.

§ Said to be called after Mary, wife of Thomas Abington, of Hinton, Worcestershire, and eldest daughter of Lord Morley. Willing to screen her husband, she addressed (from Montague-cloze, Southwark) the historic letter to her brother, Lord Montagu, which revealed the Gunpowder Plot.

* For these figures, as computed by Sir Henry Hunt, see the *Builder* for the 4th inst., p. 168.

100 yards from the Abbey western door, consisted of two portions: the one opening into Tothill-street, the other towards College-court (Great Dean's-yard), the Little Almonry, the Almshouses, and Duke's Head-court. They were built *temp.* Edward III. by Walter Warfield, cellarer to the Monastery. The Tothill portion formed an ordinary jail; the other, appertaining to the Bishop of London, a prison for offending clerks. By his paper on King George III.'s coronation,* Dr. Johnson was instrumental in procuring the demolition of a building which had served as the gaol of Nicholas Vaux, Marchmont Needham, Sir John Eliot, and Savage, in which Lovelace composed that exquisite gem, "To Althea, from Prison," and Raleigh, on the eve of his execution in New Palace-yard, wrote in his Bible the fine lines beginning:—

* "Even such is Time, that takes on trust,
Our youth, our joys, our all we have,"

We have thus briefly indicated the leading features of an area at one time defined by a watercourse that flowed around the Precincts. The stream, or rather ditch, giving names to Long Ditch and Channel-row, joined the Thames at the foot of College-street, and at the northern end of Cannon-row. Queen Matilda erected a bridge across it at the eastern corner of Gardner's-lane; another bridge lies underground in College-street; sewers now flow in its bed. About the Infirmary Garden are remains of the Precinct walls, of whose four gateways the foundations of that near New Palace-yard were laid bare in 1838, during the construction of a sewer. The Sanctuary has long disappeared that was witness to the sorrows of Edward IV.'s Queen, together with the Almonry where Caxton printed Gower's and Chaucer's poems, but there is yet standing, though bearing a threatened life, a valuable relic of these times in the shape of a Norman tower, refitted by Abbot Lillington, known as the King's Jewel-house, and latterly as the Parliament Office. By some attributed to King Richard II.,† others would claim it for the monk's primitive Refectory and Dormitory during the building of St. Edward's Abbey church. A course of Roman tiles can be traced in its lower story. King-street presents the little of the aspect it had when the author of the "Færie Queene" died here for lack of bread, and it is even deserted by the recruiting sergeants who, in our own day, made it gay with their full-dress tunics and ribbons. Yet the memory of many a famous name lingers around. From his house by Blue Boar's Head-yard, in King-street, Cromwell started for Ireland in 1649. Here lived Sir Thomas Knyvett, who seized Guy Fawkes; Dr. Sydenham, over Ram's-mews; at the house of Lord Howard of Effingham, Queen Elizabeth's Privy Council frequently met. This street has seen that sovereign pass through in state to Parliament over *pagoda* thrown down to fill rats in the roadway; she and James I. were taken through it to their graves in the Minster; King Charles I. guarded by halberdiers, returned from the Hall in a close chair through King-street.‡ Lord North died (1677) in what had been the first, and for many years the only, brick house here; and at the Bell Tavern the October Club met in the reign of Queen Anne. Vine-street is a relic of "the vineyard lately made by Bainsard" which is mentioned in Domesday Book; Wenceslaus Hollar, who worked for the booksellers at the rate of 4d. an hour, died in Gardner's-lane, his home at the time in possession of the sheriff's officer. Another worthy of Westminster should not be forgotten,—Wilkes's house was the last on the right hand down Prince's-court. Prior's house in Duke-street,—a fashionable quarter in its day,—faced Charles-street:—

"Our weeki friends to-morrow meet
At Matthew's Palace in Duke-street."

By one corner of De la Hay and Great George streets lived Lady Augusta Murray, otherwise known as the Duchess of Sussex; by the opposite corner is the house which Lord Jeffereys built for himself, and was used after his death for the Admiralty Office, until the occupation of Wallingford House. Its north wing (demolished a few years ago), forming the great hall where Jeffereys transacted business during vacation, was converted into a chapel in the year 1769.

ERRATIC ORNAMENTATION.

IN that busy doubtful time which saw the repeal of the Corn Laws, and the germination of the idea of the International Exhibition of 1851, the students of the Metropolitan School of Design were allowed to practise freehand drawing, modelling, and drawing from casts in the upper story of Somerset House. There were signs of dissatisfaction amongst the students occasionally, and on one occasion there was what might be termed a rebellion; at all events, it led to a revolution, and the school became quiet in demeanour, if somewhat ruffled in spirit. The masters were all able artists,—they were not drawing-masters in name,—even though they included such names as Redgrave, Dyce, and Herbert. There was a vagueness of purpose in the course of tuition, as if the whole course of study was guided by the idea that you had only to teach the drawing of curved lines to produce a designer of art-manufactures. Those who went onward and drew the figure well, forgot the purpose of the Government School, and joined the numerous body of artists who were then being recognised as being something more than "linners." The regularity and sameness of the teaching led to a regularity and sameness of pattern, and, were it not for the influence of the Exhibition of 1851, we should have been content to take a bit of ornament from one example, and a scrap from another, without a particle of original thought or adaptability to the purpose for which it was intended. At this period one of the most popular lecturers in England pointed out that our art was confined to the drawing-room; and, our music to evening parties. We had, he told us, as Whitfield and Charles Wesley had said before, given the devil all the best music, and left the weather and the damp to stain and vary the monotony of the whitewashed interiors of our ecclesiastical edifices. It hardly required the sarcasm of the eloquent Dissenting lecturer to aid the Oxford Tractarians in transforming our humdrum liturgical services into spectacular celebrations, or to change the whitewash, so dear to churchwardens, for the various specimens of tawdry scrolls and meaningless panels in distemper, which became the mural decoration, in so many instances, of the choirs and chancels of our minsters and parish churches. It seemed to be taken for granted that the Church of Rome had preserved the traditions of the pre-Reformation era in matters of church decoration, and any examples however debased, and however tasteless and meaningless, were copied or adapted to the new ideas of decorating the Temple of the Lord. This is little more than a generation ago, yet we hear architects and decorators speak of this period as "early days" when *true* principles were not understood. These remarks were pertinent enough when applied to the structure and details of a building, but they should not be applied to the ornamentation, or, in some instances, to the pointed rubble work which is left as a rude network of stone and plaster to hide the want of knowledge to finish the walls in a tasteful and appropriate manner. The windows, which contained in many instances choice specimens of stained glass, were cleared out to receive either plain tinted quarries or violent and gaudy coloured glass, which offended the eye and rendered the light unbearable or too dim. The true silvery tone of the ancient glass, enlivened by speckles of colour, by shields of coat-armour, or representations of some saint or legend, had been lost sight of. The purposes of the windows had been forgotten, and the small lights of a village church were filled with glass as full of colour and as dark as the immense east windows of York Minster. There was neither purpose, taste, nor appropriateness in the introduction of these monstrosities of colour. It was simply the erratic fashion of the time, which we are only reforming indifferently at the present day, when we are fluctuating between the repetition of a simple diaper pattern and the true subordination of colour to light with a clear distinctive purpose and design.

It is very much to be doubted if the æsthetic fever, of which we have heard so much in the pages of *Punch*, is not owing to these erratic ideas of ornamentation. The blending of the Pompeian panels with ideas from Japan is incongruous in itself, but true in principle, if the principles harmonise in colour, form, and proportion. The decorations which have been found on the walls of the buildings

in Pompeii have given us an excellent idea of the manner in which the ancients gave brilliancy to their colours, and grace to their figures. They were not overloaded compositions, or killed by confusing hues and lines. The introduced figures were graceful, the foliage natural. The artist did not confine himself to the particular stencil pattern, for he varied flowers and leaves and attitude as it suited his taste. The result was variety, and the effect pleasing. The Japanese have worked on a similar line. They are fond of a dark background, on which their gold and colour show brilliantly. Their patterns are not conventional in the sense of being repetitions of each other, but they are varied, and at the same time have sufficient in unison as not to offend the most fastidious eye. In the American International Exhibition some three or four pillar vases were exhibited which might have served as sections or bases of supporting pillars. The ornamentation was some lilaceous plant with large seed-capsules, and the same idea was repeated on each specimen. One was in low relief—the leaves lay flat on the surface, and the seed-vessels were only raised above the surface by the hand of the modeller pressing the inner surface of the clay so as to cause a protuberance on the outside. The effect was excellent. Another was in high relief—the petals were as delicate as egg-shells, and the insects fluttered over the flowers, and the birds snatched at the pendent seeds which were loose in the ruptured capsule. The third showed the pattern in relief between the two extremes. Here we had an example of an art-workman carrying out an idea with a definite purpose. When these vases were brought to England the idea was imitated. It was a moulded, formal, overloaded, piece of pottery-manufacture without spirit or feeling. It is thus with all our Japanese work. We became erratic, without being artistic. We multiply patterns, but do not produce beauty; we manufacture forms, but omit that variety and grace which is the essence of art. Whilst mere cheapness is the order of the day, we cannot wonder at this. We know how often the finest designs of an architect are spoiled by the want of funds or the parsimony of those who have the spending of them, and that recourse must be had to moulded bricks, terra-cotta, or the turned balusters or ornamental bosses from the quarries at Box, if ornamental details have to be employed. If we must have pictures, and cannot buy paintings by skilled artists, we must be content with oleographs or chromos; but, because some special style of ornament is pleasing, do not let us repeat the eccentricities whilst overlooking the special beauties to which alone it owes its charm and attraction.

Miss Eliza Meteyard, in one of her artistic sketches, makes her art-student seek inspiration for new forms of ideal beauty in an observatory by looking at the nebula which float in space. Our art-students have a wider field of novelty and of suggestive beauty of form and colour at home, which can be studied day by day. The Worth gallery or museum at Kew Gardens is a treasure-house of colour, of form, and ornament. If, as it is possible will be the case, colour will be used in the adornment of the exterior of our dwellings to a greater extent than at present, here is a very *Thesaurus* of ideas adapted to every species of ornament culled from every clime. The indefatigable industry of the lady who painted these wondrous transcripts of nature's marvels is not more surprising than the blended forms and colours of tropical verdure and quaint forms she has enabled us to see. A skilled potter saw fresh ideas of form and colour in a case of shells which would tax the resources of his art to imitate. The intelligent adaptation of these forms to our every-day use, will perhaps open up a truer way to the use of natural beauty, both in form and colour, than we have yet found out. We are too apt to ride our hobby to death, to carry our ideas too far. An exaggerated truth is not far removed from a falsehood, just as an exaggerated likeness of an individual becomes a caricature. We may pervert beauty into ugliness, and, by neglecting the harmony of hue, turn a source of pleasure into an offence. The old builders sought their effect, first, in the justness of their proportions to the object they had to carry out, and, next, in the appropriateness and suggestiveness of the accessories. The circumstances were taken into account, and the true principles of art adapted to them. We did not have art prostituted to circumstances as is too often the case

* "Reasons offered against confining the Procession to the usual Track."

† See, though, the grant of June 7th, 1377, 61 Edw. III., in the "Niger Quaternum," fol. 79. Here are kept the Whitworth gauges and other Board of Trade standards.

‡ Herbert's Narrative, Ath. Ox., ed. 1721, ii. 798.

now, nor did they in their adaptation seize upon an erratic variation, and perpetuate it, to the neglect of true beauty and the everlasting principles of grace, line and proportion.

LUBRICANTS.*

LUBRICANTS, as is well known, are used for reducing the friction of the moving parts of machinery to the lowest possible degree, thereby preventing undue wear and tear, and, at the same time, obtaining the greatest possible amount of work from the machinery. Owing to the extensive introduction of mechanical power during the last thirty years, the consumption of lubricants has grown in proportion, until it is now enormous. Lubricants are supplied to us by all the three kingdoms of nature. We derive tallow and train-oil from the animal kingdom; olive oil, rapeseed oil, palm oil, and cocoa-nut oil, from the vegetable kingdom; resin oil, an intermediary oil, so to say, between the vegetable and mineral kingdoms; and mineral oil pure and simple, from the mineral kingdom.

Tallow is prepared from the fat of cattle and sheep by being heated with water, sometimes with the addition of diluted sulphuric acid or caustic soda, either by the direct application of heat or by hot steam. By this treatment the cellular tissues are destroyed, and the pure fat is separated, which then settles as a layer on the surface. Tallow thus prepared forms, at an ordinary temperature, a yellowish white, pretty hard mass, which melts at a temperature of $+40^{\circ}\text{C}$. It contains, if not freed from acids by alkalis, besides the neutral fats, from 1 to 5 per cent. of sebaceous acid. In examining tallow, care should be taken to ascertain whether it is free from cellular tissues, free from mineral acid, as well as extraneous additions (other fats, sebaceous acid, mineral substances, &c.).

Train-oil, prepared from the fat of seals, &c., in a manner similar to tallow, forms, at an ordinary temperature, a liquid of a light or dark brown colour and of a peculiar odour, solidifying at a temperature of from $+5^{\circ}$ to $+15^{\circ}\text{C}$. As a rule it contains a large proportion (up to 5 per cent.) of sebaceous acid. The same care should be observed in examining train-oil as is recommended in the case of tallow.

Olive oil is obtained, by pressure, from the fruit of the olive tree, cultivated largely in the South of France and Italy. It forms a beautifully yellow liquid of a peculiar odour and a mild taste, which begins to get thick at a temperature of $+2^{\circ}\text{C}$. The contents of free sebaceous acid is very small in the better descriptions; inferior sorts contain about 0.5 to 1 per cent.

Rapeseed oil or rape oil is procured from the seed of the various kinds of Brassica, the seed being crushed in powerful hydraulic presses. The oil thus obtained is a yellowish-brown to brownish-green liquid, of a peculiar odour and a pungent taste, which precipitates the mucilaginous substances of the seed which have passed in pressing only after being kept in store for some time, and becomes clear by this precipitation. But even perfectly clear oil contains mucilage or albumen in chemical solution, and these can only be removed by treatment with chemicals or by heating up to 200°C . The raw oil only cleared by storing was, and is still, used for lubricating bearings, especially railway axles. The purified oil, prepared by removing from the raw oil the mucilaginous and albuminous constituents by sulphuric acid, chloride of zinc, &c., and the free sebaceous acid (on the average 0.4 per cent.) by treating with alkalis, is reserved for lubricating the more delicate portions of machinery and locomotives, steam cylinders, &c. The perfectly purified rape oil, and from which all acid has been eliminated, is of a light yellow colour, almost odourless, possesses a specific gravity of from 0.914 to 0.915 at 15°C , solidifies at a few degrees below zero, and melts again at about $+3^{\circ}\text{C}$. In testing rapeseed oil, it must be ascertained whether it possesses the correct specific weight and melting-point, and whether it is free from mucilage, sebaceous and mineral acids.

Palm oil and cocoa-nut oil are obtained from the fruit of the oil and cocoa-nut palms respectively, imported in large quantities into Europe. The fruit is either crushed in hydraulic presses, or the oil is extracted by means of sulphuric acid

carbon. The two oils or fats (for at an ordinary temperature they resemble butter) are now used very little for lubricating purposes, but extensively in the manufacture of soap.

Resin oil, gained by distilling the common resin obtained from the residue left in the manufacture of oil of turpentine from turpentine, was formerly used only in the preparation of "carriage grease," mixtures of this oil with colophony, fats, &c. Refined resin oil is now procured by freeing the crude oil by means of alkalis, and subsequent bleaching, the product being a clear semi-liquid of yellow colour, possessing but a slight odour, and having a high specific gravity (about 0.970). The oils are never perfectly free from organic acids, most of them containing about one per cent.

The class of mineral oils includes a number of lubricants which have nearly all a common origin with "petroleum." Crude petroleum, as it was first won in large quantities in America (since 1859), consists of an intermixture of many organic substances, which, on account of their exterior similarity to real oils, as well as for simplicity's sake, are called "oils." These oils, which may be distilled without decomposing, differ from each other by their various specific weights, as well as by their various boiling-points. For a long time the volatile ingredients only were extracted from crude petroleum, which were used for illuminating purposes, whilst little attention was paid to the heavy oils which remained after distillation. But when those residues grew in quantity, means had to be devised for utilising them, and it was soon found that they could be used as lubricants. At first the oil was applied in its original form, as left in the alembic, in which it still contains many impurities. But now in most cases, after the more volatile oil used for lighting purposes has been distilled over (at a temperature of from 150° to 350°C), the lubricating oil is also driven over. The latter is then purified with acids and alkalis, and a product obtained which, in consequence of its purity, chemical constancy, and other valuable properties, appears very suitable for use as a lubricant.

As the raw mineral oils consist of a large variety of combinations related to one another, and as those combinations, according to a greater or less degree of distillation, &c., may appear in the most various mixtures, it follows that, independent of their greater or less degree of purity, the mineral oils may possess widely varying properties principally of a physical nature. Thus the colour of the different mineral oils varies from light yellow to dark brownish red; their specific weights fluctuate between 0.880 and 0.920; their cohesion, their "body," as more generally expressed, shows itself in all grades between the consistency, for instance, of the highly liquid linseed oil, when fresh, and the semi-liquid resin oil, &c.

But, however much their physical properties may vary, in their chemical nature mineral oils are closely related to each other. They all consist (of course, only real mineral oils are included) of a mixture of carburetted hydrogen, indifferent organic combinations, which possess neither acid nor basic properties. They do not decompose either at very low temperatures or at degrees of heat which far exceed those prevailing in the steam cylinders, &c., where they are employed. They do not undergo any change either on contact with the air or with water or steam; they do not attack metals, even the most easily oxidisable, such as potassium or sodium, and are as little changed or decomposed by the metals themselves.

This chemical indifference is the principal advantage possessed by mineral oils over all fat oils, whether they are of vegetable or animal origin. All those fat oils decompose in time on exposure to the air, at high temperatures, on contact with metals or their oxides, and thus destroy, sometimes more quickly, sometimes more slowly, the parts of machinery which they are intended to preserve.

Notwithstanding those great excellences which mineral oils have over fat oils, certain difficulties were at first experienced in introducing lubrication with the former more generally. Convenience, attachment to custom, and want of intelligence were amongst the obstacles which had to be overcome. Mineral oils were looked upon as entirely unsuitable for lubricating machinery, and fat oils as alone possessing the specific property of a lubricant; apprehensions were raised as to the "easy inflammability" of mineral oils, &c. But the intro-

duction of mineral oils for lubricating purposes was also greatly retarded by the want of sense, and partly also by the want of honesty, on the part of individual producers and dealers. Properties were claimed for the crude mineral oil only possessed by carefully purified oil; when, finally, the price of the lubricating oil exceeded that of the oil used for burning, part of the latter was left in the lubricant, so that, especially if great pressure took place, it was found unsuitable. Notwithstanding all this, lubrication with mineral oil has, within the short space of the last five years, made such progress that it may justly be called, not only the lubricant of the future, but that of the present day. As the mineral oils, on account of their chemical properties, are far more valuable than fat oils, and, on the other hand, owing to greater variety physically, they may be adopted more readily for different purposes than fat oils, there is nothing to prevent their general introduction.

It will be gathered from the foregoing that the displacement of fat oils for lubricating machinery by mineral oils is a great technical progress. But the use of mineral oil is a great advantage also from the point of cheapness. The best mineral oils are now only half the price of fat oils. With suitable construction of the parts to be lubricated and a correct choice of the most suitable lubricating materials, the consumption of mineral oils is not greater; on the contrary, it ought to be less, as with mineral oil no hardening or thickening takes place, and thus there is no loss. Finally, in lubricating with mineral oil, the parts oiled are not destroyed, but, on the contrary, preserved; whilst the destruction of machinery parts, such as pivots, regulator valve-rods of locomotives, &c., is only too often a consequence of the use of fat oils.

But the ultimate introduction of lubrication with mineral oils is of importance also from an economical point of view. Our population is steadily increasing, and the difficulties of gaining a livelihood are growing with it. On the other hand, there is an abundance of suitable material for lubricating with mineral oils, for, without reckoning the almost inexhaustible stores in America, petroleum is now found in large quantities also in Russia, Galicia, and Germany. Our food supply would be greatly extended, either directly, by appropriating large quantities of fats and oils for the maintenance of the people, or indirectly, by restoring the areas now used for the cultivation of oil-producing seeds for raising cereals. It is highly necessary in the economy of nations that there should be, not only a division of labour, but also a classification of the work to be done. Let the inferior materials, as far as they can, be used for inferior objects, whilst the more valuable products are reserved for a higher purpose.

ARCHITECTURE IN HOLLAND.

THE *Frankfurter Zeitung* lately published several articles dealing with the present tendency of architectural taste in Holland, special reference being made to the National Museum at Amsterdam. In a careful review of the entire subject, the *Deutsche Bauzeitung* has recently corrected certain statements made in these articles, while at the same time admitting their instructive nature. The question of the influence M. Cuypers, of whose works we have often spoken, has exercised upon the progress of architecture in Holland is discussed in a spirit of impartiality; and, whilst exception is taken to some of the commendatory language used respecting him by certain Dutch newspapers, the details of his professional career are recorded in such manner as to elucidate its most prominent features in an interesting manner.

In the preliminary steps in connexion with the erection of the National Museum, the question of the style of architecture used by M. Cuypers formed a subject of discussion in the press; a certain amount of dissatisfaction having been created by his being entrusted by the Government (without any competition) with the designing of the Central Railway Station at Amsterdam. The opinion at one time entertained in some quarters that M. Cuypers had been unduly favoured in the matter of the National Museum, is considered by the *Deutsche Bauzeitung* to have been unfounded, inasmuch as the plans opposed to his were, from a technical point of view, undoubtedly inferior to his selected designs.

* From a paper read by Herr Lux before the Society of German Engineers.

The merits of the works of M. Cuypers are criticised at some length in the journal last referred to, and his creations are subjected to a comparison with those of Friedrich Schmidt, of Vienna; the inference being deduced that the former is, to some extent, wanting in the faculty of grasping and controlling the full resources of his art. It is, however, admitted that his activity is beyond doubt, and that Holland cannot at the present time put forward any more worthy representative of architectural skill than M. Cuypers, who is himself a native of Belgium. His adoption of the Medieval style as his ideal arises from conviction; and in this he is allied with several leading German architects (such as Ungewitter, Hase, Statz, Schmidt, and their pupils), whose adoption of that period as their model is not induced by any religious feelings. Thus the position of M. Cuypers as a leading member of the Catholic party in Holland has not been the direct origin of his artistic creed. In fact, Hübsch, who, in Germany, is well known to be of strictly Catholic views, has abjured Medieval art and has attached himself to the Early Christian style of architecture.

The manner in which M. Cuypers has designed the National Museum meets with adverse criticism from the writer in the *Frankfurter Zeitung*, on the ground that the building is wanting in those features which might be considered as worthily representing the dignified purpose to which it is devoted. At the same time due tribute is paid to the general and artistic intelligence of its architect. The opinion is expressed that he has not succeeded in his attempt to combine the Medieval and modern styles, and to unite ecclesiastical and secular features in one work. The judicious arrangement of the interior is warmly commended, its general scheme allowing of the chronological features of the display being easily appreciated.

THE PROTECTION OF IRON AGAINST RUST.

It is still an open question how best to protect iron against oxydation, commonly known as rust. He who would find an effective preservative would indeed be a benefactor, for by its means numerous noble structures, into which the tooth of time is now eating slowly but surely, would be preserved to posterity. It is well known that wherever air and damp come into contact with even the smoothest iron surface rust soon makes its appearance. By its operation not only is there a constant waste going on, but the remaining iron is rendered brittle. A coating of less oxydizable metals, such as tin, later lead and zinc, and quite recently nickel, has, therefore, been applied, and with some effect. Earthy glazes, such as are applied to pottery, have also been used for coating iron vessels for household purposes. But all these coatings of metals or glazes have been found in most cases either impracticable in application or too expensive. For extensive use, coatings consisting of oils mixed with metallic oxides, earths, &c., have thus come into use.

Now, it has been observed that iron does not rust in dry air, even in dry oxygen. Iron, also, frequently does not suffer when exposed, without being painted, to the open air,—weather-cocks, fences, &c., having lasted for centuries. But in that case it has been found that they have been protected by the formation of a thin layer of peroxide of iron, which has acted as a safe covering against exterior influences. This experience led to the artificial production of a layer of magnetic oxide, superheated steam being used for the purpose. It is not to be supposed that such a treatment will find extended application; and a protective covering obtained in this way would only be effective in the case of iron in pure air, but not where it comes into repeated contact with water or carbonic acid. An interesting phenomenon has likewise been observed on railways. It has been found that iron sleepers and spikes rust very much if the line is not used for some time. It is assumed that iron bodies are more liable to rust in a state of rest than if they are exposed to vibration from time to time, in which case, perhaps, an electrical effect comes into play which lessens the affinity of iron to oxygen.

In demolishing old buildings, there are often found iron cramps, blocks, &c., which, so far as they are surrounded by mortar, are completely free from rust, just as if they had only left the forge. A similar phenomenon has been met with by M. Vicat, a French engineer, when he

had the anchor fastenings of several suspension bridges exposed which had been put down thirty years before. Where the iron in the masonry was surrounded by rich lime mortar, there was not a sign of the formation of rust, whilst the continuations of the anchors in hollow spaces were rusted to such a degree as to have lost two-thirds of their former dimensions. It has been frequently observed that iron does not oxidise in water if small quantities of caustic alkalis, or alkaline earths, are solved in it, in which case acids of whatever nature would be excluded. It appears that the above experiences have served as the basis for the rust protective paints invented by Herr A. Riegelmann, of Hanau (Bavaria). He adds to his paints caustic alkaline earths, (barytes, strontian, &c.). By coating iron with them, it is said to be in the same state as the anchors of suspension bridges in lime mortar. Although simple coatings of such paints, owing to their slight thickness, cannot contain much alkaline matter, as is the case in walling in iron, alkaline effects will show themselves as long as they contain a certain percentage of it. But in any case those paints are free from active acids, which cannot be said of all our paints for iron. Should the paint be found in practice to possess the protective properties claimed for it, a step in advance would have been taken in the preservation of iron, and its greater application would be ensured.

THE ROMAN TOWER AT COLOGNE.

The question of the antiquity of the mosaic work in the so-called Roman tower at Cologne has recently been discussed in a treatise by Herr Michael Mertz, of Cologne. The work in question is on the exterior of the remains of an old tower in the Apenstrasse, and has received a certain amount of attention by reason of the geometrical figures and objects of which it is composed, in various arrangements of colours. The *Wochenblatt für Architekten und Ingenieure* remarks that, although no particular acquisition of technical or artistic knowledge is to be expected from the detailed examination of this specimen of ancient work, yet its unique character entitles it to attention as a relic of bygone ages, and, possibly, as affording suggestions of some practical value.

The external diameter of the tower is about 31 ft. and its internal diameter about 18 ft., so that the walls are about 6 ft. 6 in. in thickness. The older portion of the tower reaches a height of 19 ft. 6 in. above the pavement, and the lower part (up to about 6 ft. above the ground) is faced with layers about 4 in. in thickness of regularly hewn grey decomposed trapp and trachyte stones. In the succeeding layer (3 ft. in height) are semicircles of arch-stones surrounded by a narrow zigzag band in black and white. Between each of these, on a separate base, are five equilateral triangles, the insides filled with a chess-board design. Then follows a chequered band (1½ in. in height), above which there is a similar band placed 3 ft. 5 in. higher. In the intervening space are wedge-shaped stones. Above the upper chequered band are figures of temples with four columns, which correspond in their position with the semicircles in the lowest portion of the ornamentation. Between these temples are circles formed of white arch-stones, and objects resembling shields in rectangular and lozenge form. White, black, and red stones are used in the work. According to the investigations of Herr Weiland, of Cologne, they consist of carbonic limestone (white), sandstone (red), and trapp sandstone (black). The colour of the latter is attributed to the protoxyde of iron which it contains.

As to the age of the work, Herr Mertz considers that it dates from the year 69 of the Christian era. From internal evidence, Herr Wallé (in his remarks published by the journal referred to) argues that it should be referred to a later period, and cannot have been built at an earlier date than between the fifth and seventh centuries.

Some years have passed since we sketched the tower in question.

Mr. G. G. Hoskins, F.R.I.B.A., is the architect appointed by Sir Joseph Pease and Mr. Arthur Pease, the executors of the will of the late Mr. Edward Pease, to design and carry out the new Library Buildings, Darlington.

CLOISTERS RECENTLY DISCOVERED AT WÜRZBURG.

SOME of our readers may have learned by the newspapers of the opening up of an interesting cloister at Würzburg, heretofore built into a solid wall and quite invisible. The wall is now pulled down, and the cloister is exposed. Through Major Call, R.E., who was then staying there, Mr. R. Horbert Carpenter obtained photographs of the ancient work, and from these Mr. Brewer made for us the careful drawing we have engraved.

There are several peculiarities about these cloisters to which we would call the attention of our readers. Although the alternation of piers and columns is by no means uncommon in Romanesque arcades, yet we do not recollect to have seen precisely the same treatment that we find at Würzburg. The cloister to which it bears the greatest resemblance is that of the Grossminster, at Zurich. There are, however, several important variations in the two designs. At Zurich the cloister is vaulted, and each bay encloses three small arches, so that two corbels supported upon single columns occur between each pier or pilaster. Externally one semicircular enclosing arch extends from pilaster to pilaster. A vaulting shaft is attached to the inner face of every pilaster. Apart from these variations the similarity between the two compositions is very remarkable, even as to detail. Würzburg, however, has a slightly earlier character about it, though we should feel inclined to fancy, from certain indications which present themselves, that a good deal of the detail of this example is of a later date than the building itself. In all probability, as originally constructed, the cloister was quite plain, and the mouldings on the corbels, carving, &c., may have been executed a century or half a century later. The treatment of the pilasters is very peculiar, each one consisting of a single large slab of stone set up on end, and this has offered a splendid field for the sculptor. The three bas-reliefs discovered are works of the greatest possible interest. The first, which is at the extreme end of the arcade, is divided into three parts by vertical lines; the outer portions of the composition are filled by a beautiful treatment of the honeysuckle on one side and a peculiar series of knots on the other. The centre contains an oval niche filled with a bust. At first sight the composition has such a very classical appearance that one would be almost inclined to consider it a genuine Roman work, and it might be the monument of some Roman lady of rank. Closer investigation, however, will, we think, satisfy any one versed in the subject that this is not the case, and, in all probability, this curious and really elegant work does not date from an earlier period than the eleventh or twelfth century.

The pilaster which supports the sixth arch is, however, the most valuable portion of this singularly interesting cloister. It is carved on both sides, and each side is adorned with a bas-relief of the greatest possible value. One represents the Almighty in the act of benediction, the right hand raised, and the left holding a closed book. The attitude of the figure is grave and majestic. The head, which, before it was damaged, must have been a noble piece of sculpture, has long curling hair falling down over the shoulders, and a short-clipped beard. The figure is draped in a tunic and a kind of toga, and is seated upon a throne, which is adorned with a kind of Persian shawl pattern.

On the opposite side of the pilaster is a bas-relief representing a bishop, fully vested, holding a pastoral staff in his right hand,* and giving the blessing with his left hand. The mitre is very low, in fact, little more than a skull-cap, and the chasuble small and coming to a sharp point in front. The dalmatic and tunic are long, but fitting rather close. The ends of the stole hang down a long way below the tunic; the alb is very long, and without apparels. Behind the head is a nimbus, and over the shoulder is a curious kind of pallium, without crosses. Now, whom is this intended to represent? We think there can be little doubt that the person portrayed here is St. Killian, an Irishman, who first preached Christianity to the Franconians. He was put to death in 687, on the site of the Neu-Münster church. There are many reasons which lead us to this conjecture.

* We use the words "pastoral staff" advisedly, and again protest against the crook staff carried by a bishop being called a "crosier;" the latter, in fact, being a cross and not a pastoral staff.

In the first place, the nimbus shows that the figure is intended to represent a canonised saint; and in the next place, the curious form of pallium is one which was worn by all the bishops of Würzburg; then, the absence of the sword would point to a date anterior to the establishment of the prince-bishopric. The only other person whom it could represent is St. Burkard, the second bishop of Würzburg; but as he is generally represented with the sword of temporal authority we fancy this must represent St. Kilian. We are totally unable to account for the blessing being given with the left hand. It is difficult to hazard a guess as to the date of these very remarkable works of art, but we should be inclined to ascribe them to the twelfth century, and are of opinion that they are from the hands of that wonderful school of sculptors established at Hildesheim by Bishop Bernward about the year 1015, and which was at its highest development at the middle of the twelfth century. The sculptures at Würzburg bear a strong resemblance to those adorning the side screens of the choir of St. Michael's, Hildesheim, and the Liebfrauenkirche at Hildesheim.

Few antiquarian discoveries are more interesting than this one at Würzburg, and we sincerely trust that this very precious fragment of early architecture and sculpture will be carefully preserved *in situ*. If any attempt at restoration is made, it should be confined, as far as the old work itself is concerned, simply to repair. A roof, however, ought to be placed over the cloister, to protect it from the weather.

POPLAR AND BROMLEY TABERNACLE.

The building is designed in the Byzantine style of architecture, treated in a simple manner, so as to get some massive outline at a small cost. The columns to the portico are of Bath stone, with carved capitals, as also the triplet window and round windows generally. An inner vestibule effectually shuts off draughts and sound, and the gallery stairs are approached from the portico. The building is of stock bricks, relieved with red and white strings, and the roofs are covered with slate.

Internally the seats are arranged with side aisles, and a spacious gallery runs entirely round the building. The platform is large and handsome. The pews and woodwork generally are stained and varnished. The dimensions are 50 ft. wide by 76 ft. long (in addition to this there is a large apse for the choir), height 40 ft. to the flat cubing of the collar. The contract was 3,284*l.*, and the accommodation is for 1,000 sittings.* The roof is supported by semi-circular ribs, embracing the whole span, and bow-string tied.

The works were designed by Mr. W. Allen Dixon, of 14, Great James-street, Bedford-row, and executed by Messrs. Holland, of Poplar.

THORPE BUILDINGS, BRADFORD.

SOME few years ago the Corporation of Bradford awoke to the fact that the town had outgrown its babyhood, and that the busy central part consisted of narrow, tortuous streets inadequate to accommodate the ever-increasing traffic, while the old buildings fronting to them had neither beauty nor antiquity to recommend them. That awakening was the commencement of a system of street improvements that has entirely remodelled the heart of the town, and though there is room still for improvement, and a good deal to do for which Parliamentary powers have been got, yet so much has been done that a Bradford man has no longer need to be ashamed of his town.

Thorpe Buildings, illustrated in the present issue, are built on a site thus cleared by the Corporation. It is at the intersection of Yvigate and Tyrryl-street, which two streets, with their continuations under different names, cross the town at right angles. Other important streets debouch on this intersection, and make one of the few open places in Bradford.

The site is surrounded on all sides by streets, and the plan of it may be described as a square attached to the base of a triangle, the square being at the left of the picture.

Illustrating the rapid rise in the value of land

in this locality, it may be stated that the price of the triangle in 1871 was 26*l.* 5*s.* per square yard, and of the square in 1876, 42*l.* per square yard, both sold by the Corporation at public auction.

The area of the site is 7,000 square feet; the height of the building from the street to the top of the dormer is 75 ft. It was built by Mr. George Thorpe, from the designs of Mr. T. C. Hope, architect, Bradford. It is occupied by Messrs. Thorpe, Brothers, & Co., and by Messrs. George Thorpe & Co., the former as wholesale Manchester warehousemen, and the latter as retail drapers and silk mercers. It is one of the largest buildings of this kind in Yorkshire, upwards of 100 men and women being employed in it. It is built entirely with cleaned ashlar, from the Bradford quarries.

A TERRA-COTTA GROUP FOR CALCUTTA.

WE mentioned some short time ago the production of a satisfactory group of statuary, representing "Agriculture," for the Government of India, and promised to find an opportunity to give a view of it. This promise we now redeem, repeating some of the few particulars we then gave.

The group is one of four, in buff terra cotta, intended for the adornment of some important new buildings. The designs for the whole have been approved by the Government of India. Each group will consist of a central ideal figure, flanked by a European and a native. The group "Agriculture," consists of a central figure of Ceres, with sickle in right hand, and some ears of corn in left hand. On her right hand stands a European indigo-planter, and on her left an Indian agriculturist is resting by his plough. The total length of the group is 10 ft. 3 in., and the height of the central figure, including plinth, is 8 ft. 4 in. The group has been fired to such a degree of hardness, it is claimed, as to render the work imperishable. Each figure is in one piece. The sculptor is Mr. W. F. Woodington, and the manufacturers are Messrs. Stiff & Sons, of London Pottery, Lambeth. The makers have the second group nearly ready. Both these groups will probably be exhibited in the Calcutta Exhibition before being placed in their final positions.

THE WALLS OF NUREMBERG.

THAT the interesting old walls of Nuremberg should be gradually disappearing is not a thing to be wondered at. "The practical people" of the age have decreed that the beautiful must give way before the useful; that art must move out of the way before the interests of commerce,—in other words, that everything is to be governed by the absolutism of the money-maker. Of course, when the necks of men are bowed down to accept this tyranny, art must cease to exercise any important influence over their minds; for no principle can take deep root in the heart for which one is unwilling to make some sacrifice. Probably the reason why the Greeks and the people of the Middle Ages were such consummate artists is to be found in the fact that art was never sacrificed to mere considerations of convenience, but being united with religion, and forming, in fact, a part of religion,* it was impossible to degrade art, or to sacrifice it to mere utilitarian considerations without at the same time offering an implied insult to religion. To a certain extent this connexion between art and religion remained unbroken until the sixteenth-century Protestantism opposed this union, from the idea that it savoured of paganism, though in Germany, owing in all probability to the personal influence of Luther, nothing was allowed to be done in the way of destroying works of art either in ecclesiastical or secular buildings, and the Lutheran churches of Germany are, owing to this influence, richer in works of Medieval art than any other buildings in Europe except a few churches in Italy.

It is strange that, after the commencement of the seventeenth century, the wonderful influence which the Roman Catholic Church exercised over art seems entirely to have ceased, and instead of ecclesiastical architecture being in advance of domestic, we find the reverse to be the case, and church architecture becomes simply

an exaggerated and coarse imitation of domestic. In England, immediately after the Reformation, the same thing had taken place, and the churches erected during the latter part of the sixteenth and commencement of the seventeenth century can bear no comparison with the superb mansions erected under Elizabeth, James I., and Charles I.

Wren inaugurated a kind of return to old influences, and ecclesiastical architecture, under him, received quite a new impetus. No one can doubt that when Wren rebuilt London he intended to give the City a strongly ecclesiastical character. The great importance of the towers and spires, even of the smallest churches, seems at once to suggest this, and the great mass of St. Paul's, rising far above all the surrounding buildings, gave the city as marked an ecclesiastical character as that possessed by Lincoln, Salisbury, or any of our old cathedral cities. Wren's attempt to revivify ecclesiastical architecture, however, was short-lived, and it fell back to assume quite a secondary position, until Augustus Pugin again attempted to bring it prominently forward. Unlike Wren, who desired to form an ecclesiastical architecture out of the materials supplied by a living style, Pugin boldly proclaimed the living style of his day "abominable," and too degraded for such a lofty and holy purpose, and hence the revival of Gothic architecture, which he never ceased to preach and practise. Now this was a very decided challenge to modern ideas, and Gothic architecture has been, and is even now, in direct antagonism to modern notions of utility and practicability, and unfortunately these practical and utilitarian ideas have by degrees extended beyond objections to Gothic architecture, and have produced a kind of suspicion of architecture altogether! This is a feeling which was simply impossible in older times, and is so serious a misfortune to the art itself that, until it can be removed, it is impossible that architecture can assume the position which it formerly occupied. Another evil consequence of this suspicious feeling towards architecture is an indifference to ancient remains and examples of the art, and too often a positive desire to see them "improved away." Even in such a town as Nuremberg, which has, perhaps, made better capital out of its ancient buildings than any other town in Europe, that most interesting feature "the many-towered wall," which surrounds the whole city, is by degrees disappearing, and this most valuable series of examples of Medieval military architecture will in a few years have ceased altogether to exist.

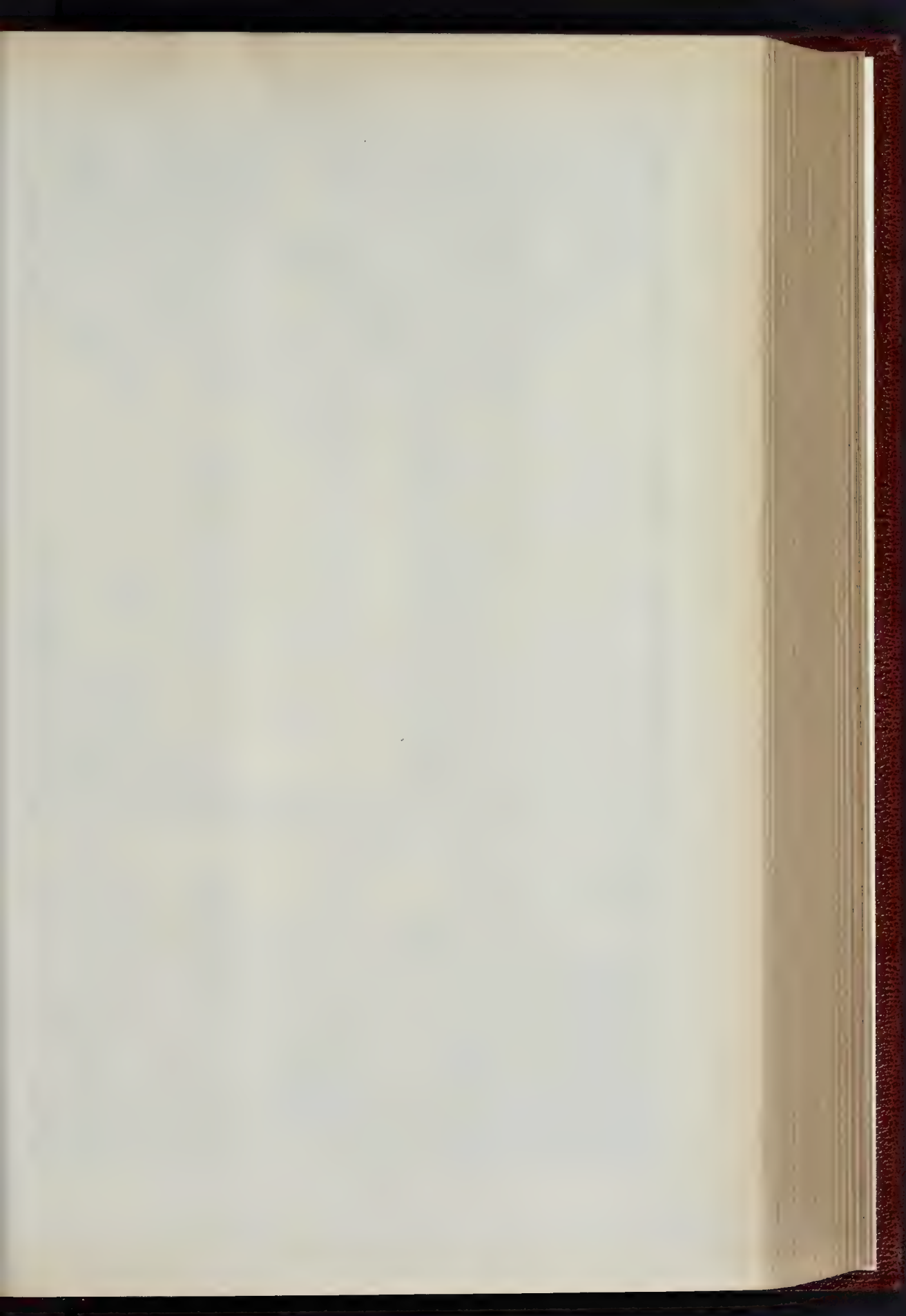
Particular interest attaches to the Nuremberg fortifications, because it is known that Albert Dürer was in some way engaged in their design. Whether absolutely as architect or not is uncertain, though it is asserted that some of the towers were erected from his design. We should, however, be inclined to think that Dürer would only have been consulted as a kind of adviser. It is, however, impossible to say. We know that Chaucer the poet acted as "clerk of the works" at Westminster Hall, and if a poet could be clerk of the works in one place, why should not a painter be appointed architect in another?

LIVERPOOL EASTERN DISTRICT POST-OFFICE.

THIS building is being erected to meet the increasing requirements of the eastern portion of the city. The principal object was to obtain a sorting-room of the largest dimensions that the site would permit, and also, so to arrange the buildings at the rear as to admit of further extension in an economical manner, should it be found necessary. The site is of red sandstone, and excavations have therefore been confined to moderate limits. In the basement accommodation is provided for boy messengers, batteries, linesmen, men's and boys' lavatories, &c., stores, and coals; on the ground-floor, in addition to the sorting-office, there is a large public office, retiring-room for female clerks, room for letter-carriers, and bag-room; and on the first floor there are rooms for the caretaker, inspectors, and others. The material used for the elevations are Stourton stone and Ramboon red bricks; the doors and windows of the public office being of wainscot. The sorting-office will be heated by hot water, and the public office by ventilating-stoves. Mr. Henry Tanner is the architect.

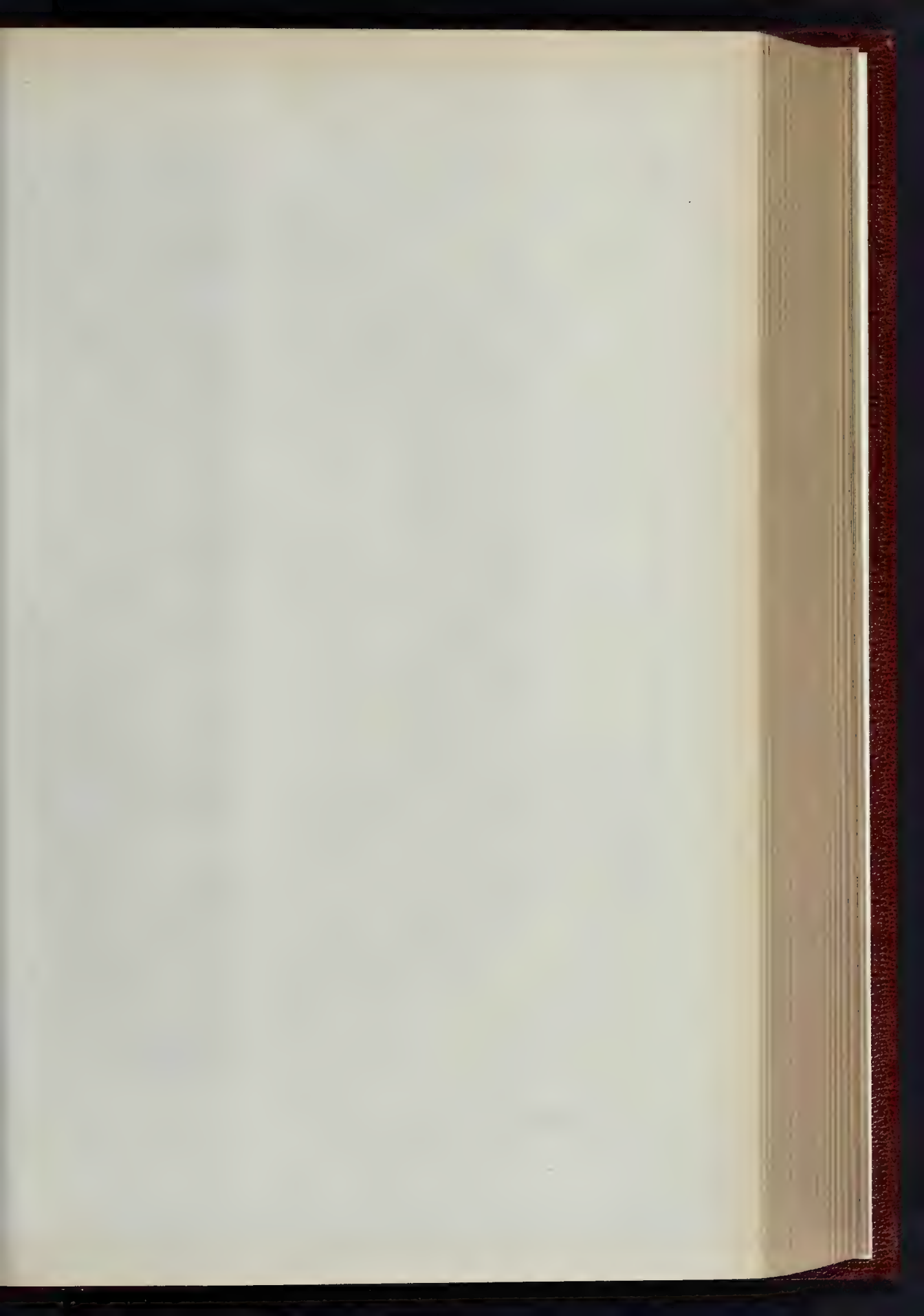
* The contract includes heating, lighting, and boundaries.

* See Mahaffy's "Social Life in Greece."



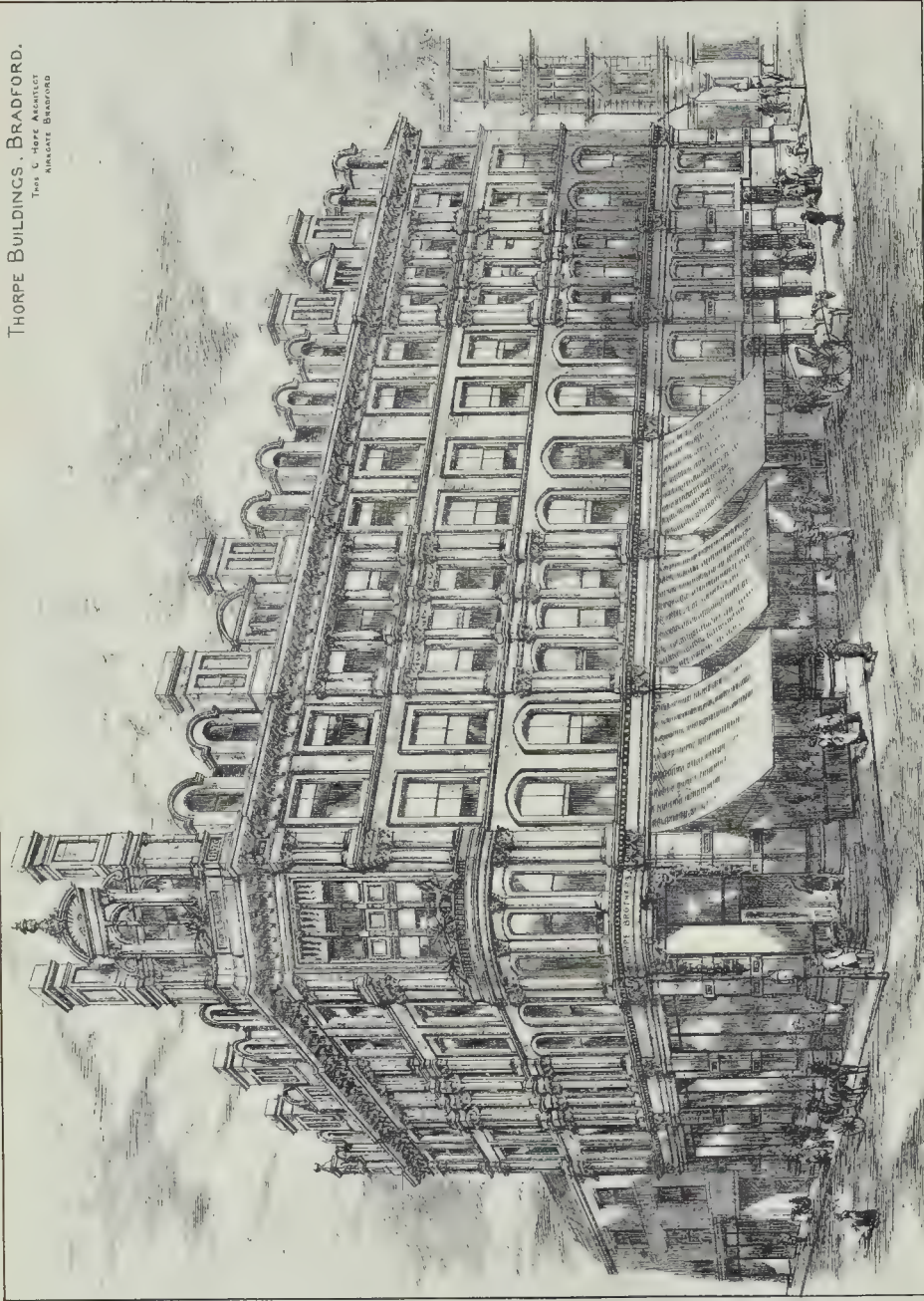


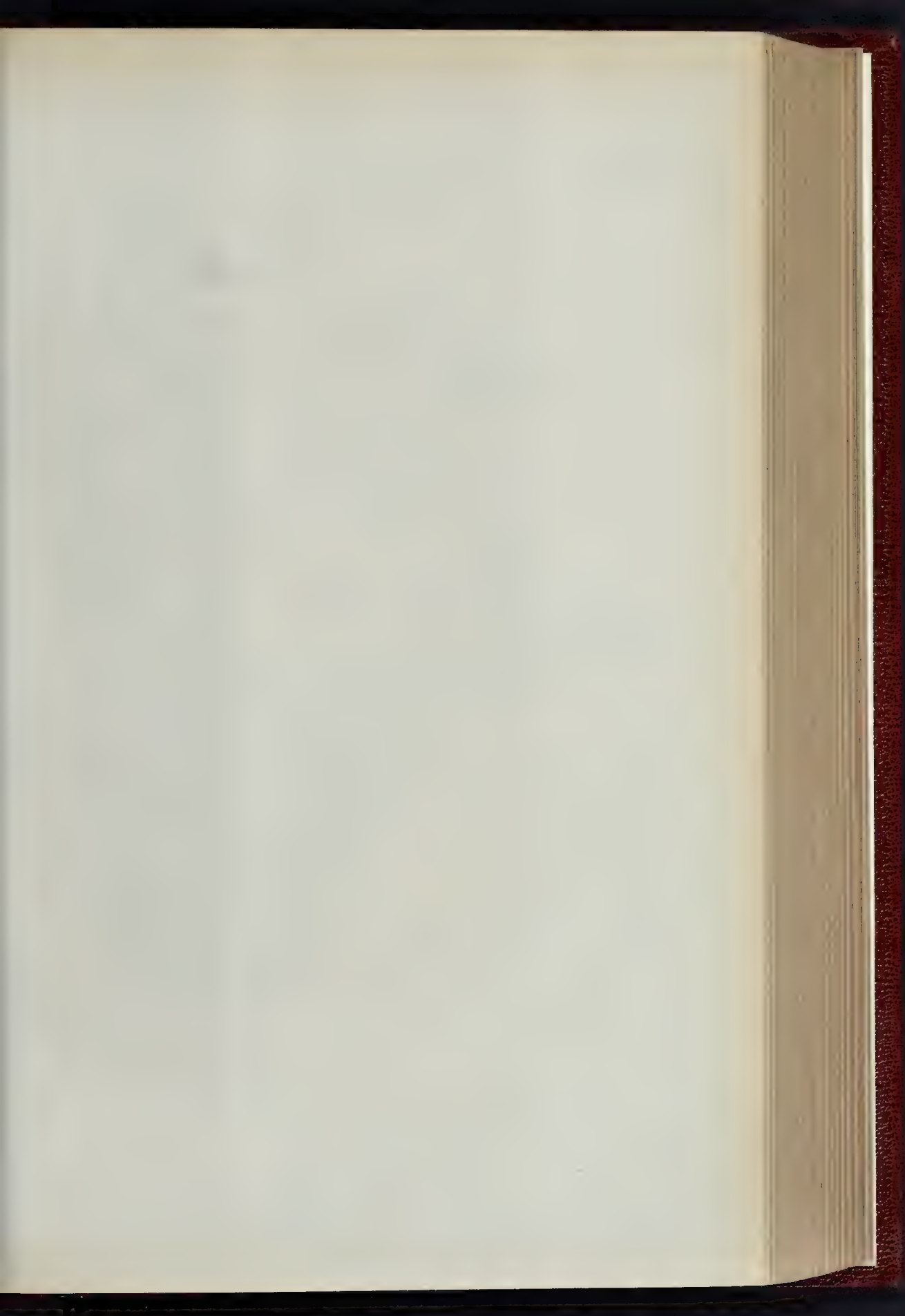
CLOISTERS RECENTLY DISCOVERED AT WURZBURG



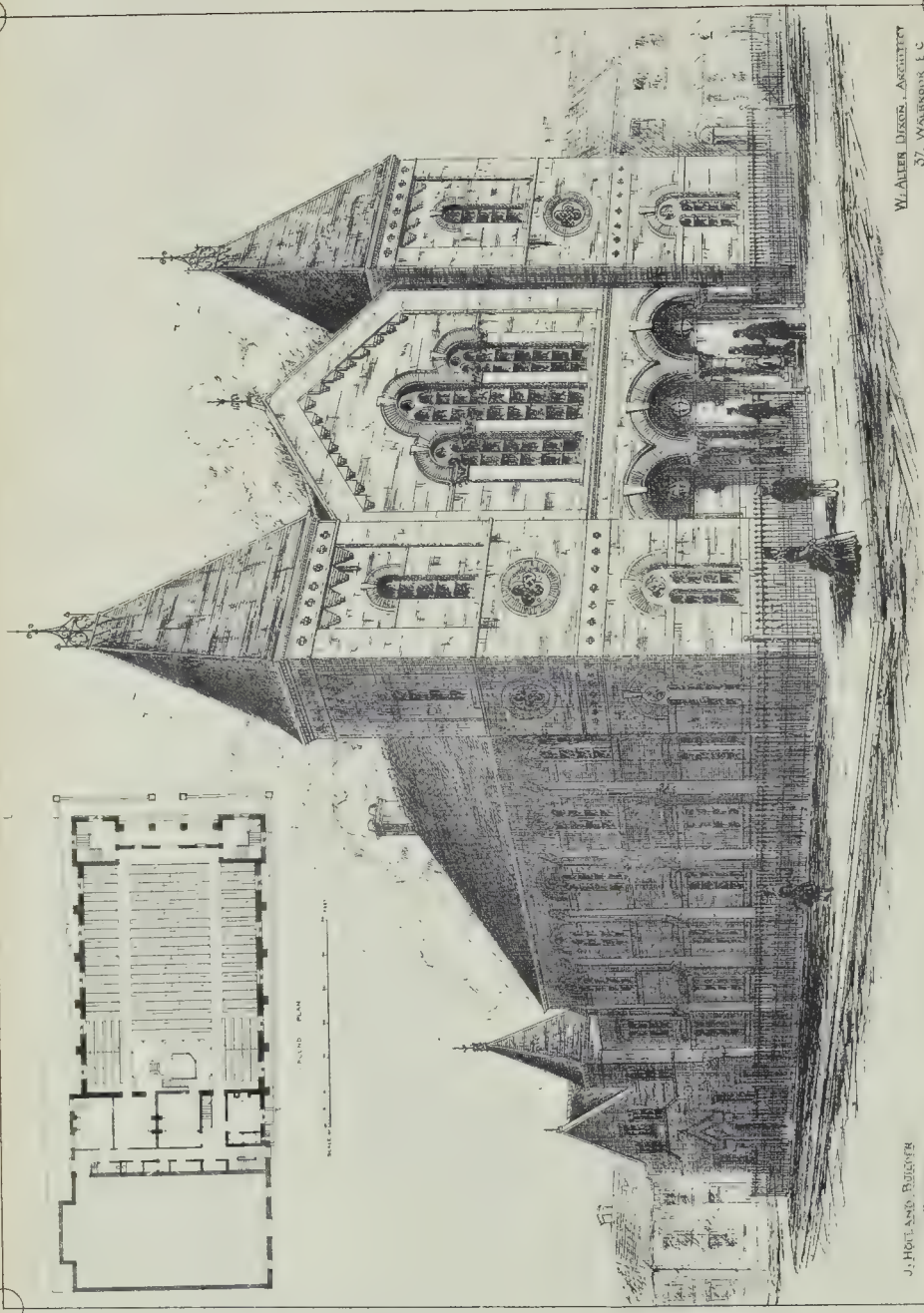
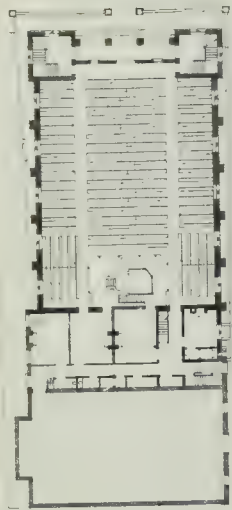
THE BUILDER, AUGUST 11, 1883.

THORPE BUILDINGS, BRADFORD.
 TOWN & COUNTRY ARCHITECTS,
 10, MARK LANE, LONDON.





THE BUILDER, AUGUST 11, 1883.



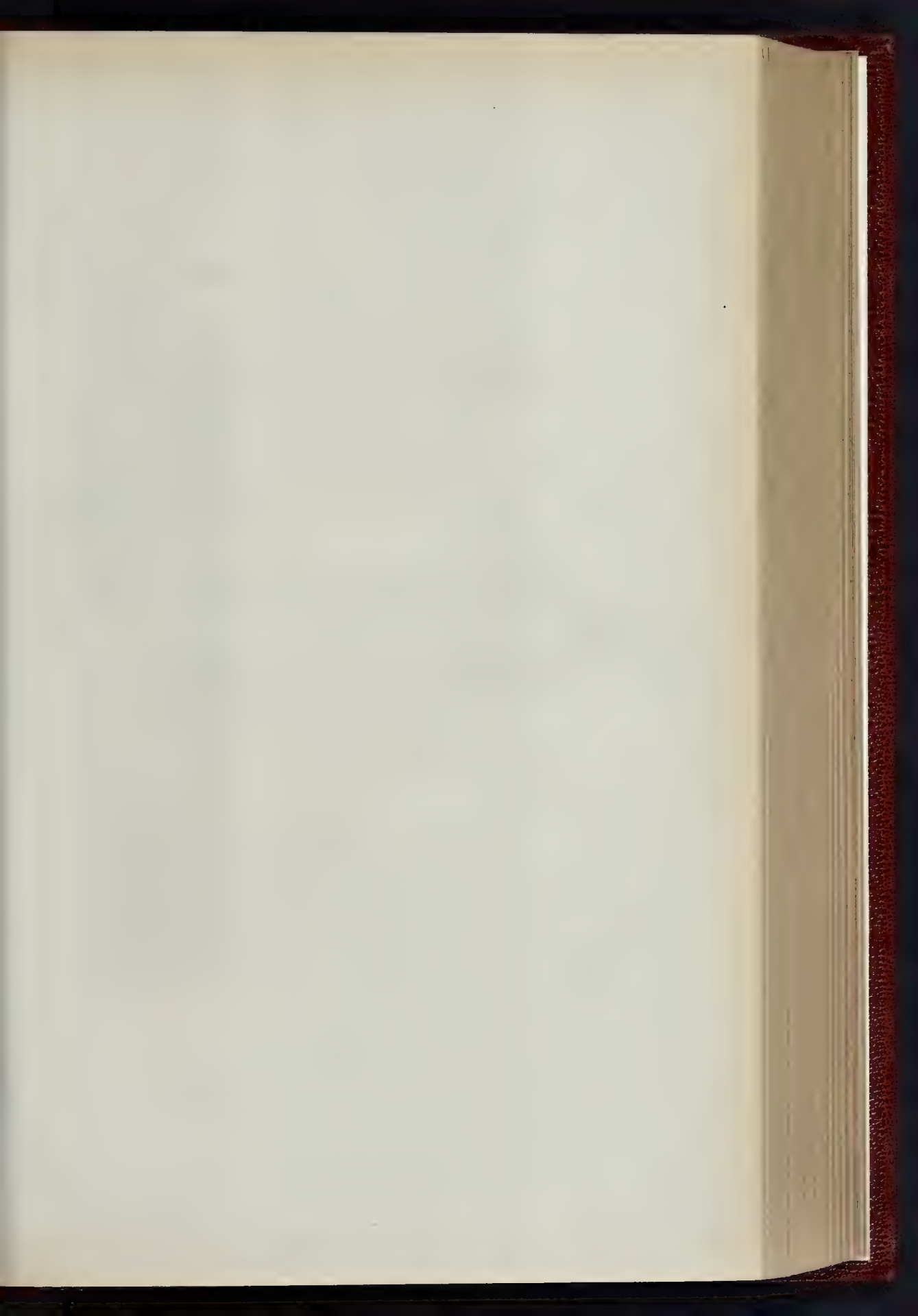
W. ALDER DISON, ARCHITECT
37, WALTON ST. E.C.

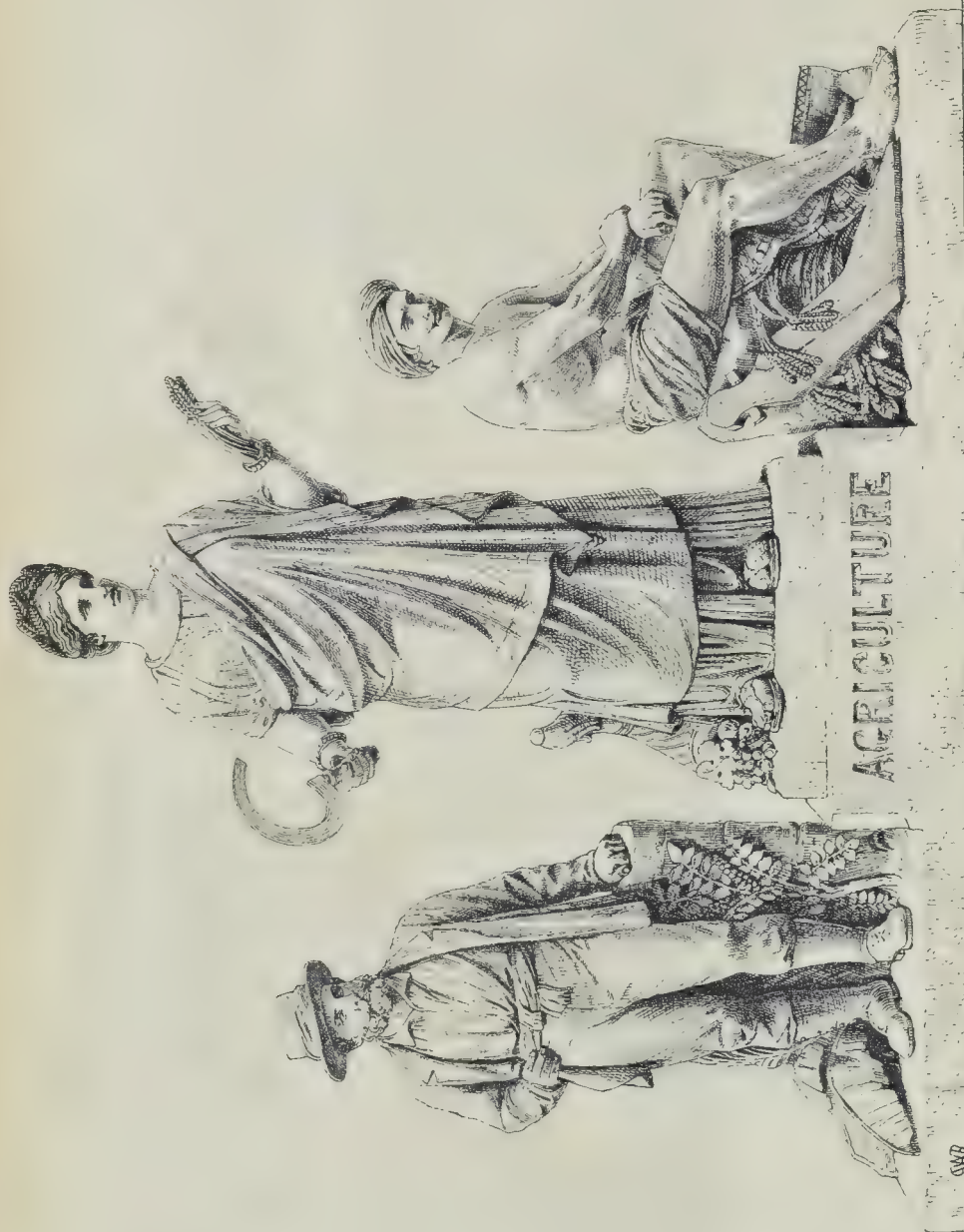
Wynne & Co. Ltd. Printers, 2, Queen St.

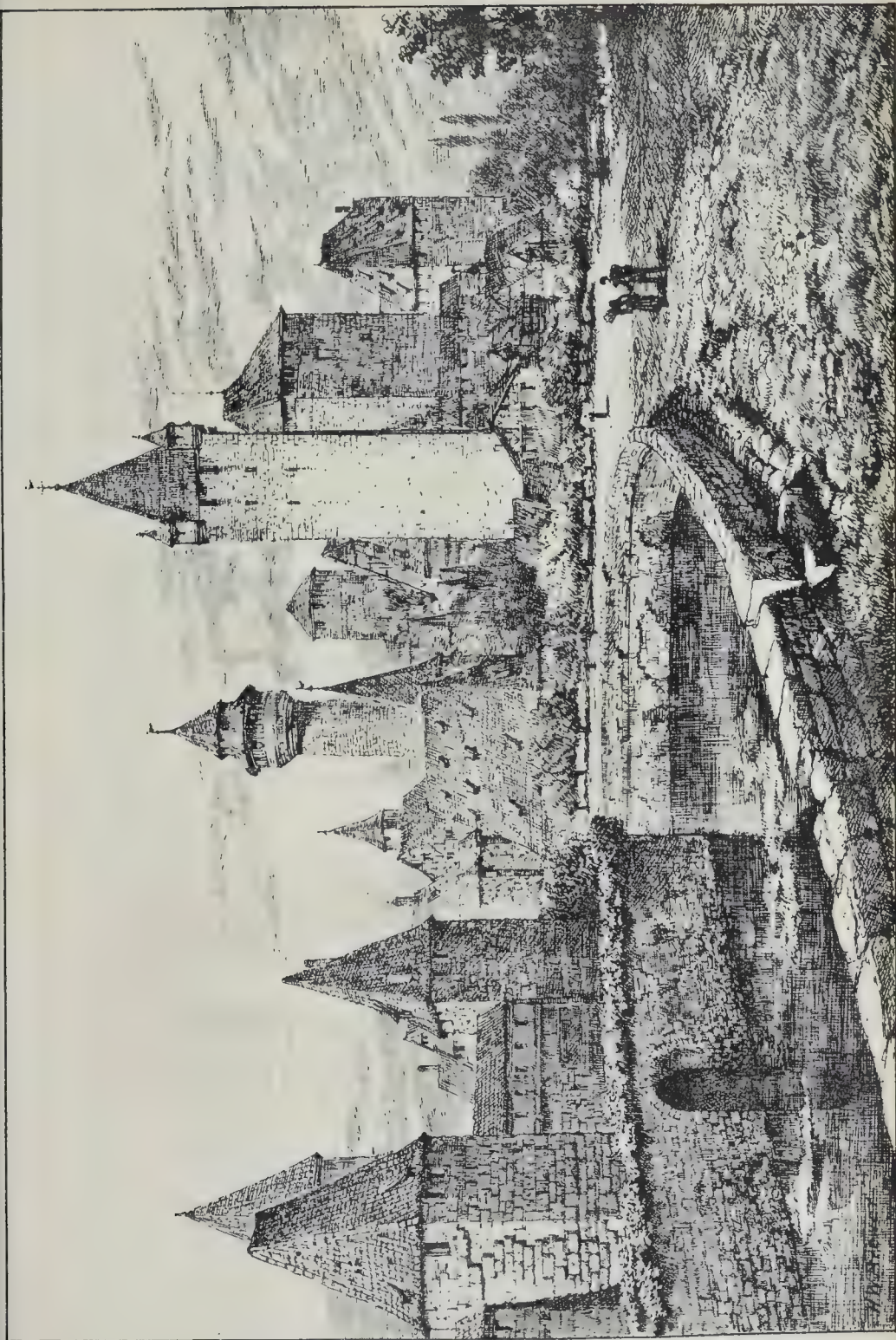
POPLAR & BROMLEY TABERNACLE.
THE REV. W. L. LAMBERT, MINISTER.

J. HOLT AND BROTHERS
POPLAR

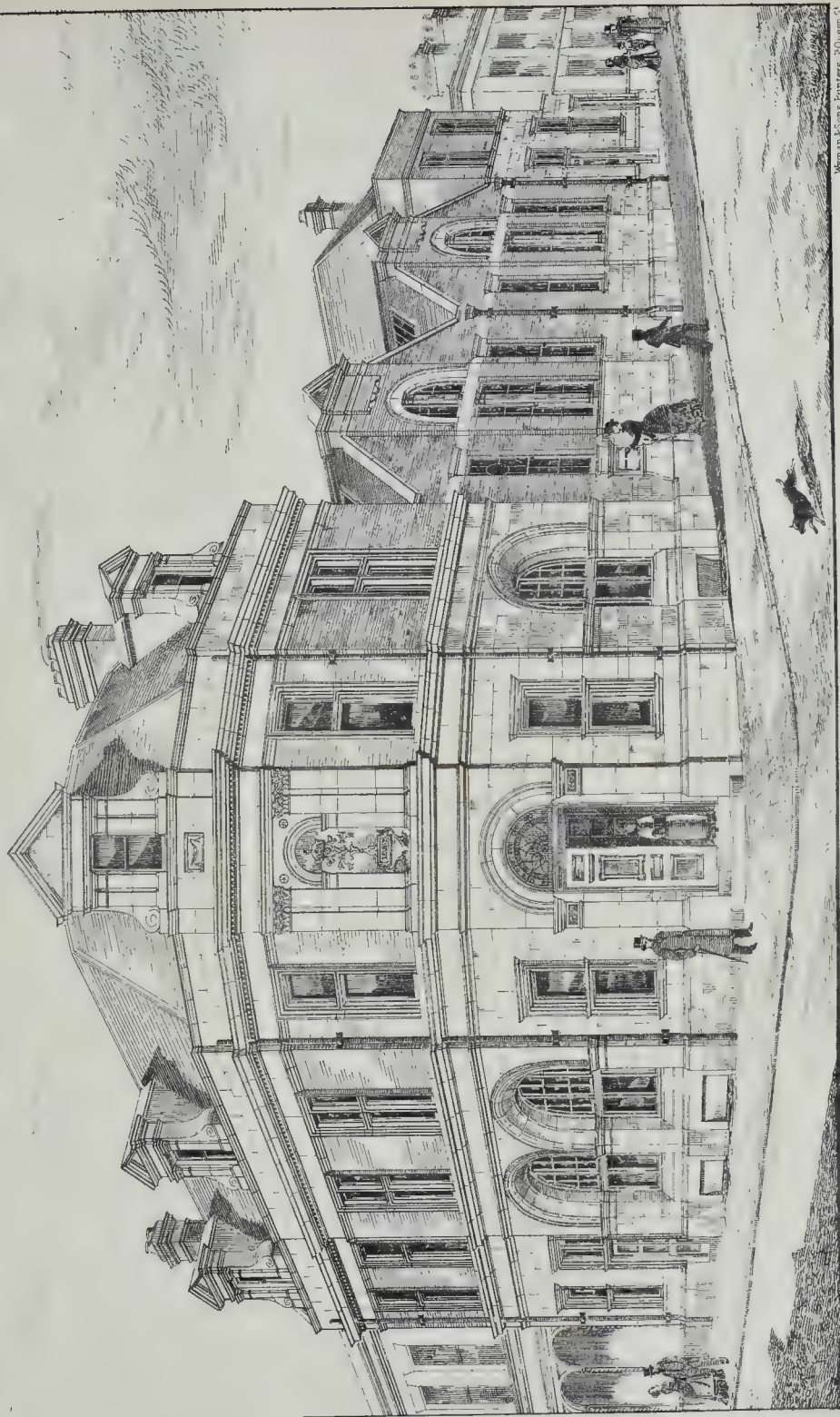
1. Kell Photo Litho Co. Ltd. 51, Holborn, London, E.C.







THE WALLS OF NUREMBERG

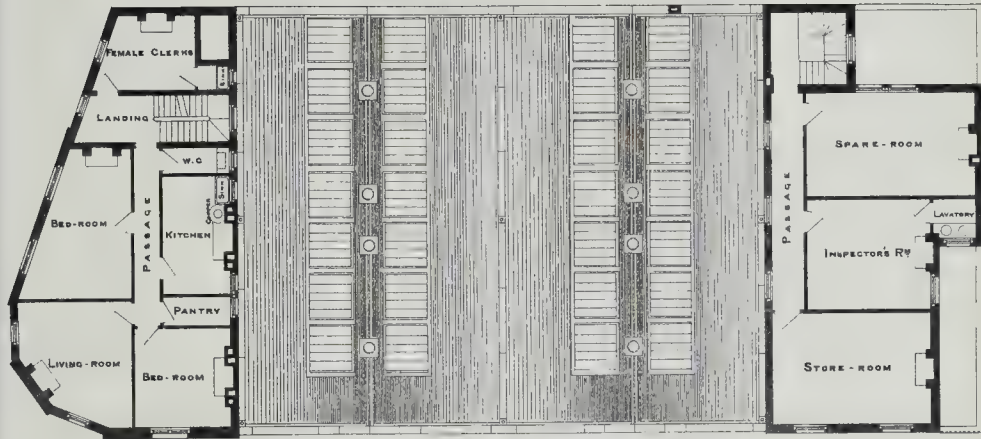


LIVERPOOL EASTERN DISTRICT POST OFFICE. MR. HENRY TANNER, ARCHITECT.

Wm. & Sons, Printers, 20 Queen St.

1661 Photo. Lane Street, 2nd Floor, London E.C.

— LIVERPOOL POST OFFICE —
— NEW OFFICE FOR EASTERN DISTRICT. —



— PLAN OF FIRST FLOOR —



— GROUND PLAN —



ARTISANS' DWELLINGS AT HORNSEY.

THE NOEL PARK ESTATE.

ON Saturday last the Earl of Shaftesbury attended at the opening of the Noel Park Estate, near Hornsey, and laid the memorial or corner stone of one of the many new streets of workmen's dwellings in what is designed to become, in five or six years' time, a town of about 2,600 houses. Some two or three hundred houses are at present ready for occupation, and many more are in a forward condition. It is not necessary that we should devote much space on the present occasion to a description of the houses, for, on the 30th of June last, we published a detailed description, accompanied by a block plan of the estate and plans of the five classes of houses which will be erected on it. Suffice it to say, then, that the estate is about 100 acres in extent, and has frontages on Lordship-lane and on Green-lanes, Wood-green. The Green-lanes station of the Great Eastern Railway is actually on the estate, while the Hornsey and Wood-green Stations on the Great Northern Railway, and the Green-lanes Station of the Midland Railway, are each within a few minutes' walk of the estate. The rents of the houses (including all rates and taxes) range from 11s. 6d. for the first-class houses (which contain eight rooms) to 6s. per week for the fifth-class houses (which contain four rooms and a washhouse). The brickwork is sound, and put together with good mortar, and special attention has been paid to sanitary arrangements. No drains pass beneath the houses, and all sinks are disconnected from the drains, and discharge into the open-air over-trapped gullies. A bed of concrete is laid over the whole of the site of each house. The Company has two other large estates in the suburbs, namely, the Shaftesbury Park Estate, at Battersen, with 1,200 houses; and the Queen's Park Estate, Harrow-road, with 2,170 houses. It is claimed,—no doubt, correctly,—that the houses on the Noel Park Estate at Hornsey exhibit in many respects an advance on those on the Shaftesbury Park and Queen's Park estates, but one of the speakers at Hornsey on Saturday last made a remark which it was encouraging to hear, viz., that the company hoped to see their way to still further improvements on future estates which they hope to cover with workmen's dwellings,—that the goal has not yet been reached, either in the extent of their operations, or in the perfection of the dwellings which they are building. The Hornsey estate, as a whole, will compare favourably with any workmen's colony that we know. Its usefulness, and, therefore, its prosperity, will obviously largely depend upon cheapness and facility of access to and from town, and we understand that negotiations are in progress with the several railway companies with the view of obtaining cheap periodical or day tickets for the inhabitants of the estate. The buildings on the Noel Park estate are being erected from the plans and under the superintendence of Mr. Rowland Plumble, of Fitzroy-square. The company purchase all materials, and let the labour in the respective trades, the immediate supervision of the work being entrusted to Mr. Wheeler, under the general direction of Mr. E. E. Farrant, the Deputy Chairman of the company. It is expected that within four or five years the land will all be covered, and it is intended to build a very large proportion of fourth and fifth class houses in order to meet the great demand among the poorer members of the industrial classes for houses which they can afford to occupy without the necessity of taking in lodgers.

Lord Shaftesbury, in addressing the large assembly (over which Mr. Ernest Noel, M.P., the Chairman of the Company presided), remarked that thirteen years had elapsed since he laid the first stone at Shaftesbury Park. Great benefit had resulted from that undertaking and others of the same kind in connexion with the domiciliary condition of the working-classes of the metropolis. Suburban towns like that of Noel Park, where a large mass of people might live in health and comfort, greatly helped, he maintained, to enable artisans and labourers to perform their daily work with cheerfulness and efficiency, and were indirectly beneficial to the whole community. After earnestly appealing to working men to discontinueance sensational acrobatic performances, which led, he said, to horrible cruelties in the training of children who were

employed in them, his lordship said he hoped and trusted that those who lived in the Noel Park Estate would be secured to them the enjoyment of the Alexandra Park. He believed that the Corporation of London would come to a determination to purchase that Park, and keep it as an open space for recreation and amusement for the great mass of the working people. He knew that they would turn it to good account. Open spaces they must have for the vast seething population of London; and open spaces, with the blessing of God, they would have. In conclusion, the noble earl expressed his great satisfaction that gin-palaces and public-houses were to be treated by the owners of that estate as the ancient Hebrews treated the lepers,—that was, kept outside the walls.

Sir Wilfred Lawson, M.P., moved the following resolution:—"That this meeting rejoices at the progress made by the Artisans', Labourers', and General Dwellings Company in providing healthy homes for working people, congratulates the shareholders on the commercial success which has attended the company's efforts, and commends its extended operations to the support of all interested in the welfare of the industrial classes." The hon. baronet alluded to the testimony given by Lord Beaconsfield at the opening of Shaftesbury Park, that that company had solved the problem how to give working men comfortable and happy homes, adding that that was valuable testimony from such a man.

The Hon. Evelyn Ashley, M.P., in seconding the resolution, expressed his belief that the opening of that estate was not to be regarded as the goal of the company's enterprise, but that its operations would be still further extended, especially as its work had proved commercially successful, and as a former director he testified that the Board well deserved the confidence of the public.

Mr. N. Story Maskelyne, M.P., supported the resolution, and it was adopted.

Mr. R. E. Farrant (deputy-chairman of the Board) mentioned the names of several noblemen and others who had written to express regret that they could not attend the opening. The Archbishop of Canterbury wrote as follows:—"I assure you of my sympathy with the work which the Artisans' Dwellings Company is attempting in the important direction of improving the homes of the working men. No one who cares for our labouring population can doubt that this is one of the first, perhaps the most necessary, steps for their good." Mr. Farrant added a few words in kindly recognition of the conscientious way in which the workmen employed by the company did their work.

Mr. S. Morley, M.P., said he had great pleasure in moving "That the best thanks of the meeting be given the Earl of Shaftesbury, K.G., for his presence to-day and his continued interest in the operations of the company." As a former director of that company, he was glad to be able to bear his testimony to the business-like and admirable conduct of the present directors, who could not pay more attention to the duties of their office, or display more intelligent interest if they were working for themselves only, instead of exerting themselves on behalf of hundreds of fellow-shareholders. Now, he knew that on estates like that just opened a large number of persons paid good rents; but he wanted to see dwellings erected for the immense mass of people who really could not afford to pay such rents, and he thought the building of houses for those who could only pay half the rents which would be obtained there would be a great public benefit. Having lately visited some houses of the class called "tenement houses," he had found cases in which a whole family were living in one room under conditions which were quite un-English, and were morally and physically degrading, and that evil was one which ought not to be allowed to go on without strong efforts being made to remedy it. He would venture to endorse an opinion which he saw expressed the other day, that a Government which had offered to lend money to construct a second Suez Canal at 3½ per cent. might fairly be asked to advance loans, on good security, for the purpose of helping to supply the deficiency to which he alluded.

Mr. Sheriff Savory, in seconding the resolution, alluding to the scheme of purchasing the Alexandra Park, said he might venture to remark that Lord Shaftesbury's presence before the Corporation to advocate the purchase, and the few words which he uttered, carried the petition which was presented on that occasion.

The motion was passed by acclamation, and

with a few words of acknowledgment from Lord Shaftesbury the proceedings terminated.

The band of the Scots Guards played at intervals up to eight o'clock, and refreshments were provided for the 3,000 persons who were present, the workmen and their wives, to the number of about 1,200, sitting down to tea in an enormous tent.

NOTES FROM THE WEST.

THE annual report of the Bristol Trades Council says, "The relations between capital and labour throughout the country are in a somewhat unsettled state. In a few instances a substantial increase in the rate of wages has been obtained, while in others it has been impossible to resist a reduction. Official statistics of the general state of the country are, on the whole, reassuring, notably in the production of manufactured commodities, which show a larger amount of business than at many former periods." Referring to local matters, the report says, "We have enjoyed a comparative immunity from trade disputes." Regret is expressed in the document that Mr. Broadhurst, M.P., had failed in his attempt to carry a Bill through Parliament for the improvement of the condition of those engaged in the nail, chain, and bolt-making districts, and at the unsuccessful endeavour of Mr. Burt, M.P., to amend the Employers' Liability Act.

At the last meeting of the Bristol Chamber of Commerce, a paper was read by Mr. W. D. Wilcox, on the Channel Tunnel, and he then moved the following resolution:—"That this Council declines to discuss the merits of the Channel Tunnel scheme in its bearings on the commerce of this country, believing that there exist reasons of paramount political importance which demand the abandonment of the project." An amendment was proposed in favour of the tunnel, and eventually it was decided to further consider the subject at the next meeting.

A new mission church has been opened at Barton Hill, a densely-peopled suburb of Bristol, where, a few years ago, there was nothing but fields and market gardens. The style adopted is Early Decorated, and the church has been substantially built of Pennant stone with freestone dressings. The building affords accommodation for 250 persons. Messrs. Wilkins were the general contractors. In the same district, a new church, to accommodate 600 persons, is being built from the designs of Mr. C. F. Hanson.

A new cemetery has just been opened at St. George's, Gloucestershire. It cost £5,000, about half of which was for the buildings, which are chiefly in the Early Gothic style. Mr. H. J. Rossiter was the builder, and Mr. W. H. Price prepared the plans. The cemetery provides for 10,000 graves.

Complaints have been made in the neighbourhood of Newport that the Severn Tunnel operations have drained the district of its water supply. A meeting of the inhabitants has been held to see what could be done, and it was resolved to ascertain if the contractor had not, in his contract with the Great Western Railway, undertaken to keep good the water supply during the tunnelling operations, and, if no such clause existed, that counsel's opinion be taken on the point.

A Mission Church is about to be opened in the Marshes-road, Newport. It has cost 800l., and will seat 250 persons.

A Bible Christian Chapel for 550 worshippers, with schoolrooms for 500 scholars, has lately been opened at Newport. The former building became unsafe and was condemned. The cost of the new structure (which was the work of Mr. W. Blackburn), exclusive of old material, was 1,800l.

A proposal has come before the Cardiff Corporation from the South Wales College Committee asking them to acquire the old Infirmary, which, with the site, could be had for 10,000l. for their purpose. The Corporation considered that in addition to the position of the building being bad, its walls were likely to be impregnated with the germs of disease, and it was therefore most unsuitable for class-rooms.

The Cardiff School Board has, since it came into existence, provided no fewer than 7,437 school places in nine schools. Voluntary schools accommodated, when the Board commenced work, 7,186. The board are proposing to erect another school to accommodate 800 children. The rate for school purposes amounts to 2d. in the pound.

Messrs. Nelson, of Carlisle, will be for several years occupied with the New Roath Dock, Cardiff, which is being constructed at a cost of half a million of money. The water area will be 35 acres. The length of the dock will be 2,400 ft., and the width 600 ft. The depth of water varies with the height of the tide from 25 ft. to 35 ft. The entrance-lock will be 600 ft. in length between the gates, and 80 ft. in width. The depth of water over the cills will be 30 ft. at ordinary spring-tides, and 26 ft. at neaps. Timber ponds are to be formed at the north side of the dock, and these will cover an additional 13 acres. Special means are intended to be taken for loading the ships. By means of hydraulic cranes coal-wagons will be lifted and swung round over the vessels and their contents discharged into the holds. It has been estimated that 2,225,000 cubic yards of material will have to be excavated, and 250,000 cubic yards of masonry will be required in the docks. Pwllpant stone will be used. When this large undertaking is completed the Bute Docks will be increased to 113 acres.

A Church Institute was opened at Widcombe, Bath, on the 27th ult. The building is in the Domestic Gothic style of architecture, and is of Bath stone with black pointing. The lecture-hall accommodates about 400 people, and various convenient rooms are attached to the building. Messrs. Wilson, Wilcox, & Wilson were the architects, and Mr. B. Smith, of Widcombe, the contractor. The contract was for 1,400l., but the cost exceeded this amount.

The new Local Board at Swindon are discussing street improvements which would cost 10,000l. House-building is going on vigorously in the district.

The memorial stones of a Wesleyan Chapel at Redfield were laid a few days ago. The new chapel will be built according to plans prepared by Mr. Robert Curwen, of Palace-chambers, London, and will accommodate 760 persons. The total cost, including the site, will not exceed 3,000l. The style of the new chapel is Geometrical Gothic. The building occupies a corner site. The west front is to be composed of a central gable, pierced in the ground stage with a richly-moulded central doorway, having a pierced and sunk tympanum. The first stage is to be divided from the second by two moulded strings. The gable will be pierced by a four-light traceried window, the angles are to be buttressed and pinnacled, and the gables will be coped with moulded coping, and surmounted with a carved finial. The west gable is to be flanked with a porch on either side, set anglewise on plan. The doors are to be the same in size and detail as the central door, but are to be without the tympanum. The porches will have pinnacles at the angles, and the gables will be coped with moulded coping and carved finials. The spandrels formed by the apex of the west gable and two porches are to be diapered. The west gable is to stand well in front of the body of the chapel proper, and will bear somewhat the appearance of chancel and side aisles. The fronts of these so-called aisles overlooking the porches are to be pierced by two-light traceried windows. The sides of the chapel are to be divided into bays by buttresses, each bay being filled with two two-light traceried windows, divided by sunk panels, and arranged one over another in two stories. The whole of the elevations will be tied together, and made into one harmonious design by moulded strings, plain bands, plinths, &c., of wrought stone. Mr. Wm. Church, of Bristol, is the contractor.

A fine group of buildings, designed by Mr. A. W. Blomfield, M.A., in conjunction with Mr. A. E. Street, M.A., on the eastern side of the quadrangle of Marlborough College, is near completion. It is said that the work cost about 10,000l. Messrs. Stephens & Bastow, of Bristol, are the builders.

Painswick Congregational Church is undergoing improvement, and new schoolrooms are being added. The estimated cost is about 1,500l.

Social.—On Saturday last Messrs. Bangs & Co., of Bow, invited their clerks and foremen, numbering some forty, to dine with them, as is their annual custom, at the King's Head, at Chigwell. Mr. Bangs occupied the chair, and Messrs. Lambert and Poston, the vice-chairs, and a toast to the health and prosperity of the firm was drunk with enthusiasm.

THE DISCOVERER OF GAS.

SIR,—It has often appeared to me somewhat peculiar that while substantial memorials in various forms have been erected to perpetuate great names associated with the application of industrial steam power to the propulsion of industrial machinery and railway and marine engines, no single public monument exists to commemorate Mr. Murdoch, the discoverer of gas, which has proved so enormous a convenience and source of wealth to the civilised world.

Men of scientific eminence have signified to me their willingness to assist in giving effect to a scheme for publicly recognising the incalculable services of Mr. Murdoch if the leading gas companies could be induced to head a movement for the purpose. I have submitted the proposal to the President of the Gas Institute, and he has considered it of sufficient importance to bring the matter before the council of that body. The President writes me as follows:—"The Council feel that great honour is due to the memory of Mr. Murdoch for the work he performed in assisting to lay the foundation of our great and growing industry, which probably even now has far exceeded any anticipations he ever formed of the importance of his work." At the same time the President states that the scope and powers of the Institute, as a society chiefly of a scientific character, do not admit of the council taking official action in initiating the undertaking.

A circumstance may be mentioned which renders the proposal specially opportune at the present moment. The commodious house erected and long occupied by Murdoch,—the first dwelling ever lighted by gas in the world,—is threatened with imminent destruction. At this residence he developed and perfected his invention, and here is still to be seen some portion of the primitive apparatus with which he conducted his experiments. The first great exhibition of the fruits of his labour was on the occasion of the rejoicings at the Peace of Amiens in 1802, that event being celebrated by the illumination of the famous works of Doulton & Watt, at Soho, Handsworth, and it is stated that these works were subsequently connected by pipes with Murdoch's house at Sycamore Hill in the same locality. The house is very strongly built and of good elevation, although the extent of land originally surrounding it has been considerably curtailed. A dozen years ago I paid frequent visits to the place, and am sorry to learn within the past fortnight that the present owner has laid out the grounds for the erection of suburban cottages, and that the execution of the plan would involve the early demolition of this historic relic, which would have been raised some years since but for accidental circumstances.

The house would be very suitable for an International Gas Museum, or the head-quarters of the Gas Institute. The drawing-room is large enough for a reading-room, and the building could easily be adapted for a public institution. I have reason to believe that the proprietor, if formally approached and the proposed scheme were explained to him, would modify his plan, accept very moderate terms for the house, and reserve a few acres in front of it from the land he is covering with buildings. If a fund were started I should be glad to contribute my mite to the undertaking, and to co-operate in worthily perpetuating Murdoch's memory.

Highbury Quadrant.

M. MACPHE.

THE NEW OBSERVATORY AT VIENNA.

This building, which was opened in June, was designed (according to the ideas of the late Herr Von Littrow, the astronomer) by Fellner & Hellmer, a firm of Vienna architects. It was commenced in 1874, and the external portion was finished in 1878. The fitting-up of the interior has occupied the remaining period, the arrangement of the great refractor having been attended with unexpected delay. The site is eleven acres and a half in extent, and the building is in brick work, in the style of the Early Renaissance. The general design of the building and its adjuncts is in the form of a cross, there being a large cupola in the central portion. The living-rooms face the south, this arrangement being intended (on account of the prevailing north wind) to prevent smoke, &c., from being driven in the direction of the instrument rooms.

THE ROYAL ARCHAEOLOGICAL INSTITUTE.

MEETING AT LEWES.

SUSSEX was last week the scene of the annual congress of the Royal Archaeological Institute, Lewes, the county town, being the headquarters of the meeting. On their last visit to Sussex, thirty years ago, the members of the Institute made Chichester their base. Last week's meeting does not appear to have attracted a very large number of members and visitors.

The congress opened on Tuesday, the 31st ult. (as we have already briefly mentioned), when the members were formally welcomed to the county town by the Mayor and Corporation. This took place in the large Court of the County Hall. The Mayor (Alderman Crosskey, M.D.) offered a cordial welcome to the Institute, paid a sympathetic tribute to the loss it had sustained in the past year by the death of its President, Lord Talbot de Malahide, and then called on the Town Clerk (Mr. Montague S. Blaker) to read an address voted by the Town Council. In this the Corporation expressed the lively satisfaction felt by the inhabitants in welcoming the Society to a field of action worthy of its distinguished acquirements. When Mr. Blaker had finished reading, the Mayor offered the address for the acceptance of the Institute, and it was received by Colonel Pinney, as its representative, the gallant Colonel explaining that Sir Sibbald Scott was to have presided, but was kept away by the sudden and serious illness of his son, whilst, as the election of Lord Percy to succeed Lord Talbot as president had not yet been confirmed by the Council, the Institute was temporarily without a president. On the part of the Institute, however, he thanked the Mayor and Corporation for the cordial welcome which had been given to the Institute, a kindness and cordiality which had not been exceeded in any of the many towns which it had visited. Saying which, Colonel Pinney vacated the seat of honour in favour of the Earl of Chichester, an excellent nobleman who, he said, was not only a distinguished archaeologist, but was esteemed and beloved by almost every man, woman, and child in the county. The noble Earl, in the course of his address, which was intentionally a brief one, said it was sometimes urged that archaeology was a worn-out science,—that they had, as it were, worked out those rich veins of ancient monuments and relics which, at the commencement of the work, were so interesting and full of historical illustrations; but, though no doubt some of them had been worked out, he was sanguine enough to believe that there still remained, though, perhaps, hidden in strata more difficult to work, plenty of rich ore to reward the skill and industry of explorers.

Archæology might help us to understand the inner life of our forefathers; whilst they should bear in mind that the chief use of all history was to give a correct knowledge of the deeds and characters of our forefathers, in order that we might learn, both in private and public life, to imitate their virtues, and avoid their faults and their blunders. Nothing, perhaps, was so useful for this purpose as the private or semi-official correspondence of eminent persons. But private correspondence, especially in England, was not of a very ancient date; for before the fifteenth century, perhaps one might say the sixteenth, century, few even of the higher classes were able to write at all. Mr. Hallam instances, as the earliest specimen of female epistolary correspondence, the letter of Joan to her husband, Sir John Pelham; a letter written from Pevensey Castle to Sir John, which had recently landed in the north with his old master, Henry IV. Mr. Hallam added, "without," said the Earl with a smile, "sufficient respect to my distinguished ancestors," that, "Judging from the bad spelling and composition, the letter is probably genuine." Lord Chichester then touched on some of the work of the Sussex Archaeological Society, and adverted to the unearthing of the venerable Clunio priory at Southover by the navies of the London and Brighton Railway Company, resulting in the discovery of the remains of William de Warenne and his wife, Gundrada, daughter of the Conqueror, and concluded by observing that the study of the past history of the English people must produce in every well-ordered mind a deep feeling of thankfulness to the good providence of God for the many

blessings which, as Englishmen, we now enjoy, a feeling of thankfulness that our lot has been cast, not in the Middle or earlier Ages, but in the peaceful and prosperous reign of our good and gracious sovereign, Queen Victoria.

After the President's address, the members of the Sussex Archaeological Society took luncheon in a marquee erected on the bowling-green in the castle grounds, a large company sitting down, under the presidency of the noble Earl, who, after luncheon, proposed the customary loyal toasts.

Afterwards, the company moved to the gateway of the Castle, where Mr. G. T. Clark drew attention to the chief features of the building. The gateway, he pointed out, was the original Norman gateway, and was a very good specimen. There was no portcullis; it was simply a door, a mere hole in the curtain. Inside the gate, there was probably at one time a gatehouse, of which the wall on the right-hand side represented the old wall, whilst that on the opposite side corresponded with it, helping to form a sort of parallelogram, something similar to that to be found, among other places, at Pevensey and at the Château d'Arques, near Dieppe. Going through the gateway, they found the barbacan, added probably in the time of Edward I., and consisting of two parallel walls, whilst at the end was another gatehouse, something like that seen at Carlisle. They would observe, what was rather rare, that there were two portcullises, close together, and, moreover, on the inside of the wall. There was another feature which could be seen by going to the top of the tower, namely, the machicolations in the roof outside the gate, intended to drop missiles through. These were on the platform of the roof, and, usually, they were holes in the floor; but here there was a parapet as if to prevent anything or anybody falling through by accident. He had not seen such an arrangement elsewhere. Passing up the steps, Mr. Clark pointed to where the foundations of a small square tower had recently been found, on the walls, or curtain, of the castle. Then, reaching the keep, he remarked that though there was not much left of the castle, it was a very curious and interesting example, which threw much light on the construction of such buildings. The style of fortification in use in England, and in Normandy as well, before the Conquest was, he said, very simple as well as effective. The practice was to throw up a mound, or to take advantage of a natural mound, and round this to form a ditch, which was often the parent of the mound. This made the keep, or citadel; and from the ditch, or moat, was carried a ridge or bank enclosing so much ground as a court, appendage, or bailey of the citadel. Sometimes the mound stood in the centre of this court; more frequently, as in this case, at the edge of the circuit; whilst at Windsor the court was like an hour-glass in shape, with the mound in the narrowest part. Here, the court was an oblong, with the mound at one end of the enclosure. Although masonry, by which he meant stones and mortar, was at that time used in churches, it was employed very little in works of fortification, partly owing to the mounds, such as were artificial, being ill-calculated to support the weight; in fact, so far as he knew, there was only one military building in England, except Roman buildings, in which masonry was used before the Norman Conquest. Arundel Castle had been mentioned in Domesday as existing before the Conquest; but, unless it were in the vaults or in parts of the castle not generally seen, he had failed to find any part of it of an earlier date than the Conquest. In short, when the Conqueror came from Normandy, he left very few castles in masonry behind him, and he found still fewer in England. There was no evidence that he found any at all. The defensive works before that time were of timber, triple rows of palisades, behind which the people withdrew in time of war. After the Conquest, when the Conqueror had distributed his great Barons over the land, the works in masonry began. The old fortifications were kept until the new could be substituted, and the castles were placed on the mounds, as representing the centre of the estates. For this reason, the square keep, of which the Tower of London was the type, was for the most part older than the shell-keep, which usually belonged to the late rather than to the early Norman period. In some few cases, such as at Arundel, it appeared to be early, and so again at Lewes. As to the fortification of the court, there was usually one citadel. There

were obvious inconveniences in having more; and the practice was to concentrate all the forces upon one single keep. Here, at Lewes, Nature had provided two mounds, and the Norman who came to fortify it took one mound as his keep, but, as he could not leave the other, the Brack mound, undefended, fortifications were also placed there, though subordinated to the keep in which they were then standing, where the walls were Early Norman.

Leaving the Keep, the visitors passed to the edge of the Castle mound, where, in sight of the Brack mound, covered with trees in the full luxuriance of their midsummer foliage, and in the open air, the Rev. W. R. W. Stephens read a paper on the Battle of Lewes, after which some of the party drove to the scene of that historic encounter, whilst others went to the Church of St. John at Southover. Here Mr. Somers Clarke, jun., directed notice to the massive cylindrical columns, which he regarded as proving the high antiquity of the church. Here the visitors were shown the exquisite little chapel in the Norman style erected by subscription in 1847 as a resting-place for the remains of William de Warenne and his wife, whose bones, enclosed in two leaden cists, measuring less than 3 ft. were found, as stated by the Earl of Chichester in his opening address, in the Priory ruins. On one of the cists the word "Gundrada" was plainly visible. The chapel is lighted by three windows, filled with painted glass, showing De Warenne, Gundredra (the founders of the Priory), and St. Pancras (its titular patron saint). Passing from the church, the visitors went on to the Priory ruins, some of the walls of which, as all who have travelled by rail from Brighton to Lewes know, are to be seen from the railway. In fact, it was due to the cutting of the railway that the older ruins were discovered. The Priory was one of the Clunian order, and is especially remarkable from the fact that large portions of it were twice rebuilt. Recently, a very considerable area, having been excavated, it has been proved that many of the apartments were filled in with chalk, to afford foundations for the newer buildings. Thanks to the assiduity of Mr. Somers Clarke, jun., and of Mr. W. H. St. John Hope, sufficient has been explored to enable a tolerably complete plan of the original Priory to be drawn. The second rebuilding dates from 1145, and a record of the destruction of the Priory chapels has been found in a letter written to Thomas Lord Cromwell by one of his agents, telling how he had undermined the walls, supported them with wooden props, and then set the props on fire, when the whole came down. Corroboration of this, said Mr. Hope, had been found in traces left by the fire.

After seeing the Priory, the visitors went to dinner, and in the evening Mr. E. A. Freeman, the historian, opened the Historical Section by delivering an address on the general history of Lewes and the county, dealing specially with the three great sites, the scenes of the three great events which, beyond all others, give the South Saxon land its historic place among the counties of England. With this address, the proceedings of the day ended.

On Wednesday, the 1st inst., the members of the Institute spent the day in an excursion to Pevensey, Rye, and Winchelsea. On their return to Lewes in the evening, the Architectural Section was opened by Mr. Micklethwaite, who took occasion to make a full tilt against "restorers" of ancient buildings, remarking that the first lesson to be taught such men was that their duty towards an old church was not to "restore" but to preserve it, and this would generally best be done by showing them how it came to be what it was; and, secondly, that the marks of age on a building many centuries old were not defects, but honourable scars. A paper was also read by Mr. Hope on the St. Pancras Priory.

On Thursday, the 2nd inst., the party visited Hastings and Battle Abbey, where they had Mr. Freeman as their guide; and in the evening the Mayor of Lewes gave a brilliant *conversazione* in their honour in the County Hall, which passed off most successfully.

Friday, the 3rd inst., was a busy day. It was devoted to the annual meeting of the Institute, followed by the opening of the Antiquarian Section by Major-General Pitt Rivers, and by the reading of nearly a dozen papers on various subjects, from the question of the meaning of the shears combined with clerical symbols on incised gravestones (by the Rev. T. Lees) to an inquiry into the traces of Teutonic settlement

in Sussex (by a Brighton member, Mr. F. E. Sawyer), and from some observations by the Rev. W. Powell on the Domesday survey in Sussex to some remarks by the Rev. J. J. Raven on certain Sussex bells.

On Saturday last the members visited New Shoreham.

In connexion with the meeting an interesting collection of objects was got together in the chief room in the County Hall by Mr. R. Crosskey, Mr. A. E. Griffiths, and Mr. Henry Griffith, of Brighton. Most of the articles were connected with the county. Chichester was represented in the collection by a curiosity in the shape of a big globular lantern of horn, in a metal framework, set on a pole. This was called "The Moon," and accompanied the mayor at night through the streets of the city; and probably, when "The Moon" was first introduced, the streets of the city needed all the artificial lighting that could be got. A curious relic with a story attached to it was a silver spoon, close to which was the body of a dead rat, dried like the skin of a mummy. Two centuries ago, so the story goes, this spoon was missed at one of the Lewes inns, and a servant was suspected of the theft, but nothing was proved. The house was pulled down a few years since, and hidden among the ancient timbers was the spoon, with the dead body of the thief,—a rat.

BRITISH ARCHÆOLOGICAL ASSOCIATION.

The Fortieth Annual Congress of the British Archaeological Association will be held at Dover, commencing Monday, the 20th August inst., and terminating Wednesday, the 29th, which will include extra days, to be passed at Calais (for more than two hundred years, up to Queen Mary's reign, an integral portion of the English kingdom), with excursions to the neighbourhood, probably extending to Amiens, Abbeville, and Boulogne. The Right Hon. the Earl Granville, K.G., has been elected President of the Congress, and intends to be present at the opening meeting at the Town-hall, for the reception of his lordship and the Association by the Mayor and Corporation of Dover, as well as at the public dinner to be given by the Mayor (Mr. R. Dickson) in honour of the noble president and the Association the same evening.

On Monday, the 20th, members and visitors provided with Congress tickets will assemble at the new Town-hall, Dover, at one p.m., for the reception by the Mayor and Corporation of the President and the Association, and examination of the regalia and muniments, on which Mr. George Lambert, F.S.A., and Mr. W. de Gray Birch, F.S.A., will make some remarks, and the Maison Dieu Hall, under the guidance of Mr. Edward Knocker, F.S.A., hon. librarian to the Corporation of Dover. The party then will proceed to the inspection of St. Martin's Priory, where Dr. Astley will give a history of the remains of the ancient buildings and their recent restoration by the late Mr. Street, R.A. Afterwards, carriages will be taken for the ruins of St. Radigund's Abbey, which will be described by Mr. E. P. Loftus Brock, F.S.A. On returning to Dover, a visit will be paid to St. James's Church, if time will permit, for an inspection of registers, &c., under the guidance of Mr. Edward Knocker. At 7.30 p.m. the inaugural dinner, given by the liberality of the Mayor of Dover to the President and the Association, will take place at the new town-hall.

On Tuesday, the 21st, members and visitors will leave for Deal at 9.10 a.m. by railway, and visit the Castle, then proceed by train at 10.45 to Sandwich, where, under the guidance of Mr. George Dowker, the party will walk to Richborough Castle, and examine its massive Roman remains, Mr. Dowker illustrating them at the same time. They will return to the Bell Hotel, Sandwich, at 1.0 p.m. for luncheon, then proceed to examine the churches of St. Clement and St. Bartholomew, hospice and chapel, as well as the old town-hall and the pictures there, lately presented by the Ashburnham family, relating to the early history of the old Cinque Port; thence to the entrance-gate, near the Fishers' Gate, town walls, &c. They will leave Sandwich by train at 3.50 p.m. for Walmer Station, where carriages will be in waiting for those who have provided themselves with the necessary tickets, and drive to Walmer Castle, which, by the permission of Earl Granville, Lord Warden of the Cinque Ports, will be

visited. Leaving by the same carriages, it is intended to drive to Dover, taking the Church of St. Margaret-at-Cliffe (a fine specimen of late Norman work) *en route*, if time will allow. The first Evening Meeting will be held at the Council Chamber at the Dover Town-hall, for the reading and discussion of papers, at 8.30.

On Wednesday, the 22nd, members and visitors will leave by railway (South-Eastern) at 8.45 a.m. for Westenhanger, and visit the ruins of the castle, known as Fair Rosamond's Bower, close by, and then by carriages, about 10 o'clock, to drive to Lyme, for the examination of the Roman remains there, castle, and church. Then to proceed to Saltwood Castle, which will be described by Mr. F. Beeston, who is restoring it, and afterwards drive to Hythe, where luncheon will be partaken of and the horses refreshed and rested. After luncheon, the church and crypt will be inspected, and then the party will proceed by the same carriages to Caesar's Camp, on the road to Folkestone, which, if time will permit, will be ascended and explored; if not, the drive will be continued to the Folkestone Railway Station, so as to catch the 6.38 p.m. train to Dover, arriving at 6.54. The second Evening Meeting will be held at the Council Chamber, as before, at 8.30.

On Thursday, the 23rd, members and visitors will leave by a special train (London, Chatham, and Dover) at 9 a.m. for Canterbury, where, after the reception of the party at the Guildhall by the Mayor and Corporation, and examination of the regalia, charters, and other muniments, which it is hoped may be commented on by Mr. E. Maunde Thompson, Keeper of the MSS., British Museum, they will proceed, under the guidance of Mr. J. B. Sheppard, to the cathedral, where the Very Rev. Dr. Payne Smith, Dean of Canterbury, will give an historical account of the sacred edifice, and Mr. Loftus Brock will describe its architectural details, &c. Afterwards, it is proposed to visit St. Augustine's Monastery, by permission of the Warden, and which will be described and commented on by Mr. Sheppard. The return to Dover will be by special train, and in time for the third Evening Meeting at the Council Chamber, at 8.30.

On Friday, the 24th, the members and visitors will leave again for Canterbury by an early train, so as to reach the ancient city about 10 a.m., and then, under the guidance of Mr. Sheppard, visits will be made to the remains of the castle, the city walls, on the Dane John, St. Mildred's Church, the West Gate, St. Dunstan's Church, St. Pancras Church, for Roman remains there, and St. Martin's Church. Luncheon will be partaken of at the Rose Hotel, after which, if time will permit, a visit will be made to the Museum. About 3 p.m. carriages will be in readiness to convey the party to Dover, *via* Bekebourne, Patribourne (Bifrons), Adisham, through Fredville Park to Barfreston, by permission, the churches of which places will be visited, and described by Messrs. Loftus Brock, George Patrick, and others. The party will return to Dover, by Coldred, in time for the fourth Evening Meeting at the Council Chamber at 8.30.

On Saturday, the 25th, members and visitors at 9 a.m. will walk to the Templars' Church, on the Western Heights, where it is said King John did homage to the Pope of Rome through Cardinal Pandolph, and then, on returning to Dover, proceed to St. Mary's Church about 10.45, which will be described by the Vicar, the Rev. Canon Puckle, M.A. At one o'clock luncheon will be partaken of at the Royal Oak Hotel, the head-quarters of the Congress. At 2 p.m. the party will proceed to Dover Castle, which, by the kind permission of General Newdegate, the General Commanding the South-Eastern District, will be inspected, under the guidance of Mr. Thos. Blashill, and the church and Roman Pharos will be described and commented on by the Rev. Canon Puckle, M.A. In the evening there will be a *conversazione* at the new town-hall, by the courtesy of the Mayor and Corporation of Dover, where the closing meeting will be held, and certain remaining papers read and discussed.

All members and visitors intending to join the Congress and the three extra days' excursion to Calais and its neighbourhood, as already referred to, are requested to send in their names as soon as possible to the Hon. Congress Secretary, Mr. George R. Wright, F.S.A., Junior Athenæum Club, Piccadilly.

EDINBURGH ARCHITECTURAL ASSOCIATION.

SESSION 1882-83.

THE Report of the Council refers to the session now concluded as the most successful in the annals of the Association.

The papers have been of a high order, both as regards knowledge and utility, and the Members of Council as well as the Syllabus Committee warmly acknowledge the indebtedness under which the various lecturers have placed them, as they also do their obligation to the proprietors, agents, and custodians of the many buildings and archaeological remains which have been inspected during the session. They have also specially to accord their thanks to the Honourable the Board of Manufactures for granting the use of the National Galleries on the occasion of the Architectural Exhibition, as also to Her Majesty's Treasury for confirming the arrangement. With regard to the exhibition, which was opened with an evening *conversazione*, it may be stated that the contributions, both as regards number and merit, vastly exceeded the most sanguine expectations. Exhibits were received not only from all the great centres of architectural art, but also from many of such private collections as contained the works of deceased or ancient masters. The scheme was so hurriedly and somewhat unexpectedly developed that time proved slightly insufficient in which to interest the outside public, and the season of the year was such that the galleries were required to be vacated apparently at a very moment when the citizens of Edinburgh became alive to the importance of the collection in their midst, and unfortunately just too soon to prevent the receipts from entirely covering the whole requisite expenses. The accounts are not yet quite adjusted, but the slight deficit will be liquidated without expense to the Association.

During the session volume iii. of the Sketch Book has been issued, and arrangements made for the publication of volume iv. The Committee have been encouraged by the success attending the publication of the Sketch Book to venture upon improvements in the forthcoming volume, which will very much increase the value of the work. It is intended to produce about one-half of the plates by means of photo-lithography instead of by the ordinary process of lithography, as previously employed. Another improvement will be the introduction of letter-press in description of the plates.

With reference to the membership the society has great reason to congratulate itself. At the beginning of the financial year the members numbered 139, while now there are 235 on the roll. The names of eleven old members were during the year withdrawn, while 137 gentlemen were proposed, balloted for, and duly admitted. The numerical gain during the session is 96.

The council are happy to be able to announce that several new and important features will be added to the proceedings of the Association during the ensuing session. Besides the ordinary fortnightly papers a series of lectures on "Early Christian Art" has been promised by Professor Baldwin Brown.

There will also be inaugurated two classes for the study of construction and design, which will be worked upon the lines of similar classes carried on by the London Architectural Association and the Royal Academy.

THE NEW SHIRE HALL, SHREWSBURY.

A PORTION of the Shropshire Shire-hall has been re-opened for the transaction of public business. From plans prepared by Mr. T. M. Lockwood, architect, of Chester, the buildings have undergone an almost entire reconstruction. Built much upon the same lines as the courts at Chester, of which also Mr. Lockwood was the architect, the reconstructed Assize Courts at Shrewsbury will bear favourable comparison with many in the kingdom. The contractor, Mr. Samuel Warburton, of Manchester, has carried out the work. Mr. Warburton's foreman-superintendent was Mr. Harry Rowland, and Mr. J. B. Ham being the clerk of the works, and proving himself an able lieutenant, and Mr. H. Healey being the foreman-in-charge. The fittings have been supplied by the general contractor, and the furniture and judges' canopy by Messrs. W. & F. Brown, of Chester; the tessellated pavement of the corridors by Mr. Oppenheimer, of Manchester; the stained glass

ceiling and other lights by Messrs. Shrigley & Hunt, of Lancaster, and Mr. J. Davies, of the Wyle Cop, Shrewsbury; and the heating and the cooling apparatus by Messrs. Haden & Son of Manchester and Trowbridge. The whole of the floors are of fire-proof construction, and have been executed by Messrs. Dennett & Ingle of Whitehall, London. The locks have been supplied by Messrs. Charles Smith & Sons, of Birmingham, and the grates by Mr. James Roy, of Liverpool. When Mr. Lockwood received his instructions from the Shire-hall Committee early in 1881, to prepare plans for the rearrangement of the buildings, his attention was primarily directed to ascertaining how far the area of the old courts,—a total of 2,730 ft.²—would be adequate to provide the necessary accommodation in accordance with modern requirements. The conclusion at which he arrived was that the area would be altogether insufficient to provide anything like a satisfactory arrangement, being very much below the average of courts at Chester, Liverpool, Manchester, Durham, and Bristol. In the interest of the county, therefore, Mr. Lockwood recommended the adoption of a much larger space than the old court possessed, and this led to the suggestion of some new arrangement, which provided adequate and separate means of access for the various persons having business there. The space devoted to each of the courts is 52 ft. by 36 ft., giving an area of 1,872 square feet to each, a size admitting of the use of the walls of the old building, and the provision of corridors for the most convenient access to the courts, and rooms in connexion therewith. The front entrance of the old building is intended for the judges, grand jury, barristers, and others in professional attendance at the Assizes; the new level of the courts being at the top of the first landing of the staircase, the doors on either side of which are for the barristers and solicitors. Beyond this is a further flight of eight steps to the main corridor on the level of the bench, from which access is gained to the grand-jury room, judges' retiring-rooms, and barristers' rooms. The corridors on each side leading from the present side entrances in the front of the building, are intended for the public and those interested in the cases, there being doors placed so as to prevent mere idlers from gaining access to the body of the court, and so taking up the space intended for those engaged in the causes in progress. Convenient access is furnished to the cells, and therefrom to the docks in each court. The ground-floor accommodation comprises spacious and well-lighted entrance and waiting halls, rooms for the clerk of the Crown, and waiting rooms for male and female witnesses. From these waiting-rooms witnesses obtain access to the courts in close proximity to the respective witness-boxes,—an arrangement which has been adopted in the London Courts. The retiring-rooms, with their offices, &c., are on this floor. In the old portion of the building, next the front, provision is made for the mayor's court, which is greater in area than before.

The dimensions of the new courts are as follow:—Length, 52 ft.; width, 36 ft.; height, 34 ft.; height of galleries, 7 ft. The effective ceiling light of each court contains eight panes of stained glass, each bearing a coat-of-arms.

The whole of the new buildings will, it is hoped, be ready for occupation in October next while the work of completing the Nisi Prius Court will probably be accomplished in time to admit of the use of that court for the forthcoming autumn Assizes.

THE EXTERNAL USE OF PLASTER CASTS IN BUILDING.

A GERMAN technical journal remarks that the statute which enjoin a certain punishment for those who threaten the public safety by the careless execution of building work, will no find an application in Berlin. It is asserted that the manner in which plaster consolidates, rosettes, mouldings, &c., have been fixed many new buildings (by wooden screws or other doubtful methods) is so insecure that numerous cases of their falling are to be looked for. Most of the houses referred to have been built within the last ten years, before which time it is said that more care and discernment were evinced in the use of plaster for the purposes indicated. The prohibition of its employment in this manner is suggested both from constructive and æsthetic grounds.

THE NEW REICHSTAG BUILDING AT BERLIN.

THE execution of the above work is expected to occupy eight years. According to the *Deutsche Bauzeitung*, Herr Wallof has assumed the responsibility of his position as architect, and is to have the assistance of a responsible official in the technical and business portions of the work. This arrangement will, of course, only come into force when the details of the plan are finally arranged.

Herr Wallof's remuneration will be a fixed annual salary of 1,500*l*. He is also to receive a special premium at the completion of each important stage; the entire sum thus allotted being 6,000*l*. All the cost of his assistants, &c., is to be defrayed by the State.

SEPARATE OR SUB-CONTRACTS IN BUILDING MATTERS.

SIR,—The reference to this subject by a Clerk of Works, in your issue of the 28th ult., p. 130, seems to give room for some further remarks, and I venture, as one who has had opportunities of gaining experience in this and kindred subjects affecting building structure, to offer a few remarks in a disinterested spirit, and with a view to helping to arrive at a right understanding.

As to whether separate or sub-contractors' profits are generally in excess of what is reasonable, I need not enlarge upon now, nor would I venture to assert what should be the percentage allowed to the general contractor upon sub-contractors' works, since what may suit the circumstances of one case may not be properly applicable to others; 10 per cent. has been mentioned, and whether this would meet the average of cases, I would leave to other and more competent heads to decide.

It may be possible, however, here to discuss this vexed question in such a manner as to give a more intelligible view of the rights or wrongs involved than at present exists in the minds of many, and should these remarks have the effect of convincing architects generally that a fair case is made out in favour of a more general recognition of the general contractor's claims in this vexed question, that it is right in principle to allow these claims, there should be little fear that architects being, as they are, mostly men of honour, would shrink from the duty of applying the remedy in common everyday practice.

It seems to be an impression in the minds of many thoughtful contractors that architects show a growing disposition to encroach unduly in this matter of separate or sub-contracts, and that by the introduction of sub-contractors into buildings, and over the heads, so to speak, of the general contractors, they are simply inserting the thin end of a wedge which would unseat the whole present system of general contracting, and ultimately split up the fabric into a series of separate contracts, with no one in particular responsible to the client for the integrity of the whole. However, this thread of the story need not be further pursued now; it may be assumed that there exists no wish on the part of general contractors to "break bones" over this subject of sub-contracts, but that there is a wish to have all such sub-contracts put upon such a footing as should ensure their being carried out subject to the general control of the general contractor, who has all the care and responsibility of the building on his hands; and it is urged that this object could be best effected by passing all sub-contracts through the general contractor's hands, to be paid by him, and that he should receive a fair percentage on the amount of such sub-contracts to reimburse him for interest on outlay, watching, protection, affording facilities, &c. The motives of architects for making these separate or sub-contracts may perhaps be not unfairly stated thus:—1. Not unfrequently has it occurred from want of confidence in the ability of the general contractor to perform such special works to satisfaction. 2. That something may be saved to the client which would otherwise go into the pocket of the general contractor. 3. That the specialist be brought into direct communication with the architect is an advantage to the special work to be executed. 4. That the architect only exercises a duty by securing for his client the very best appliances which skill and ingenuity can devise. 5. That the introduction of the separate or sub-contractor does not touch

the general contractor any way to his hurt, since if he does not execute the work his loss is nil.

On the other hand, the general contractor argues his case thus,—That he is bound by the conditions of contract to uphold, maintain, and care for the integrity of the building in all its parts from first to last; that he is not allowed to sublet any part of his contract, though the architect does so; that he has to bear the expenses of general supervision, the proportion of office expenses, foremen, watchmen (day and night), boardings, scaffolding for every body, temporary barricading, casings for protection, fuel, gas, &c., and that this cost, in most instances, must come out of his ultimate profits, if any are made. That in addition there is a general unseen kind of waste constantly going on in a building, fully understood by those who come into day-to-day contact with the details of actual construction (the use of the word "waste" here is not intended to be understood in the sense of its being avoidable waste), the which is not lessened by the operations of sub-contractors' representatives during the process of fixing their works; that innumerable small expenses occur during the continuances of a contract which it is absolutely impossible to foresee or provide for; and finally that, under these circumstances, he is fully entitled to receive in all cases where separate or sub-contracts are entered into by the architect with other parties outside an adequate percentage on the amount of such sub-contracts in order that he may suffer no loss.

It has been said that all contractors have many sins of omission and commission to answer for of their own making and others' too; but however this may be, they can hardly be expected to cheerfully give the public twenty-one shillings' worth of labour and materials for a sovereign. This may seem to some class of minds the proper thing regarding contractors; but if it were to become more general a kind of Nemesis would be raised up, or, in other words, there would be in course of time but very few truly honourable contractors left. N.

A NEW WING TO MARLBOROUGH COLLEGE.

THE large and handsome group of new buildings on the eastern side of the spacious quadrangle of Marlborough College, Wiltshire, is fast approaching completion, and in a few weeks will be opened. A brief description of the buildings, or at any rate that portion known as the museum block, may perhaps interest our readers. The architect is Mr. A. W. Blomfield, M.A., in conjunction with Mr. A. E. Street, M.A. (the two architects who on the death of the late Mr. G. E. Street, R.A., were appointed by the Government architects of the Royal Courts of Justice), and the style of architecture is quite in keeping with the most important of the buildings of the college, which were designed by the celebrated Inigo Jones. Messrs. Stephens & Bastow, builders, of Bristol, secured the contract. Their original tender amounted to 8,750*l*., since considerably increased by an extra contract for arched cloisters at the north and south sides of the new buildings, and the work was commenced in May last year. When completed, these cloisters will make the block the most imposing structure of all the numerous college buildings. The arches of the cloisters are of rubbed and moulded red bricks, supported on Hopton Wood stone bases and columns, with Portland stone caps richly carved. The floors are polished Portland stones of large size. The roofs are flat, and covered with lead, and the ceilings are panelled in polished wood, with moulded red brick cornices. The new buildings are substantially constructed of red bricks. All the outer walls are two bricks and a half in thickness, and the inner walls are two bricks thick. The whole length of the quadrangle front is 108 ft.; height to the eaves of the museum, 36 ft.; and the block is surmounted by a flat, 30 ft. by 71 ft., surrounded by an oak balustrade at a height of about 50 ft. from the ground.

The Museum is a fine apartment, well proportioned and admirably adapted for the purpose for which it has been constructed. It measures 51 ft. long by 27 ft. wide, and 26 ft. high, with an open roof up to its purlins. The roof-timbers are of wrought pitch-pine, broken into panels, each principal divided into arched bays. A handsome gallery, of polished oak, panelled

out, is around three sides of the room, and is approached by two circular staircases, also of polished oak. These staircases, as, indeed, all the oak fittings of the museum and other rooms, are good specimens of workmanship.

The works have been carried out under the supervision of Mr. H. Webb, as clerk of the works, with Mr. Stacey as manager for the builders. We understand Messrs. Stephens & Bastow are carrying out another large contract, under Mr. Blomfield, at the Charterhouse Schools, Godalming.

THE LONDON PAVILION, TICHBORNE STREET.

EXTENSIVE alterations are in progress to this building (which is the property of the Metropolitan Board of Works), under the superintendence of Mr. George Vulliamy, the Architect to the Board. The principal staircase will be rebuilt, and additional exits provided from the balcony, opening into Tichborne-street and the court in the rear of the premises. The hall will be enlarged by the addition of the shop, No. 4, Tichborne-street, and a portion of the Black Horse public-house adjoining. The cost of the works will be about 1,500*l*., exclusive of decoration. The builders are Messrs. J. M. Macey & Sons, who obtained the contract in a limited competition.

THE METROPOLITAN RAILWAY COMPANY'S SURPLUS LANDS.

EXPECTED INCREASE OF VALUE.

ACCORDING to the statement of the Chairman of the Metropolitan Railway Company, there has been an enormous increase in the value of the company's surplus lands during the last few years. At a meeting which has just been held he stated that within the last twelve years, allowing for that which had been abolished owing to making new railways upon the sites of their property, practically speaking, the surplus estate had increased in annual value 52,000*l*. Now, 52,000*l*. represented over a million at 5 per cent., or over a million and a quarter at 4 per cent. How was it that the value of the surplus estate had increased in that manner? One phrase was sufficient to explain it. It was by keeping it, by waiting to enable it to ripen. Of course, he said, during the process of ripening somebody had to suffer. The ordinary stockholder was the man who suffered, and the man who sold his property ten or a dozen years ago sacrificed potential benefit, and the man who kept his property had got it. He should not then ask them what their course should be with regard to this surplus property, for they need not at present come to any determination, because the question was only beginning to arise whether it would not be policy to keep any surplus property that they had, even at some temporary sacrifice, in order that it might ripen at some future day. They had only to walk across the road [from the Three Nuns Hotel in Aldgate, where the meeting was being held], and they would see a magnificent piece of ground 33,000 square feet, in a very good position in London, which was producing nothing. Of course if they kept that some new purpose would arise, some new want would be created, and they would perhaps double or treble the price for the land compared with the price they should get if they were to-morrow to put it up to auction, and rush it too soon into the market.

UNHEALTHY CONDITION OF A BUILDING ESTATE IN CAMBERWELL.

THE Camberwell Vestry have just had laid before them the shocking insanitary condition of a building site called the Newlands Estate, situated within the parish.

Mr. Middlemass inquired of the Surveyor how many houses there were in each road on this estate, and what proportion of land was uncovered; also the number of cesspools provided, and the number of houses not provided with them; likewise the estimated cost of a sewer for each road.

In reply, the Surveyor stated that in the Hall-road there were seventeen houses already built, about two-thirds of the land being uncovered. There were three cesspools for a block of seven houses, and there were ten houses without cesspools. In Stewart-street there were twenty-five houses built, and about two-thirds

of the land was uncovered. The total cost of providing drains and sewers in the roads would be 1,286l.

The statement of the Surveyor led to a prolonged discussion, in the course of which it was generally admitted that the condition of the estate was discreditable to the parish. The Sewers and Sanitary Committee recommended that sewers be forthwith constructed in the several roads named, but the Vestry Clerk gave it as his opinion that under the provisions of the Metropolis Management Act the roads in question could not be called "new streets," a sufficient number of houses to form "a new street" not having been erected, and that, therefore, it was not competent for the Vestry to construct sewers in the streets referred to, and charge the owners of the property with the cost.

Several members strongly urged the immediate construction of the sewers, notwithstanding the advice of the Vestry Clerk. Mr. Lewin said that if it was necessary to strain a point of law in the matter there was no case in which it could be strained with greater justice than in that of the Newlands. The condition of the estate was a disgrace, and on the grounds of public health he contended that the work ought to be done. Another speaker, Mr. Kemp, characterised the Newlands as one of the most disgracefully unhealthy places in the parish. The place, he said, was, under present circumstances, quite uninhabitable, and it was an act of absolute necessity that something should be immediately done to improve the sanitary condition of the estate, if the Vestry were not to incur the responsibility of an outbreak of cholera.

It was ultimately resolved that sewers be constructed in the roads, and that the cost be apportioned to and defrayed by the owners, but that before the sewers be constructed the owners be summoned.

BUILDING PATENT RECORD.*

APPLICATIONS FOR LETTERS PATENT.

- 3,675. B. Martiney, New York, U.S.A. Mats or floor coverings. July 27, 1883.
 3,685. W. A. Bonella, London. Fastenings for securing doors and gates. July 27, 1883.
 3,701. J. Davies, Llanfyllen. Increasing the ventilation in chimneys, &c. July 28, 1883.
 3,716. H. Pataky, Berlin. Roof covering. (Com. by C. Wildagen, Treseburg, Germany.) July 30, 1883.
 3,718. B. D. Healey, Brighouse. Asphalt apparatus. July 30, 1883.
 3,740. T. W. Helliwell, Brighouse, water-closets. July 31, 1883.
 3,754. C. M. Tate, London. Apparatus for ventilating, heating, &c., the atmosphere of rooms, buildings, &c. July 31, 1883.
 3,760. F. J. Austen, London. Automatic flushing and antiseptic tank. Aug. 1, 1883.
 3,761. T. Griffith, Manchester. Stair-pads. Aug. 1, 1883.
 3,775. T. W. Webber, Kellyville, Athy. Construction of roofs. Aug. 1, 1883.
 3,788. A. J. Boulton, London. Chimney-cowls. (Com. by J. Wüstner, Annecy, France.) Aug. 2, 1883.

NOTICE TO PROCEED

has been given by the following applicants on the dates named:—

July 31, 1883.

- 1,611. H. J. Haddan, London. Manufacture of tissues applicable as a base for plaster ceilings, &c. (Com. by H. Kahls, Saxony.) March 30, 1883.
 1,694. J. B. Adams and J. Telford, Liverpool. Balancing, securing, &c., sliding window-sashes. April 4, 1883.
 3,169. W. R. Lake, London. Matting, &c., for covering floors. (Com. by J. Bray, Washington, U.S.A.) June 26, 1883.

August 3, 1883.

- 1,585. W. P. Thompson, Liverpool. Heating apparatus for domestic use, &c. Com. by C. Launay, Paris. March 29, 1883.
 1,592. L. C. Besant, Greenock. Stoves. March 29, 1883.
 1,599. A. F. Anderson, London. Smoke-preventing and fuel-saving grates and stoves. March 29, 1883.

* Compiled by Hart & Co., Patent Agents, 186, Fleet-street.

2,535. F. H. F. Engel, Hamburg. Manufacture of artificial stone. (Com. by Y. E. Marjalen, Hamburg.) May 21, 1883.

ABRIDGMENTS OF SPECIFICATIONS.

Published during the week ending August 4, 1883.

5,704. H. J. Allison, London. Composition of matter or artificial stone for veneers, &c. (Com. by W. Matt and M. Mehrbach, New York, U.S.A.) Nov. 30, 1882. Price 2d.

This is made of a solution of glue, oil, and resin mixed while hot, with glycerine and paper pulp, and coloured as required. The mixture is then rolled into sheets and used as veneers, &c. (Pro. Pro.)

5,737. J. F. Farwig, London. Construction of stoves for burning paraffin and petroleum oils. Dec. 1, 1882. Price 2d.

Two concentric cylinders form the stove, and inside the inner one is the lamp. A coil of pipe is arranged above the lamp through which air passes to be heated. The products of combustion pass up the inner cylinder down the annular space between the two and then pass away at the bottom of the outer cylinder. (Pro. Pro.)

5,756. W. Foot, Wellington. Bricks, blocks, and slabs for building and paving purposes, &c. Dec. 2, 1882. Price 6d.

Dovetailed slots are formed in the sides and ends of the blocks, in which ties are inserted to bind them together.

5,760. J. H. Johnson, London. Bricks or blocks for building purposes. (Com. by J. Darrigan, Vaquette, France.) Dec. 2, 1882. Price 6d.

These have double interlocking or compound dovetailed formed on one of their sides, while on the others are corresponding projections.

5,772. R. W. Hitchins, London. Construction of fire and sound proof ceilings and floors. Dec. 4, 1882. Price 6d.

Wire netting is stretched beneath the joists, and a composition, formed of coke breeze and fibre mixed with alum, is poured in between the joists and made to cover the netting, beneath which it is moulded smooth by a temporary frame of wood.

5,778. J. D. Sprague, London. Window-sash fastenings. Dec. 5, 1882. Price 6d.

A semicircular piece of metal is pivoted between two cheeks on the lower sash in such a manner that it normally hangs with the circular part downwards. When the window is closed the outer edge of the semicircle automatically engages a hasp on the upper sash, and the window then cannot be opened from the outside. When it is required to open the window the inner edge of the semicircle is lifted and the outer edge is disengaged from the hasp.

5,781. G. Crofts and G. F. Assinder, Birmingham. Joints for suspending swing looking-glasses, fanlights, &c. Dec. 5, 1882. Price 6d.

The pivot-pin is secured in the standard and a plate secured in the frame of the glass turns upon a round part of this pivot. A circular disc is fixed upon a square part of the pivot inside the frame, against which press springs which can be tightened when required.

5,848. J. W. Butler, Blackheath. Indurating artificial stone. Dec. 7, 1882. Price 2d.

The material is subjected, in a closed chamber, to the action of the fumes of carbonic acid gas and vapours of sulphur combined with steam.

5,855. T. E. Parker, London. Open fire-grates, stoves, &c. Dec. 8, 1882. Price 2d.

This is an improvement on patent No. 3,166 of 1881, in making all the apertures and perforations of a conical shape. (Pro. Pro.)

6,027. J. Woodward, Wolverhampton. Latching bolts of locks and latches. Dec. 18, 1882. Price 6d.

This is an improvement on patent No. 717 of 1881, in making the extreme end of the bolt dome-shaped, and in combining therewith a short length of parallel-sided part so that the door cannot be opened by pressure alone.

Parcels Post.—Mr. J. C. Humphreys, of Knightsbridge, who built the corrugated iron buildings at the Fisheries Exhibition, has received an order from the contractor to the Parcels Post (Mr. James Allen) to erect within seven days stabling for sixty horses in Red Lion-yard, Clerkenwell. We understand the enormous strain upon the department has forced the authorities to increase the number of vans originally provided for, and hence the necessity of providing almost instant stable accommodation until permanent buildings can be erected. It certainly is an undertaking deserving of notice that a building 175 ft. long by 25 ft. wide can be erected and fitted complete with mangers, water-troughs, &c., in one week from date of order, and speaks well for the resources of Mr. Humphreys's establishment.

Art-Union of London.—The pictures selected by this year's prize-winners are now on view in the new galleries, 112, Strand. The private view is held on Monday next, the 13th. On the following days visitors will be admitted to the galleries on presentation of their address cards.

BATTEN'S MANHOLE COVERS FOR SEWERS.

We have on two or three occasions spoken favourably of the advantages of Batten's patent manhole covers and ventilators for sewers. Increased experience of their use confirms us in our good opinion of them. They are the invention of Mr. W. Batten, C.E., of Lodels-road, Birmingham, and have been largely used since their introduction a few years ago. The advantages claimed for them are thus summarised:—(1) That thorough ventilation of the sewers is secured; (2) that the refuse that may enter the ventilator is easily and quickly removed; (3) that free access is given to the sewers for flushing and other purposes; (4) that, as the entry of solid matter into the sewer is entirely prevented, the stoppage of the sewer is also prevented, and the dangerous results of the decomposition of such matter in the sewers rendered impossible; (5) the dirt-boxes are emptied by one man, with a small scraper, without removing the lid of the manhole-cover, or ventilator, which is only required when inspection of the sewer is necessary; (6) the upper portion of the dirt-boxes being seen from the footpaths, any one can tell whether the dirt-boxes are properly attended to or not; (7) the dirt-boxes being fixed, they require no repairs and cannot be lost or forgotten to be replaced; (8) in the old system of removable dirt-boxes, or catch-pans, two or three men are required merely to empty the *debris*, and very often they have to hammer the castings, or lift the entire cover, or ventilator, from the brickwork before the lid can be lifted. The whole of this unnecessary labour is obviated by using the patent manhole covers and ventilators, thereby saving the cost of the extra men's time.

NATIONAL ASSOCIATION OF MASTER BUILDERS.

On the 30th ult. the half-yearly meeting of the National Association of Master Builders of Great Britain was held in the Waterloo Hotel, Edinburgh, when representatives from London, Liverpool, Bristol, Birmingham, Leeds, Bradford, Glasgow, Hull, Walsall, Lancaster, Dalkeith, Dundee, St. Helens, Wigan, Newport, St. Andrews, and Crewe attended.

The Association was formed in 1878 for the purpose of defending the interests of its members against combinations of workmen seeking, by strikes and other means, to impose restrictive conditions upon building trades; to secure united action and mutual support in dealing with demands made by such combinations, especially in reference to hours of labour, piecework, and similar points; and for other objects connected with trade interests. The Association holds its half-yearly meeting in the principal cities of the country in turn, and this is the first time it has been held in Scotland.

The chair was occupied by the president, Mr. Stanley G. Bird, London.

Mr. W. Knox, Liverpool, secretary, read the half-yearly report.

The Chairman moved the adoption of the report, and in doing so he explained the action that had been taken by the sub-committee on quantities. He stated that some time ago a meeting was held at Birmingham, at which the whole matter as to quantities, forms of tender, and conditions of contract were fully discussed. It was left to him to try and bring about a meeting with the Royal Institute of British Architects. He explained that the question of quantities and contracts was the one point of importance to master builders at present. It was the one thing which builders suffered from more than any other, and was the means of great loss to them. Referring to the bill which had been introduced in Parliament affecting the building trades, he said they cordially supported that which had been passed to prevent the payment of working-men in public houses. They could not, however, give the same support to the amendments proposed on the Employers' Liability Act. It had been alleged that under the present Act people had contracted themselves out of it; but he could say, without fear of contradiction, that not a single builder in England or Scotland had attempted to do that. What they objected to principally in the proposed amendment of the Act was the attempt to do away with the six

weeks' notice of an action at law in the case of a workman meeting with an accident. They considered this proposal was a very unjust one to them, and he was glad they had been successful in getting the Bill thrown out by a large majority.

Mr. J. H. Mackay, Dundee, seconded the motion, which was agreed to.

It was resolved that the resignation of Mr. E. Hughes, treasurer, be accepted, and that Mr. White, Liverpool, be elected to fill the office of treasurer.

The next meeting was then fixed to take place in Bradford, in the last week of January next.

The members were entertained by the Master Builders and Master Painters of Edinburgh at a banquet in the evening.

THE CHRONICLER, RICHARD OF CIRENCESTER.

This is a name of very doubtful omen. The writer, at p. 143 of the *Builder*, gives no references, but I fear that his quotations are taken from the fraudulent compilation imposed by Charles Julius Bertram, on the credulity of poor Dr. Stukeley, and first published by him in 1757.

Not knowing how far a recapitulation of the evidence is now called for, I forbear entering on the full details, and merely make this protest, stating that the name of Richard of Cirencester, a monk of Westminster, who lived circa 1350-1402, has been most unwarrantably used by a forger, as skilful in his way as Chatterton, Ireland, Psalmist, or Simonides. I need not mention living adepts, for unfortunately the law of libel fosters these criminals for a time.

Bertram's forgeries, accepted for about a century, have become welded into our histories, our maps, and gazetteers. The confusion is endless, and the results are often adopted, most innocently, by scholars who utterly reject the original.

A. HALL.

HOW SURVEYORS DIFFER.

SIR,—Some time ago an advertisement appeared in your columns inviting tenders from surveyors for the survey of the Local Board District of Brighouse in Yorkshire, comprising some 400 acres.

It may interest some of your readers to know that the tenders ranged from 96*l.* to 98*l.*, but the Clerk to the Board considers "it would be a breach of confidence to state the amount of tender accepted." A novel idea, certainly. I may say that the survey is to be planned to a scale of 30 ft. to an inch, and the other conditions are most stringent.

A.M.I.C.E.

WATER COMPANIES' CHARGES.

DOBBS V. THE GRAND JUNCTION WATERWORKS COMPANY.

In this case (which came before the House of Lords on appeal last week) a question of considerable practical importance arose. The company is authorised by the Act 15 & 16 Vict., c. 157, to levy water-rates on dwelling-houses according to their "annual value." The plaintiff occupied a house in Westbourne Park, and the company made an assessment on him at the "gross rent," without making the deductions for tenant's repairs, insurance, tenant's rates, &c., which are usually made in order to reach the net value on which the poor-rate is assessed. Mr. Dobbs insisted that the true basis of rating was the net value alone. The metropolitan police magistrate, before whom Mr. Dobbs was summoned, held that he was liable on the gross value, but stated a case for the opinion of the Queen's Bench Division. The Queen's Bench Division, consisting of Justices Field and Bowen, reversed the decision of the magistrate, holding that Mr. Dobbs was liable on the net value only. The Court of Appeal (Lord Coleridge and Lords Justices Bagallay and Lindley) reversed the decision of the Queen's Bench Division, and held that the assessment should be made on the gross value. An appeal from their decision came before the House of Lords, and was argued at considerable length, last week.

The Lord Chancellor (with him were Lords Blackburn, Bramwell, Watson, and Fitz-Gerald) intimated on Tuesday last that he desired, for public convenience, to announce that their Lordships were unanimously of opinion that the decision of the Court of Appeal should be re-

versed, and that of the Queen's Bench Division restored, for reasons to be given at large at their next sitting.

PROVINCIAL NEWS.

Ramsgate.—A new amphitheatre, erected for Mr. George Sanger, has just been opened here. It forms part of a large block of buildings, with frontages to High-street and George-street of 127 ft. and 117 ft. respectively. The principal entrance to the amphitheatre is by a wide corridor through a lofty tower in High-street. Other entrances are in George-street. All staircases are of stone, and the exits are of such capacity that the audience (numbering 2,000) can, it is claimed, be easily cleared in a minute and a half. The area of the auditorium is 5,000 ft., its height from floor to ceiling 50 ft. The stage is 2,000 ft. in area. On each tier lavatories and other conveniences for the comfort of the audience are provided. The building is designed to meet varied requirements, and can be used as a theatre or circus, and by lifting the floor of the stalls, and a portion of the pit, the building is intended to be available for a dancing and assembly room, or for promenade concerts, &c., with a floor over the entire area level with the stage. The building is erected in a substantial manner, the walls being of brick, the roof of iron covered with slates, and iron girders have been introduced into the floors as required. The gas supply to the different parts of the building is by separate services. In addition to this amphitheatre, the block of buildings consists of five shops and a restaurant, with lofty frontages of red brick and Ancaster stone. The style adopted is Italian Renaissance of ornate character. The total cost is about 30,000*l.* The architect is Mr. Albert Latham, C.E., Borough Surveyor of Margate; and the builders are Messrs. Denne Bros., of Upper Walmer, their foremen being Messrs. Parsons, Weymouth, Knight, & Pepper.

Dudley.—The foundation-stone of the new Free Library and School of Art was laid on the 7th ult., by Earl Beauchamp. The site of the new block of buildings is at the corner of Priory-street and St. James's-road. The reading-room and library, both 50 ft. long, are on the ground floor, and approached by lobby-entrance from Priory-street. At the rear of the building, approached from St. James's-road, is placed the Art Gallery, 40 ft. long by 27 ft. wide, lighted on one side by skylights, and on the other side by windows near to the ceiling. The whole of the upper floor is occupied by the School of Art. The elementary room is towards Priory-street, 48 ft. long and 27 ft. wide, and lighted from the roof by large lantern light. The antique room is over the Art Gallery. The painting, modelling, and masters' rooms are all arranged in conformity with the regulations of the South Kensington Art Department. Committee-room, caretaker's rooms, store-rooms, and lavatories are also provided. The whole of the building is well ventilated, and will be warmed by hot-water pipes. The exterior of the building will be of plain Renaissance character, of red terra-cotta and brickwork, and the roofs covered with green Westmoreland slates. At the corner of the two streets will be an oriel, terminated with a lofty turret. The works are being carried out by Messrs. Webb & Round, builders, of Dudley, under the joint superintendence of Mr. J. J. Bateman and Mr. B. Corser, architects, both of Birmingham, whose plans were selected in a limited competition. The cost of the buildings will be about 5,000*l.*

CHURCH-BUILDING NEWS.

Steynton.—Steynton Church, Pembrokeshire (the parish church of Milford) was re-opened by the Bishop of St. David's on the 18th ult. after a complete restoration by Mr. Henry Edwards, of Milford, from the plans and under the superintendence of Mr. E. H. Lingen-Barker, architect, of Hereford. The fabric consists of tower, nave, chancel with hagioscope, north and south aisles, and north porch; and no change in the outline of the building has been made, though the chancel and aisles are of comparatively modern date, the remainder being fourteenth-century work, all five of the original two-light nave windows having been found walled up in different parts of the building, and, of course, re-opened and re-glazed. The belfry lights have also been

carefully restored and re-louvred, and the sanctus-bell cot rebuilt upon the old lines. The east and west galleries, the old pews, and other flimsy fittings, have been removed, the upper tower arch and hagioscope opened. New open-timbered roofs, covered with silver-grey slates to the original pitch, have been built, the thin walls of the aisles being strengthened to receive the heavier timbers by internal piers, so as to preserve the external unbuttressed characteristic of the churches belonging to this district. New pitch-pine doors, open seats, and other fittings have been provided throughout, the only exception being that of the pulpit, which is of carved stone supported on marble shafts. Mr. Ben. Gay, of Bristol, supplied the ornamental cathedral glazing; Messrs. Brawn, of Birmingham, the wrought-iron work; Messrs. Webb, of Worcester, the encaustic tile pavement; and the carving has been executed by Mr. Herridge, of Cardiff. Two curious discoveries were made during the progress of the works, in the one case (as we have already mentioned), four human thigh-bones were found hidden in long narrow recesses above the piers of the nave arcade; and in the other case a perfect human skeleton, with three horses' skulls and a pipe-head, were taken from below the chancel-step. Fenton, in his "History of Pembrokeshire," alludes to the tower of this church, from its elevated position and command of the country, as having been garrisoned with twenty musketeers, and some horse collected about it to cut off communication between Pill Fort and Haverfordwest. It is therefore supposed that this strange burial took place at that time. The accommodation has been raised from 273 to 383, and the total outlay has been about 1,500*l.*

Bacup.—The new Church of St. John the Evangelist, lately consecrated, replaces a dilapidated structure, which for some years had to be propped up to prevent its untimely collapse. The new church is massively built of stone. The peculiarities of the design, if such there be, arise mainly from the nature of the site, which is irregular in form, confined in size, and is, moreover, steeply sloping. The church accommodates between 800 and 900 adults, and consists of a nave, chancel, north and south nave aisles, north chancel aisle, and a western narthex and baptistery. The tower, a portion only of which is at present built, is placed at the highest part of the site, on the south-west corner of the building, and, when finished, will be a conspicuous object from all parts of the town. The nave floor-line, following ancient precedents on similar sites, slopes down towards the chancel step. The nave, chancel, and narthex are of the same width, forming a parallelogram about 120 ft. in length and 27 ft. broad, and giving a lengthened perspective effect as seen from the baptistery, which is projected in a westerly direction from the narthex. The chief entrances to the building are through the tower and north-west porches. They are both in sheltered positions, and open into the narthex, which, except on crowded occasions, will remain an open, unseated space. The walls internally are almost entirely faced with dressed ashlar. The roofs, which are open-timbered, are throughout boarded and felted. The nave is about 67 ft. long, and is divided from the aisles by arcades of four bays. The nave walls are thus carried upon six pillars, which are circular in form, with well-moulded capitals, bases, and annulets. These capitals alternate in design, and the bases vary in height, following the slope of the floor. The nave is about 55 ft. high from floor to ridge of roof, and about 33 ft. to the wall-plate. The chancel arch is carried on massive quatrefoil pillars, which range with and are a development of those of the nave arcade. Indeed, this arcade is in reality carried on into and through the north and south walls of the chancel, leading the eye on, in perspective, from end to end of the building. Across the westerly end of the nave this arching is repeated, and thus there is a continuous arcade of fourteen arches running round the nave and chancel. The chancel is about 38 ft. long, and (as already stated) 27 ft. wide, thus allowing space for a good-sized choir. It opens on the north side by a wide arch into the organ-chamber. The choir seats and other fittings are solid and good, and have been executed by Mr. W. A. Peters, of Rochdale. The pulpit is of stone, circular in shape, and projecting (ambone fashion) from the low wall under the chancel arch. There are marble pillars in its open arcade, and a

carved cornice. The floors of the chancel are paved with Godwin's encaustic tiles. The oaken Communion-table and altar-rail, sedilia, surplice stand, and vestry cupboard have been executed by Mr. Thomas Scott, joiner, of Manchester. The gas-fittings in the chancel, and those throughout the church, also the brass standards of the altar-rail, are the work of Messrs. T. T. Freeman & Co., of Manchester. The baptistery is semi-hexagonal in plan, with an hexagonal roof. The font, executed by Messrs. Earp & Hobbs, is of coloured alabaster, with marble pillars. The heating of the church is by hot-water pipes, and is being done by Messrs. George Petrie, of the Phoenix Foundry, Rochdale. The sittings in the nave and aisles are low, open benches. The contractors for the masonry are Messrs. James Hargreaves & Co. The woodwork (with the exceptions named) is done by Mr. J. Plane; and the slating, by Mr. J. Rushton. The architects are Messrs. Medland & Henry Taylor, of Manchester.

Fulham.—The Bishop of London last week consecrated the new church of St. Peter, on the Salisbury Estate, Fulham. At the special request of the Bishop a mission was commenced about two years ago to meet the spiritual needs of this rapidly increasing suburb. A site was secured, and a school church erected, in which services have been conducted by the Rev. Rowland Cardwell. The new church has been erected by Messrs. Gibbs & Flew, from designs by Mr. Arthur Billing, and will accommodate 750 adults. The cost of the edifice is about 5,500l.; 1,000l. is yet required for the completion of the spire, and 500l. for the organ.

Eyam.—The re-opening services in connexion with the restoration of St. Helen's Church, Eyam, Derbyshire, took place on Tuesday last. The works, which include a new south aisle, have been carried out under the direction of Mr. J. D. Webster, architect, of Sheffield. In 1868, the restoration of the north aisle and chancel was begun by the late Mr. G. E. Street, R.A., and completed in 1870.

STAINED GLASS.

Cullingworth (Yorkshire).—Two stained-glass windows have been erected in the chancel of this church, of which the figure subjects respectively are St. Peter and St. John. The figures of these apostles, each painted upon a white screen background, stand boldly forth beneath rich canopies, upon ornamented bases, and with suitably enriched brocades. They are a gift by Mr. E. H. Hartley, as memorials of his deceased sister, Nancy, and father, John, Hartley, of Bent's House. Messrs. Powell, Bros., of Leeds, are the artists.

Andover.—The parish church has been further enriched by the addition of a two-light window, from the studio of Mr. Charles Evans, of Warwick-street, Regent-street. The window is very rich in colour, and the figures are arranged to harmonise with a very elaborate subject of "Christ in Majesty," painted on the wall beneath. The window is erected to the memory of Mr. Gradedge.

Books.

Mechanical Drawing: Self-taught. By JOSEPH ROSE, M.A. London: Sampson Low, Son, & Marston.

MANY years ago the writer of this notice, having "inked in" a drawing, was about to rub out all the pencilling, when he was stopped by his employers. "Hold, Sir! Why rub out those constructional lines? They helped you to draw that and they will help others to follow your meaning." The American author of the above book has left in his woodcuts his constructional lines advisedly, and they do show the methods by which he has set out and the centres from which he has struck his curves, the cogs for his wheels, and gearing, &c. They furnish much of the instruction which is usually given orally, and carry out, to some extent, his object of placing something in the hands of students by the aid of which they may teach themselves mechanical drawing.

The subject is taken up in its most elementary form, and nothing is omitted which the learner should be told. The least satisfactory chapter is that on the difficult art of shading and colouring, and on this point personal instruction

is, perhaps, indispensable. The woodcuts,—apparently taken from photographs,—are poor and coarse; the shadows opaque, and by no means such as the tyro should copy; and it is a pity that an otherwise useful book should fail in a particular in which the Americans have lately shown themselves such adepts.

The Open Fireplace. By J. PICKERING PUTNAM. Boston: Osgood & Co. London: Trubner & Co.

THE author of the above has laid under contribution American, French, and English publications, from which and from the *Builder* he has freely borrowed hints and illustrations of fireplaces of all ages and countries. Such a collection brought between one pair of covers cannot fail to be interesting. In many instances, however, the drawings have been so much reduced as to have lost all their characteristic detail, and the wood-cutting throughout is indifferent.

The writer is a strong advocate of the open fireplace as against stoves and hot-air apparatus of all sorts: his object is to show how the radiant heat may be made the most of, and as a consequence how fuel may be best economised. We need not say for how many years we have laboured in the same field, or how entirely our sympathies are with the writer in his endeavour. The chapter on the ideal fireplace sets out anew the desiderata, and repeats the old indictment against the present wasteful construction. The several attempts which have from time to time been made to utilise waste heat are all based on the same principle, and seek, by the introduction of air behind the grate, and by warming it in contact with fire-clay or iron chambers, and gills or plates, to impart a certain degree of heat to it, and then to discharge it into the room, either at the head or sides of the grate, or above the mantel, or, as in the Galton grate, near the ceiling.

The author speaks with approbation of the "Follet" grate, which exposes the chimney-flue in a sort of niche above the mantel, and so imparts to the air in the room the heat which usually goes to warm the chimney-bread.

We cannot say that the writer has done very much to advance the subject, but he has brought into a focus much scattered information about it, and a multitude of examples ancient and modern. Notwithstanding an Englishman's love for his "hearth," it is evident that the French architects of the Renaissance were far ahead of us in the boldness, originality, and delicacy with which they treated this feature of domestic architecture.

Irrigation and Water Supply. By JOHN SCOTT. London: Crosby Lockwood & Co.

WE had occasion lately to notice with approval a companion treatise on draining and embanking lands by this author. The present work deals with the reverse process of increasing the fertility of lands by irrigation works in times of drought. The author states that English water-meadows are doubled in value by this means, and that a good supply of water has been known to increase the value of arable land from four to ten-fold. Professor Johnson has a remarkable passage to the effect that the great deserts of the world are not sterile because they cannot yield the soil-food required by vegetation, but because they are destitute of water. In these days, when the farmers have hard work to make their occupation yield a living, such a book as this should need no apology. The subjects embraced by it are a little wider and more various than the title would lead one to expect, and the construction of wells, obtaining water by artificial means, its storage, purification, raising, and distribution are taken up successively and treated with competent knowledge and with business-like clearness and brevity. Plans are freely given in illustration of suitable treatment of lands of varying figure and contour, with descriptions of the several systems of irrigation respectively applicable to each.

Not the least valuable portion of the treatise is that devoted to the statistics of outlay and return furnished by the experience of well-known sewage farms such as that at Croydon, and the relative values of the produce as against farms under the ordinary treatment.

The chapter on wells brings out the fact that the Americans have the "biggest thing" in wells at St. Louis, it having a depth of 3,850 ft.

The chapter on domestic water-supply only deals in a partial manner with a large subject.

Indeed, too much is attempted in this little book, which embraces some subjects which should have formed separate treatises. So far as it goes it is excellent.

VARIORUM.

"HYDRAULIC MANUAL," by Louis D'A. Jackson (Crosby Lockwood & Co., London). This book is like the instrument-maker in "Dombey & Son" "chock full of science," and its pages, consisting as they do of long strings of formulae of learned complexity, are enough to scare the non-scientific and non-mathematical reader. The author is quite given over to the subject of the flow and discharge of water under every conceivable condition of conduit and orifice, and follows the intricacies of the subject with never-flagging zest. His work has reached a fourth edition, which may be taken as a test of its value to those whom it concerns. The most generally useful portion of it we venture to say will be the numerous tables of velocity and discharge which can be profitably consulted by the ignorant many while the rest of the work is only addressed to the learned few. The chapter on the "control of floods," on "field drainage," the ruin of "canals," and that on "water meters" have an interest for every one.—"The Land of the Five Rivers and Sindhu," by David Ross C.I.E. (Chapman & Hall, London), is the title of a collection of sketches historical and descriptive of a country the interest of which neither sketch nor description can exhaust. Although "the land of the five rivers" has been the scene of the principal events in the history of India from the earliest period up to the time of its annexation to the British territory, the history will not perhaps be so universally interesting as the description which deals with scenes of beauty and grandeur almost beyond belief. Everything is on the same immense scale,—cities, palaces, temples,—ruined centuries since and deserted or overwhelmed by some catastrophe which hurried all in one confused and hideous doom. The remains of sculpture and the ornamental forms of articles of domestic use buried for thousands of years show to what a degree of excellence the arts had then attained, and make us regret that the book is not furnished with adequate illustrations.—"Smoky Chimneys, their Cause, Prevention, and Cures," by Captain J. T. Johnston, R.E. (Bowering & Co., Plymouth). We cannot say much in recommendation of the pamphlet, and will not therefore discuss its length, only remarking that amongst the "natural facts" upon which the author bases his theory "No. 3, smoke is heavier than air until it becomes rarefied; is ambiguous; and 'No. 4, dry air is heavier than moist air' is misleading. The old criticism (attributed to Dr. Johnson) about the new things and the true things might be applied not ineptly to these 'notes.'—"Practical Upholstery," by a Working Upholsterer (Wyman & Sons, London). This book is evidently all that it pretends to be. I want sense we are to understand the words "Working Upholsterer" is a little doubtful; the preface says he is a "gentleman of exceptional large experience." Whoever he may be the book is well written, clear, and comprehensive and eminently practical. The designs,—which are plentiful,—are many of them elegant and appropriate, and avoid the faults and vulgarities incident to too much of what goes under the name of upholstery. The book will not only be of use to "the trade," but to those housewives who economise by effecting, for a small outlay, what is often unnecessarily performed by other more expensive means, and it should therefore have a wide sale.

Miscellaneous.

Ventilation of Public Buildings.—Messrs. Robert Beyle & Son, 64, Holborn Viaduct, and Glasgow, have had their system of ventilation adopted for the following public buildings:—New Art Galleries, Liverpool; New Art Gallery, Birmingham; Guildhall, Bristol; New Public Hall, Cardiff; General Post Office, Manchester; New Theatre and Concert Hall, Devonshire Park, Eastbourne; Boys' Home, Forest Hill; Children's Hospital, Brighton; New Workhouses, Wandsworth. They are also at present ventilating for Mr. Arthur W. Blomfield, St. Michael's Church, Paddington; St. John's Church, St. Leonard's; and Emmanuel College Chapel, Cambridge.

Congregational Church, Richmond (York).—On the 11th ult. the foundation-stone of a new Congregational church and schools, intended to supersede those which have been in use for the past forty or fifty years, was laid. The plans, by Messrs. Clark & Moscrop, architects, of Darlington, show a church with hancel, accommodating 320 persons, schools and class-rooms behind for 110 scholars, and the usual vestries and ante-rooms. The building will be in the Early Perpendicular style of architecture. An octagonal tower, with long pierced belfry windows and lofty spire, will be placed at the south-west corner. The walls are to be faced with limestone blockers, with freestone dressings, and the windows glazed with leaded cathedral glass. Ample arrangements will be made for ventilation and heating by hot water. The total cost is estimated at 1,600l., the contractors being:—Mason work, Mr. Wm. Shaw, Richmond; joiner work, Mr. H. Harwood, Manfield; slating, Mr. T. Wandless, Darlington; smith's work, Messrs. R. Spence & Co.; plumbing, Mr. C. Fryer, Richmond. The ceremony was performed by Mr. E. Crossley, J.P., of Halifax.

Memorial to the late Lord Frederick Cavendish.—The design adopted by the committee for erecting the proposed monument to Lord Frederick Cavendish, on the South Nab, an eminence situated to the east of Bolton Abbey, is a massive square embattled tower, of Gothic character, affording a wide prospect of the surrounding hills and woods, the Valley of Desolation, the abbey ruins, and river Wharfe. The monument stands on a rocky base, composed of the stone of which the hill is formed, so as to make it appear as natural an outgrowth from the hill-side as possible; and it is approached by broad flights of stone steps, with a terrace and parapet at the base of the tower. The materials of which it is intended to construct the memorial tower will be obtained in the district as far as practicable. The design selected was submitted by Mr. Thos. Worthington, architect (of the firm of Messrs. Worthington & Elgodd, architects, Manchester), under whose joint superintendence the work will be carried into execution.

London and Middlesex Archaeological Society.—The annual excursion of this society was to Edgware, Whitechurch, Stannore, &c., on the 7th inst. The Chandos Chapel at Whitechurch, with its decorative paintings by Laquerre and Verrio, were much admired, as well as the general appearance of the interior, which was explained by the Rector, the Rev. J. B. Norman. Great Stannore, with its ancient church of brick in part remaining, was also visited and described by the Rev. F. C. Jackson. The new church of Great Stannore, close adjoining, was built some years ago, after the designs of Mr. H. Clayton. A short account of the Manor of Edgware was given by Mr. S. W. Kerr, F.S.A. (the hon. secretary), and Professor Hales and Mr. E. W. Brabrook, F.S.A., commented on the ancient earthwork of Grimes-Dyke, near Pinner. About 100 persons, members and visitors, were present, and the meeting was one of the most successful and numerously attended for some years past.

Borough of Oswestry.—At a special meeting of the Town Council held on Thursday, the 2nd inst., it was decided to make an application to the Local Government Board for sanction to borrow a sum of money for ventilating and flushing the whole of the town sewers, according to plans prepared by the Borough Surveyor, who was complimented highly upon the system proposed and the plans he had prepared; it was also decided to advertise for tenders for diverting the effluent sewage waters and constructing new drainage works at Crampwell. Plans for the works have been prepared by Mr. H. T. Wakelam, C.E., the Borough Surveyor.

The Wandsworth-roads.—The Wandsworth Board of Works on Wednesday agreed to purchase for 2,000l., from Price's Candle Company, a piece of land, for the purpose of widening the public footpath at York-road, Battersea. In addition to the sum named the Board will erect for the company a new boundary-wall, at an estimated cost of 200l.

Nuneaton Surveyorship.—The Local Board of Health at their last meeting unanimously elected Mr. Charles Law Green, C.E., late of the City Surveyor and Waterworks Engineer's office, Coventry, to fill the above office. There were seventy-three applicants for this appointment.

Suggested Alterations in the House of Lords.—On the 1st inst., a Parliamentary paper was issued containing the report of the Select Committee of the House of Lords appointed "to consider the construction and accommodation of the House, including the galleries and rooms belonging thereto, more especially in reference to seating, hearing, and reporting; and whether any and what improvement therein can be made." The report recommends that a larger room be given to the reporters for the purpose of transcribing their notes, and suggests certain alterations in the reporters' gallery, the effect of which would be to give a slightly-increased amount of accommodation. With regard to the accommodation for peers the fifth paragraph of the report says,—

"The seats in the side galleries are extremely narrow and uncomfortable, and on the nights when there is a large attendance the amount of accommodation is much short of what is needed. The committee think that an extension of the side galleries, giving 226 comfortable seats in place of 146 seats, many of which are cramped and uncomfortable, would be desirable, provided it can be done without injury to the architectural beauty of the House, and the wider galleries would probably improve the acoustic qualities of the House. In order to judge of the effect which a widening of the galleries would have on the appearance of the House, the committee recommend that the experiment should be tried by projecting (but not for occupation) the whole or a sufficient part of one of the galleries, taking care that the new work shall be made and coloured or toned so as exactly to correspond in colour, material, and shade with the present work."

Other minor alterations as to gangways, lavatories, cloak-room accommodation, &c., are suggested.

A Dirty Slaughter-house at Coventry.—Mr. John Young Butcher, of 40, Smithford-street, has been again before the Coventry City Police Court, on August 1st, and fined 2l. and costs for not having proper receptacles, with tight and close-fitting covers thereto, for receiving and conveying away all the manure and offal from his slaughter-house. Mr. Walter Brockett appeared on behalf of the Sanitary Committee to prosecute, and stated that the defendant had been before the Court only recently, viz., on June 21st, and was then fined 12l. and costs; but that warning did not seem to have had the desired effect. He therefore now asked the bench to increase the penalty to such an extent as would save him the trouble of repeatedly summoning the defendant. Mr. Frederick Brooker, the Sanitary Inspector, in his evidence, stated that on July 24th he visited the defendant's premises, and called his attention to the filthy condition of his slaughter-house, to the absence of those proper receptacles that were required by the by-laws, and in answer to the inspector the defendant stated that he did all he could to see that the "stuff" was got away. He had been trying to get some tubs, but found that they would cost too much.

St. Ann's, Sheffield.—The colour decoration of this newly-consecrated church is at present confined to the chancel; the most prominent and interesting feature of such decoration being the conversion and utilisation of an antique stone reredos which for very many years held that status in the old parish church proper of Sheffield. By reason of wear and time the stone of this fabric had become unfitted for any further exercise of the carver's art, though still available for that of the skilled artist-painter. As now treated, all the elaborate details of the old ornamental carvings have been not only preserved, but picked out and emphasised in rich colours and gold. The reredos is in three sections; the middle containing three panels, and the wing sections two panels each. In the central panel the Last Supper has been artistically painted. Messrs. Powell Bros., of Leeds, are the artists, Mr. J. D. Webster, of Sheffield, being the supervising architect.

New Hospital at Greenwich: Circular Wards.—On the 1st inst. the Earl of Dartmouth laid the foundation-stone of a new hospital, in connexion with the Royal Kent Dispensary at Greenwich. The hospital will at present consist of only one ward, which will be styled the "Miller Memorial Ward." It is to be erected on a new plan, with circular wards, and will be the first hospital in this country which has adopted the system of circular wards. The hospital is intended to perpetuate the memory of the Rev. Canon Miller, D.D., vicar of Greenwich, 1866–1880, founder of Hospital Sunday.

The Cork Exhibition.—In connexion with this Exhibition we may mention that the premium of 5l. offered for the best design for the Prize Medal,—the competition being open to all Ireland,—has been awarded by the Executive Committee to Mr. Richard Q. Lane, of Belfast. The design for the medal is in the Celtic style, and is 2½ in. in diameter. On the obverse is a foliated trefoil, in the centre of which is placed the City of Cork shield of arms. The space above and on each side of the shield is filled in with intricate scroll tracery, characteristic of the style, while the spandrels between the trefoil and circular band running round it are filled with interlaced work. The inscription (and date) is placed on the circular band already referred to,—"The City of Cork Industrial Exhibition. MDCCCLXXXIII." On the reverse, in a circular panel, is placed an ancient Irish harp, with scroll ribbon thrown across and partly entwined, bearing the words "Awarded to." Surrounding this is a band, left blank for exhibitor's name, &c., while outside all is a space divided into panels by circular and square bosses alternately, three of each, ornamented in character with the style, the six panels being filled with strap fret-work to correspond, treated in three different ways.

TENDERS.

For re-building a warehouse at Bell's Wharf, Millbank, for Messrs. J. & G. Bell, Mr. John S. Woodard, architect:—

Hall & Bedall	£1,120 0 0
Hayward Bros.	1,100 0 0
Colls & Sons	1,059 0 0
J. & J. Greenwood	1,050 0 0
Bywaters	1,000 0 0
Barrie Bros. (accepted)	953 0 0

For alterations, additions, and repairs to Hope Cottage, Church-road, Upper Norwood, for Dr. Hiley. Mr. Frederic W. Ledger, 3, Lombard-court, architect:—

Garratt	£507 0 0
J. Smith & Sons	475 0 0
J. & C. Bowyer	397 0 0
Jenkins (accepted)	342 14 0

For extension of business premises, No. 70, Western-road, Brighton, for Mr. W. Hetherington. Mr. Frederic W. Ledger, architect:—

T. Mills	£238 10 0
W. & T. Garratt (accepted)	384 0 0

For Stoodleigh Court, Devon. Messrs. Ernest, George, & Peto, architects. Quantities supplied:—

Simpson & Co.	£14,801 0 0
Manley	14,533 0 0
C. Frank	14,320 0 0
Letlebridge	14,222 0 0
Stephens & Bastow, London and Bristol	12,725 0 0
Coville & Sons, Bristol	12,186 0 0
Edcote, Gloucester	12,119 0 0
Peto Bros.	11,461 0 0
Luscomb & Son	10,619 0 0
W. Pethick	9,281 0 0

For the erection of ambulance station, porter's lodge, and other works, at the Western District Hospital, Dublin, for the Managers of the Metropolitan Asylum District. Messrs. A. & C. Harston, 15, Leadenhall-street, architects. Quantities supplied by Mr. C. Poland:—

J. R. Brass	£10,150 0 0
Thorne	10,150 0 0
Holland & Hannan	10,035 0 0
Gibbs & Flew (Lim.)	10,000 0 0
C. Wall	9,902 0 0
Dove Bros.	9,885 0 0
Wall Bros.	9,777 0 0
Mowlem & Co., Millbank (accepted)	9,730 0 0

For decorations, &c., to Palace Gardens Church, The Mall, Kensington. Mr. Alexander Payne, architect:—

Heaton, Butler, & Bayne	£568 0 0
Kerr & Bright	427 0 0
Wilkinson & Son	462 0 0
Decorative Co-operators' Association	405 0 0
Gregory & Co.	378 15 0
Hampton & Sons	320 15 0
Dobie & Son (accepted)	315 0 0

For a cottage home, Old Charlton, Kent, for Sir Spencer Mayson M. Wilson, bart. Mr. John Rowland, of Charlton, architect. Quantities supplied:—

William & Son	£1,763 0 0
Hayward & Son	1,760 0 0
W. Tansant	1,678 0 0
Putnam & Fotheringham	1,695 0 0
Kirk & Randall	1,555 0 0

For additions, Sunnyside, Hampstead-hill Gardens, for Mr. H. B. Lee. Messrs. Batterbury & Huxley, architects:—

Holliday & Greenwood, Loughborough Junction (accepted).	
---	--

For new gas-tank, &c., at Ilford. Mr. James Church, engineer:—

W. Webster	£3,233 0 0
Aird & Sons	2,904 0 0
W. J. Botterill	2,309 0 0
Robins	2,100 0 0

For alterations and additions to the parish church, Henry's Mote, Pembroke-shire. Mr. E. H. Lingen-Barker, architect:—

Edwards, Milford	£488 0 0
Jones, Haverfordwest	477 0 0
Lewis, Letterston (accepted)	395 0 0

Chief Office : 360, EUSTON ROAD, LONDON.

The Builder.

Vol. XLV. No. 1115.

SATURDAY, AUGUST 14, 1883.

ILLUSTRATIONS.

Spandrel, Mendresseh College, Ispahan; Spandrel, Cairo	216
Tomb of the Princess Margaret, Lincluden Abbey. Date about 1145	219
Design for Proposed New Church, Edingley, near Southwell, Notts.—Mr. John Cottingham, Architect	220
The Newly-constructed Portion of the Facade at Santa Maria del Fiore, Florence (Double-Page Engraving).—Prof. De Fabrici, Architect	222, 223
St. George's Church, Preston.—Messrs. Garlick, Park, & Sykes, Architects	225
Entrance to Finsbury Hospital.—Mr. J. D. Sedding, Architect	227
Filing-in and Border.—Designed by Geo. C. Haité	229

CONTENTS.

Danger from Lightning and how to Escape it	205	St. George's Church, Preston	231	Parliamentary Jottings	231
Art and Art	206	Wrought Iron Screen, Leonard-square	231	The Art-Union of London	232
The "Architectural History of the City of Rome"	207	Surface Dressing	231	Practical News	234
Sharborn Abbey Church	208	The Berlin Gallery of Sculpture	231	Old Plastering	234
On Thence Canals	210	Discovery of Roman Remains at Mainz	232	Swi Contracts	234
Professional Portraits	211	Edinburgh	232	Proposed Waterworks at Dargay	234
The Last of Old Cuspy Street	212	The Manchester Ship Canal	232	Pal Haddad, East Highgate	234
The Working of the Public Health Act	213	The Tollhouse, Great Yarmouth	232	Books: Moncel's "Electric Lighting" (Routledge); Holmes's "Practical Electric Lighting" (Spon); Ware's "Modern Perspective" (Pitman); Burgham's "Limestones and Marbles" (Tudner); "Sussex Archaeological Collections" (W. H. & J. Hutchings)	234
Some Recent Foreign Work on Hygiene	213	Competition for Mural Paintings at Düsseldorf	232	Books: Moncel's "Electric Lighting" (Routledge); Holmes's "Practical Electric Lighting" (Spon); Ware's "Modern Perspective" (Pitman); Burgham's "Limestones and Marbles" (Tudner); "Sussex Archaeological Collections" (W. H. & J. Hutchings)	234
Sir Robert Rawlinson	214	Foreign Competitions	232	Books: Moncel's "Electric Lighting" (Routledge); Holmes's "Practical Electric Lighting" (Spon); Ware's "Modern Perspective" (Pitman); Burgham's "Limestones and Marbles" (Tudner); "Sussex Archaeological Collections" (W. H. & J. Hutchings)	234
Sarcophagi Design	214	The Assurance Dwellings Act; Its Cost and Value	232	Books: Moncel's "Electric Lighting" (Routledge); Holmes's "Practical Electric Lighting" (Spon); Ware's "Modern Perspective" (Pitman); Burgham's "Limestones and Marbles" (Tudner); "Sussex Archaeological Collections" (W. H. & J. Hutchings)	234
The Tomb of the Princess Margaret, Lincluden Abbey, Dumfries	231	The Living Monument	233	Books: Moncel's "Electric Lighting" (Routledge); Holmes's "Practical Electric Lighting" (Spon); Ware's "Modern Perspective" (Pitman); Burgham's "Limestones and Marbles" (Tudner); "Sussex Archaeological Collections" (W. H. & J. Hutchings)	234
Proposed Edingley Church	231	The North and East Suburban Industrial Dwellings Company	233	Books: Moncel's "Electric Lighting" (Routledge); Holmes's "Practical Electric Lighting" (Spon); Ware's "Modern Perspective" (Pitman); Burgham's "Limestones and Marbles" (Tudner); "Sussex Archaeological Collections" (W. H. & J. Hutchings)	234
Florence Cathedral and its New Facade	231	Over Building and Rebuilding Roads	233	Books: Moncel's "Electric Lighting" (Routledge); Holmes's "Practical Electric Lighting" (Spon); Ware's "Modern Perspective" (Pitman); Burgham's "Limestones and Marbles" (Tudner); "Sussex Archaeological Collections" (W. H. & J. Hutchings)	234
		Priddy, near Wells, Somerset	233	Books: Moncel's "Electric Lighting" (Routledge); Holmes's "Practical Electric Lighting" (Spon); Ware's "Modern Perspective" (Pitman); Burgham's "Limestones and Marbles" (Tudner); "Sussex Archaeological Collections" (W. H. & J. Hutchings)	234

Danger from Lightning, and how to Escape it.



GOOD advice, in order to be of practical use, should be such as has some probability of being followed. Indeed, sensible persons may not be deterred from adopting a line of conduct known to be conducive to their safety or their interest by the consideration that it is unpleasant, any more than they would reject the prescription of an eminent

physician on account of its disagreeable taste. But children, and not a few grown-up children, find abundant reasons for so rejecting the nauseous potion. The promise of future good has less influence with most of us than the menace of immediate disgust. Thus, when we find in the daily press a writer, of whose work on the action of lightning we had occasion to speak in very high terms on its first appearance, come forward to give this advice to the public as to their conduct in thunderstorms, we cannot entertain much expectation that it will be followed. "Shelter of all kinds must be most carefully avoided. The shelter afforded by trees, hedges, banks, hayricks, walls, porches or doors of houses, cliffs and sheds, is all equally deadly. . . . A wooden building is more dangerous than most persons imagine. A wholly wooden house is more dangerous than a wholly metal one, on account of the absence in the former of the elements in the latter tending to electric leakage."

Under these conditions of universal danger, the advice given to rustics when a thunderstorm comes near is that "they should on no account move, but, careless of the rain, they should lie flat on their faces on the ground till the clouds have passed over them. . . . What signifies a wetting on a summer's day to a hardy labourer?"

Now, supposing this advice to be sound, and that the certain danger of rheumatism or dysentery is worth encountering for the sake of the uncertain avoidance of the danger due to some four or five feet elevation towards the thundercloud, is there any probability that it will be followed? Does not a man diminish his claims to attention by riding his hobby so hard as this? We may fully agree with the writer that "Government should for a few years

scientifically investigate and minutely record every instance of fatal or destructive thunderbolts that should occur during that time in the United Kingdom." That there is the remotest chance of this being done we suppose few people who have had the misfortune to propose improvements to the administration will for a moment admit. Still, it can do no harm to make such a statement. "The regular inspection of lightning-conductors," as Mr. R. Anderson wrote in 1879 ("Lightning Conductors, their History, Nature, and Mode of Application," p. 222. London: Spon), "as yet unknown, or all but unknown in England, has been for a long time in practice in several states of Continental Europe, among them Germany and France." In Schleswig-Holstein a special commissioner was appointed to investigate the question whether buildings provided with proper conductors could even be struck by lightning. The results obtained by the gentleman chosen to undertake this task, Dr. Wm. Holtz, of Greifswald, were directly opposed to the theory of Colonel Parnell, who is an opponent of lightning-conductors. As to this, we think it impossible to doubt that the Schleswig-Holstein experience is only confirmatory of the great body of evidence to which Mr. Anderson calls attention, to the effect of the essential utility of the lightning-conductors, when properly constructed and maintained. We may leave the advice to people to prostrate themselves, like *Trinculo* in the "Tempest," on the approach of a threatening cloud, to take its chance. "There's neither bush nor shrub to bear off any weather at all, and another storm brewing. I hear it sing in the wind," may be cited in proof of the support that Shakespeare would have given to the advice to lie down to be rained upon. "If it should thunder as it did before, I know not where to hide my head; yond' same cloud cannot choose but fall by palpable." As to that, we may leave it to those who may be in the like predicament to make their own choice. But in the interest of the builders, of the ancient buildings of the country, and of the urban population, indeed we may say of the whole population, we feel bound to protest when a scientific man writes in depreciation of lightning-conductors. This elegant application of the great discovery of the identity of the lightning with the electric fluid had first to overcome the opposition of those who thought it was impious thus to attempt to divert the vengeance of the thunderbolt. It has still to overcome the dull, unyielding opposition of ignorance, indifference, neglect, and penny-wise and pound-foolish parsimony. But it is no less than disastrous to find the ranks of these congenial opponents to sound measures of precaution reinforced by men who may claim no superficial acquaintance with the theory of electricity. We cannot, however, but think that a respon-

sibility of no ordinary kind attends on any effort to discourage the application of lightning-conductors.

There is no doubt that one or two very fierce thunderstorms, as well as the unsettled weather which has prevailed in England since last St. Swithin's Day, have directed public attention to the means of ensuring, so far as possible, safety from lightning. And it is well for those who are better informed than the generality of their neighbours in the matter to give the world the benefit of their experience. The warning, for instance, not to take shelter under a lofty tree in a thunder-storm is a very sound one, although it may be added that there appears to be a specific difference, in this matter, in the behaviour of different kinds of trees. Thus it is said that thunderbolts never strike the laurel, or, it is added, the alder. On the other hand the elm is signally unsafe, not only from the attraction due to its height, but also from the manner in which its branches break off short, without warning. But we do not think that, to say nothing of the certain evil of a drenching rain being poured on a prostrate form, for electric reasons alone the advice to lie down in the open field is good. The electric fluid, as far as we know, seems to be far more affected by the superficies than by the mass of a conductor. The difference of 4 or 5 ft., when added to the 3,000, 4,000 or more feet that the thunder-cloud is distant from the earth, is so small as to be almost inappreciable in its attractive influence. On the other hand, the difference between the area directly opposed to the cloud by the erect and by the prostrate human figure is three or four times against the latter. We should, therefore, be inclined to hold, that on an open plain, in a heavy thunder-storm, very near the surface of the earth, a prostrate man would be in much greater danger of being struck by the fluid than a man who was standing or walking. This is a matter of opinion, and it may not be very easy to put it to the test. It is, however, worth consideration before following the advice to lie down.

But with regard to the recommendation to prefer the open downpour of rain to taking shelter in a porch or doorway, this comes within the province of the protection of buildings. If the building be safe, the people taking shelter in it will be safe also. As to the process of making buildings safe, we are not among those who hold that there is any doubt whatever. The rules of protecting buildings by conductors are known, and we are not aware of a single instance of serious damage when these rules have been faithfully carried out. Persons will do far better to inquire whether their buildings are in a state of proper electrical safety, than by endeavouring to ensure personal immunity from thunderbolt at the risk of an attack of dysentery.

ART AND ART.

ALTHOUGH the use of such an expression as "the fine arts" betokens the admission of the fact that there is a branch or division of art which is other than fine, we question whether the essential distinction between the two very opposed methods which are employed by different classes of artists has been hitherto as fully illustrated as its importance demands. We instinctively feel the difference between a portrait and a machine. But the last half century has witnessed, what the masters of Grecian or of Italian art would have called incredible, the production of accurate portraiture by purely mechanical means; that is to say, by the pencil of the sun, unaided by the hand of the sculptor or of the painter. What, then, is the essential distinction between fine art and art that is not called fine?

Essentially, we take it, the distinction is one of method. It is true that one method is most usually applied to one, and the other to the second, of the two vast provinces of art to which we refer. But the example which we have cited of the use of the camera to produce portraits is only one of those which may be adduced to show that it is rather in the nature of the method employed, than in that of the object to which either method is applied, that the essential difference exists.

Such, indeed, is found to be the case in what we may call the most rudimentary form of art, that of the draughtsman. There are, as every student knows, two very distinct methods of drawing, viz., that which is called by the appropriate name of "freehand," and that which is known as mechanical. So distinct are these methods, that a procedure which is essential in the one of them is inadmissible in the other. Thus it is of the essence of mechanical drawing that every dimension should be accurately measured; and, not only so, but that it should be twice measured,—once to ascertain its numeric value, and again, either in full size or on a reduced scale, on being committed to paper in the form of a drawing. But any such measurement will be discouraged and as far as possible prevented by the freehand drawing-master. He holds it to be illegitimate, and is of opinion that its adoption would tend to cramp, stiffen, and render altogether inferior the handiwork of the student who should have recourse to it. Even in marking out the main points in a landscape, the use of the pencil, held at arm's length between the eye and the scene, and of the thumb-nail to mark the apparent distances where certain lines cut on the pencil, is thought to be barely allowable.

We may go a step further in this direction and appeal to the experience of the student. It is always hazardous to draw general conclusions from particular instances, so that we must limit ourselves to the observation that, as far as our own experience goes, the practice of either one of these methods is somewhat hostile to excellence in the other. We are far from saying that this is always the case; in fact, in the case of those artists who are confessedly the most free-handed draughtsmen in the world,—the Japanese,—we find combined the utmost freedom of touch and the greatest accuracy of mechanical detail and finish. But we do not know that these two excellences are developed in the same individual. In the illustrated books on Japan and Japanese art, to some of which we have from time to time called the attention of our readers, we have found much as to the former branch of Japanese draughtsmanship. The paper, we are told, is never laid on the desk. It is held in the air, in the left hand, and the design is dashed in by a brush held in the right hand. As to the use of this method there is no doubt. We have minute accounts of the process from more than one witness, and the wonderful freedom of many of the Japanese designs is in exact accordance with the method described. We know of but little in art to which this graceful freedom of touch can be compared, except in what is called the Raffaele ware. In that case necessity was the mother of invention; as the touch on a wet clay surface must, in order to produce anything but a smudge, be as sharp and certain as that on the bibulous paper of Japan.

But then it must not be forgotten that side by side with these freaks of free-hand drawing are found geometric designs of the greatest delicacy and intricacy, designs such as can only be produced by instruments having all the precision of the compass and the drawing-pen.

Of the method of producing these designs and of the instruments used by the draughtsmen we have no account in either of those important works on Japan that have lately come to our notice. But we think it very questionable whether the great artist who can give flight to the cranes and almost everything except movement and fragrance to the flowers which he throws on paper or on lacquer, is the same as the artist who produces these exquisitely delicate intersecting circles and straight lines.

However that may be, our own experience is rather to the effect that excellence in the two departments is but rarely to be found displayed by the same hand. Nay more, when such is the case, we think that the more general, is attained at the cost of the more special, excellence. There may, of course, be exceptions. It may be that the use of the scale and the straight edge will give, in some cases, a firmer touch to the draughtsman of the living form. But our own experience points in the other direction. And we think that, as a general rule, that man will attain the highest excellence, in either bold sketching or accurate drawing, who confines his labour to that one branch in which his genius finds most ease in the manipulation.

If this, as we cannot doubt, be the case in drawing, no less is it the case in sculpture, or in any of those branches of art which mould refractory materials into form. In metal, in wood, in stone, as well as on paper, we find the application of the two methods to be equally convenient, according to the object sought. Do we seek for a portrait bust or cameo in marble? That which comes to the hands of the purchaser is mainly a mechanical product, copied by purely mechanical means, from the clay on which the artist impressed his thoughts. The fact that the last touches may be given to the marble by the chisel does not interfere with the other fact, that the greater part of the work done on that marble is purely mechanical. So, again, with regard to that development of the art of the sculptor, which reached a high excellence before Phidias opened the quarries of Pontelices,—statuary in bronze,—there was combined, first, the free master touch on the damp clay or the yielding wax, and then the accurate mechanical work of the moulder and caster. Most of this priceless work has turned to dust. But enough remains to show what the bronze work of the highest time of Greek art really was. The writer of these lines, in company, a few months ago, with one of those officials of the British Museum to whom art in England owes so much, ventured to express the opinion that the bronze mask, which is called variously a Venus or a Hypnos, and is said to have been dug up in Epirus, was the finest thing in the British Museum. "In the Museum?" replied Mr. N.: "I should say, the finest thing known in the world." Yet the work in question, while embodying the result of the highest genius of the sculptor, was,—as it now exists,—the work, we take it, of the mechanic, or, at all events, of the sculptor who was proficient in the mechanical branch of art.

Our attention has been riveted on this question of the opposed methods of art, in consequence of the examination of some very exquisite models which were displayed at the Engineering Exhibition, of which we gave a summary account on the 14th ult. (p. 61, ante), as exhibits of working men. In some of these the artist, for such he must worthily be called, had been careful to represent every part (as in the model of a yacht) in the actual material of which it is constructed in the real vessel. In one of the most beautiful of the models, however, the whole was constructed of steel. We must remember that this refractory material was one of the noblest employed by the great Italian sculptor; or, rather, that its extreme hardness and fine texture led to its being raised to the rank of a noble metal by the exquisite work of their chisels. The modeller, indeed, enjoyed advantages denied to the sculptor, in steel, as plates may be rolled and bars forged, for his use of the exact dimensions that he may require. But, all said and done, a point in the work arrives where the two artists work very much alongside of one another, and where hammer and chisel have to be employed by each to hew this enduring metal into the required form.

Yet even here, brought, as it were, side by side in the use of the same implements on the same material, the methods of the two workmen differ in their essence. To the one the straight-edge, the callipers, and the scale

form necessary adjuncts to the chisel, and the file is no less useful to him than the sharper tool. To the other, these instruments are abominations. The file, indeed, as we know to our cost, was used by Bernini upon marble, and that marble one of the finest relics of Roman reproduction of Greek art. That he would have used it on steel or on bronze there can be no doubt; but the effect sought and produced by the use of the tools we have mentioned is that of flatness and sharp angularity. All the surfaces are plane, or, if curved, are level and broad in their curvature. All the angles are right angles, or, if not, are as distinctly fixed in their trigonometric measure as if they were right angles. All the holes are round, exactly fitted by the pins or bolts which they were pierced to admit. The model, beautiful as it was, gave no idea of having grown, of having been a product of great creating nature. Every line of its surface betokened art, the art of the builder and of the smith.

In the flowers or masks cut by such a workman as Cellini in steel, or in any softer metal, all this is reversed. No surfaces are plane; no angles are trigonometrically perfect. Level smoothness, except as a foil to artistic work, is avoided. The ever-flowing curves of Nature are followed by the fancy of the sculptor; and it is by a succession of bold strokes, each of which leaves its own memorial in the metal, that the grand final result is attained.

This opposite style of treatment, moreover, is in many cases accentuated, not only by early study, but by hereditary training of the faculties. The great artists in the imaginative branches of art have usually betokened the bent of their genius in very tender years. The greatest excellence in mechanical art is attained among those sturdy and able mechanics who, according to the testimony of Mr. Nasmyth (in that charming autobiography which we reviewed on its publication), are the descendants of smiths and armourers who came over with William the Conqueror.

And thus, without forgetting that there exist specimens of old French work in steel which may rival the excellence of the famous Milanese armour, in which the fine and the mechanical craftsmen wrought together in noble emulation, we think that the English worker in metal, in the mechanical department, can fairly hold his own against the world. Not only could we point to individual productions, in support of this view, but can cite in testimony the perfection attained by those instruments which now cheaply, swiftly, and perfectly turn out work to replace that which was formerly costly, slow, and rough in its character. When Sir Joseph Whitworth shows us a pair of plates so smooth in their surface that they adhere to one another by atmospheric pressure, he gives us a measure of the perfection obtained by the human hand. It is with those splendid labour-saving machines which now plane and bore and shape iron and steel in our factories with the ease, and with far more than the accuracy, of wood work, as it is with the general problem of education according to the definition of a great French philosopher, To make one mind, often of inferior capacity, arrive, in a limited time, at the same point reached by the combined and successive efforts of a long series of master-minds, is the problem of education. To produce a machine which, cheaply and rapidly, shall give to iron and steel the forms, and the perfect finish, attained by the combined skill of a long series of able workmen, each devoting his life to the attainment of accuracy of finish, is the work of the tool maker. And thus in such a tool as a measuring-machine which will measure to the hundred-thousandth part of an inch, or of a shaping or planing machine that will produce any number of exact *fac-simile* copies of a given form, we have embodied the stored-up skill of generations of able workmen. The machine represents and reproduces the happiest efforts of their skill. But its excellence cannot be greater than that of the best of its makers.

When we see men trained from their early years to the use of the chisel, the hammer, and the file, and accustomed to the work and the direction of those wonderful appliances that now reduce to easy outcome the labour which had formerly to be effected by those implements alone, devoting their leisure and their money to the production of exquisite models of machinery, of carriages, of locomotives, or of ships,—working models in many cases,—we therefore hold that we are in presence of what is rightly to be regarded as a very high form of art. And

there is a remarkable contrast between such products of the working man's leisure as those to which we now refer, and a different class of the same exhibits to which, now some years ago, we called attention as displayed at the workmen's international exhibition.

In that display there were not a few exhibits which were not, in themselves, of the highest order of excellence, but which were yet of great interest as betokening the result of perseverance under unfavourable circumstances. There were, if we remember rightly, drawings or paintings executed by a rural postman, who had to walk so many miles a day, and who had had no regular training in art. Under such circumstances his work was not only creditable, but even wonderful, and it was painful to have to add that the qualities on which the judges in such an exhibition had to decide were exclusively those of the exhibits, and not those of the exhibitors. Again, there were some specimens of sculpture, also from the hands of amateur artists of the working class. And what most struck the careful observer in these objects was the resemblance that they offered to the corbels, and other features of sculptural church decoration of the thirteenth or fourteenth century. Any one who has himself learned to handle the chisel on wood or stone knows how this occurs. He knows how the idea is to a certain extent confined and modified in its reproduction by the nature of the material on which he works, and of the tools which he uses. He knows that there is a stage in his work at which it assumes a certain homogeneity,—a stage from which he has to learn that he must start afresh. But it is only the long-trained artist who has the courage for this fresh start. Thus the amateur, be he a working man or not, is pretty sure not to go beyond the excellence that was attained, centuries ago, by those early artists who had not gone beyond a certain stage in the progress either of their own skill or of the perfection of their art.

This arrest of development, in the application of amateur labour to fine art, contrasts in the most pointed manner with the result of the application of the labour of the experienced mechanician to produce some triumph of his craft. We hardly like to speak of such things as "amateur work!" That, no doubt, they are, in a sense,—in the sense of being work done for the very love of the workmanship. But they are executed by no "prentice hands; but, on the contrary, represent the highest outcome of the skill of the English mechanic in this portion of the nineteenth century.

Here, then, we cannot fail to be impressed with the fact, that it holds to the national welfare to encourage the devotion of the spare time of each man to that branch of occupation in which he most excels. In that, in the long run, he will find the most pleasure, as well as produce the most valuable results. We are aware that there is another part of what we may call the "doctrine of hobbies," that has rather a different aspect. There is an advantage in that change of occupation which to the essentially industrious man is rest. That, no doubt, is true. And the value of such change of occupation is great. But then let it be regarded in its true light. If the undergraduate fits himself for the ordeal of the schools (harder and harder as that ordeal becomes year by year), by devoting a fixed portion of his time to boating or to cricket, he does well. But if he wishes to become a first-class man, he will not go pot-hunting for prizes at all sorts of regattas or cricket-matches. So to the worker in iron or in steel, we would grudge no proper proportion of time for useful recreation. But if he wants to excel,—it will not be as a sportsman, or as a public speaker,—or as a politician,—that he can hope to do so. These subjects demand each a special study of its own, in the want of which the untutored man is at a great disadvantage. It will be in something in which his habits and education prepare him for excellence that alone he can attain it. Such is the case with those beautiful models. They may very fairly challenge the world. England should be proud of the work, and of the men who can produce it. And we should all feel that when the spare time of the working man is thus devoted, very much is being done by him for maintaining that priority of excellence which it should be the great aim of the English workman,—of the Englishman of all occupations,—to ensure and to maintain.

If we have carried with us the attention of our readers it will be to the effect that there

are two methods in art,—the exact and the free. The artist who can sketch in charcoal,—which we take to be about the acme of draughtsmanship,—has no more right to look down on the man who can produce a perfect working model of a steam-engine, that will stand on a dining-table, as a "mere mechanic," than the latter has to sneer at the former as a mere scribbler who cannot handle a tool. *Suum cuique.* To each his own praise and palm. Each,—and that is our contention,—is essentially an artist.

THE "ARCHITECTURAL HISTORY OF THE CITY OF ROME."

Of all places in the world, Rome would appear to have been marked out by Nature as the site of a great fortified city. A crescent of high ground six or seven miles in extent, with jutting spurs for flanking defence; a broad and deep river for its base; a group of bold eminences within the circuit commanded by a natural citadel or keep, with precipitous side, and surrounded by valleys which could be flooded at will,—these furnish all the elements for successful resistance against the arts of primitive warfare. Such obvious recommendations must have been instantly appreciated by the bold spirit who first raised his standard on the Palatine,—the nucleus of the Roman nation,—that hill from which Roman history and Roman art have their source, and where the student must seek his first lessons in the archaeology of the Eternal City.*

The military instinct and administrative capacity of the first settlers are seen in the precautions they then adopted and subsequently repeated. Wherever the Roman arms were carried, one uniform system was followed. An elevated plateau was selected; its sides, when not sufficiently steep, were scarped, and the disintegration of the rock prevented by masonry fronts; at its foot a wide berm or terrace was formed, and beyond that a foss or ditch, in the bottom of which ran a narrow road encircling the site, the *débris* from its excavation being thrown up in an advanced bank or rampart, with a covered-way on its inner side. Fortified entrances were provided at points suggested by the configuration of the position, and the natural defiles and approaches. These entrances were defended by drawbridges,—a very ancient expedient for keeping an enemy at bay. The summit of the hill was traversed by a ditch, dividing the plateau into unequal portions, the smaller of which, on the least accessible side, was enclosed as a keep or "arx," and in this the garrison and the townspeople, with their cattle and valuables, sought a final refuge in troublous times. Care was taken, as in the later Medieval fortresses, to supply this portion of the works with water, either by a well, or, where the character of the rock rendered this impracticable, by storage-tanks. Here, then, was a perfect fortress, and such the Palatine Hill, called from its figure "Roma quadrata," quickly became in the hands of its original occupants. The Sabines, who had taken possession of the neighbouring height, afterwards known as the Capitoline Hill, were, however, a constant source of annoyance to the infant nation. Stones could be hurled with deadly effect therefrom; and a work of protection to the N.W. salient of Mount Palatine was begun in the form of bastions, the substructure of which can still be seen. The conclusion of a permanent peace arrested the work, an enclosing wall was drawn by mutual consent round both the hills, and the two peoples, hitherto determined foes, were henceforth one community. The keep of the new position was, of course, the Capitoline Hill, which was severed from its neighbour by a deep natural valley. The whole fortress was one of great strength, the Tiber on the S.W. flank, a low marshy district on the south, and precipitous cliffs and high walls completing the enceinte. It is even now possible to trace the course of the winding path by which the Roman maidens in tranquil times carried their pitchers of cool water from the Luperical spring, and on a beautiful map by the architect Giambattista Noli, published in 1748, this path is clearly shown after a lapse of 2,500 years. The occupation of the two most prominent hills left them open to desultory attacks from the

Aventine, the Celian, and others of the group, and, within two centuries of the foundation of the city, these had all been similarly fortified, each with its "arx," its high scarps and encircling foss, and, finally, the whole series were linked together by the noble wall of Servius Tullius, 50 ft. high and 12 ft. thick, "the usual dimensions of all the early walls." Pieces of this wall are still visible in places. The stones at its base are 7 ft. 6 in. by 4 ft., and weigh each 9 tons; they are closely fitted and cramped together. This enormous work was undertaken of necessity, and even here the defensive measures could not be allowed to stop. A line of detached posts on the heights along the enclosing crescent were required to secure them against adverse possession, and the whole site became one vast stronghold.

But, strong as it was, it was dominated by the lofty Mons Janiculum, on the western bank of the river, and this in turn was occupied and strengthened exactly on the principles adopted for the other heights. Its communication with the city was secured by a bridge across the Tiber, so constructed that it could be easily and rapidly taken to pieces. And, once more, the enclosure of the whole was attempted by the ambitious "agger" of Tarquinus Superbus.

The wall of Aurelian, "the latest gridle put round Rome," completed the intended work, which was of stupendous magnitude. The wall so built was 50 ft. high, wholly of brick, furnished with towers at close intervals, and battlemented along its whole length. On the inner side an arched passage or "chemin des rondes" was constructed, nearly half a mile of which and one tower still remain almost intact. Towers were added in later times, and gateways closed by portcullis, of which the grooves are still visible.

Notwithstanding all these elaborate precautions, the city fell before the attack of the Visigoths in 409, and again in 455, and its subsequent history is one long alternation of ruin and repair.

Rome passed under the protection of the Popes in 774, and the restoration and conservation of its defences engaged their peculiar care,—Leo IV. visiting and personally directing the works. This pontiff enclosed with a wall that portion of the city which then lay on the west bank of the Tiber, which was in the seventeenth century again defended by a wall on a modern or bastioned "trace." A writer of the ninth century, who made a circuit of the defences on both sides of the river, sums up the whole as consisting of 383 towers and 7,020 battlements, but he does not, unfortunately, give the total length of the line of rampart, which could not, however, have been far short of twenty English miles.

Apologists for archaeological pursuits,—pursuits which have been the butt of much unreasoning ridicule,—will find a strong argument for such studies in the success which has attended them in Rome. The mere scholar in the presence of some newly-disinterred masonry learns but little from its stones, and the secrets which they convey to the initiated. He sees that they are the work of human hands, and that is all,—for him they may be 300 years old, or 3,000. The archaeologist steps in, and reduces all to order, assigns a date, and furnishes the historian with another link in his chain. The earliest work, he knows, is composed of cubes of tufa split off by wedges from the parent rock,—unskillfully disposed,—without bond, with wide joints, and no mortar. As time advanced the builder composed his work of smaller and handier materials,—cut with tools to suitable shapes, and adjusted so that they lock into one another and form a compact mass; or he uses irregular polygons wedged and fitted together, their interstices filled in with smaller fragments. Later on the discovery of the setting properties of calcined and slaked limestone enabled the builders to form an artificial stone and bind detached materials into a firm conglomerate. This discovery gave an immense impulse to constructive works, and enabled them to be carried out cheaply and expeditiously. With unerring instinct their architects built the body of their mighty walls with loose stones embedded in a matrix of lime mortar, and they protected the exposed portions of their work by stone, and subsequently by kiln-burned bricks of peculiar hardness. In the size and shape of the Roman bricks the archaeologist has a sure clue to the date of the work brought under his examination. The earliest are thin, flat tiles, and as time wore

* "The Architectural History of the City of Rome," based on J. H. Parker's "Archæology of Rome," by Arthur Shadwell, M.A., Oxon. London: Parker & Co. 1883.

on they became thicker and thicker, from nine or ten to the English foot in the first century to the thickness of our modern English bricks in the fourth. In the early work, moreover, the jointing was fine as in our gauged brick of the last century, while in the later specimens the joints were often an inch thick and the bricks themselves comparatively poor and porous. Another form of construction is that commonly found in Romano-British examples, and consisted of alternate layers of stone and brick, flushed up and grouted with coarse lime mortar. For the decoration of their buildings and for statues and fountains the Romans used marble, and ransacked the whole world for choice specimens, our own Devonshire marble being highly prized. Their mode of applying it as a veneer is well known, and has survived to our own days.

The most casual treatment of this absorbing subject would be incomplete without some reference to that astonishing network of roads which from the golden pillar of Augustus,—the *umbilicus urbis*,—traversed the Imperial dominions to their remotest point. These marvellous works,—running straight over hill and dale,—laid upon strong foundations, and paved with accurately-fitting masonry,—are one of the wonders of the world. Many of them, after a thousand years, are as serviceable as when first laid down. If the fact were not vouched for by so cautious an historian as Gibbon we might well doubt the assertion that one alone out of the multitude of roads so found extended to a distance of no less than 4,000 miles. The system of posts at intervals of four or six miles, with relays of horses always in readiness, made it possible to travel at the rate of 120 miles a day for successive days, which would be very good travelling even now. These prodigious lengths of roads, all constructed with equal care and completeness, were marked in the year 123 B.C. by milestones, and "mounting-stones were fixed at the road-side for the convenience of horsemen," who of course then rode without stirrups.

Scarcely less marvellous were the numerous aqueducts,—anciently sixteen in number,—which brought daily to Rome 900 millions of gallons of pure water carefully filtered at its several sources. These were designedly built of different sections and varying sizes, in order that the workmen engaged in their cleansing and repair might find their way through the dusky labyrinth. These channels were lined with an impervious cement, and were laid out with falls of the nicest calculation for the regulation of the volume and velocity of the fluid. Sharp bends and angles checked its course where necessary, and frequent dips were arranged at intervals to agitate the water and so take up the oxygen from the air, which was freely admitted through shafts serving also as wells. These works have been added to from time to time through the whole course of Roman history, the last Pope supplying the east side of the city from the old Marcan source; but as early as the first century of our era there were, in addition to the copious services of the Imperial palaces, the public baths, and other establishments, no less than 591 open reservoirs or fountains provided for the gratuitous supply of all comers. Such a system puts us to the blush with our makeshift and half-hearted economies in dealing with one of the greatest necessities of healthy life.

Hitherto we have scarcely touched upon the architectural history of Rome; but in approaching the subject of the great public baths or thermae, we are entering upon the consideration of architectural works of the first magnitude and importance. The earliest of these structures was built by Marcus Agrippa (B.C. 27), and the vestibule to it is now commonly known as the Pantheon. The enormous baths of Caracalla, completed A.D. 222, are widely known, and have been restored, conjecturally, in the beautiful drawings of the late M. Viollet-le-Duc. But the largest of all were the Thermae of Diocletian, on the Viminal, built A.D. 305, and destined to accommodate no fewer than 3,200 bathers at a time. The caldarium alone, 200 ft. by 100 ft., is now converted into a noble church. The mere scale of these buildings and the amplitude of all their proportions are, in their ruin and nakedness, impressive even to sublimity. When furnished with groves of columns of marble and jasper, the walls covered with marbles and frescoes, the niches and pedestals adorned with countless

statues of gods and heroes, they must have been indeed magnificent, and have vindicated the claim of architecture to be amongst the foremost of humanising influences.

Not less remarkable are the remains of the Forums or market-places, exchanges, courts of justice, and places of general assembly on great occasions. Entered through noble gateways, recording the victories of the Roman arms, surrounded by temples, palaces, and public buildings, and adorned with statuary, these places must also have had a large share in the healthy education of the people. To the largest and earliest of them, which has now been completely laid bare, all the roads throughout the vast empire converged. Here the senate sat, and here the public voting took place. Here Cicero delivered at least one of his immortal philippics, and here, a short time after, his severed head was affixed before an excited multitude to the rostrum from which he had addressed them.

The Forum of Trajan and the rest have yielded up their secrets to the patient skill of the explorer. The renowned fragments of the marble plan of the city, engraved by order of Septimius Severus, have been recovered and pieced together, and are now lodged in the Capitoline Museum, and the Rome of the Cæsars is better known to us than it has been to any of their descendants for a thousand years past.

We are compelled to leave unnoticed the mausolea, the amphitheatres, and the palaces of ancient Rome, all of which were of great size and almost inconceivably sumptuous in their decoration and appointments. The site of the house of Mæcenas,—dear to all scholars from its connexion with Horace,—has, by recent discoveries, been placed beyond question. It stood a little to the south of the "agger" of Servius Tullius, on the low ground between the Esquiline and Cælian Hills. One little room with an apse may still be traced: it was lighted from above, and on blank windows in the apse there are indications of the paintings with which they were adorned, and which the poet and his patron may have discussed as they reclined on silken couches, anointed and rose-crowned, sipping the ice-cold Falernian.

In all the works of the Romans we see the same virtues and the same vices,—patriotism, public spirit, zeal for the commonwealth, far-seeing prudence, and wise and capable administrative faculty, coupled with much individual hardship, cruelty, and oppression. While those mighty evidences of their genius were rising to record their authors' fame to the latest ages, the hordes who toiled to raise them sought in wholesale suicide an escape from a lot too miserable to be borne. In a very real and terrible sense, the words of a modern poet apply:—"The individual withered, and the state was more and more."

But we must stop. We thank Mr. Parker and his able collaborator for a charming book. In its author all the necessary qualifications for the task appear to have met. "He is a scholar, and a ripe and good one." He reads ancient literature for the light it may throw on ancient art and ancient archaeology, and he brings his knowledge of art to the elucidation of history. His acquaintance with architecture in all its forms is, as all the world knows, wide. A patriotic government has afforded him special facilities for prosecuting his inquiries, and has specially recognised the value of his long and arduous labours.

Having paid him our tribute of honest praise, we will proceed to exercise the immemorial prerogative of the critic and find a little fault. The book is ostensibly written for students, and is, therefore, intended to be studied, and not merely scamped through. It lacks, however, some necessary aids to study. In the first place, the map is coarse and blurred, and in places scarcely legible; it has been drawn by some one who is not familiar with topographical drawing, and is with difficulty read even by one who sees a good deal of maps of all sorts. Moreover, a second map, of modern Rome, is much required. Throughout the pages sites of ancient portions of the city are indicated by their relation to modern buildings; but every reader is not so well acquainted with the numerous public buildings as is Mr. Parker. The value of the book would be further increased by the addition of dates in the margins. Only Macanlay's schoolboy,—who is, however, dead and buried by this time,—could carry in his head the dates at which all the great Roman characters "flourished," and all the events,

great and little, in its history occurred. A very little extra type would save many a disturbing reference to other works,—works which may not always be at hand,—necessary to follow the author's narrative.

Once more, the title of the book is a misnomer. The architecture of Rome is only touched upon incidentally, as an accident connected with the history of the city, and finally Rome has an architectural history subsequent to the days of the Cæsars, and this is not touched upon at all.

The above are intended as friendly hints by attention to which in a new edition a very valuable book may be made still more valuable; and in this spirit we hope they will be received by its cultivated authors.

SHERBORNE ABBEY CHURCH.

THE visit of the Architectural Association to Sherborne last Tuesday, in the course of their annual excursion, affords as good an opportunity as could be wished for recalling some of the characteristics of a very fine and interesting building, which is more talked about than practically familiar to architects and archaeologists.

Our interest in the present case is more with the architectural character of the church than with its history. A good deal of information in regard to the archaeology of the abbey is to be found in Professor Willis's papers on Sherborne in the Journal of the Archaeological Institute, and the main points in regard both to its historical and architectural peculiarities have been brought together in the handbook compiled by a late vicar (the Rev. Edward Harston), the architectural information in which must, however, be taken *cum grano*, as it is not in all matters correct, nor, as may be expected in the work of an amateur writer on architecture, are the various points of the architecture described with correct insight into their special interest.

As it now stands, Sherborne is externally a rather lofty, not very long, church of late date, with a centre tower, and no especial development of the west front, which is the least impressive, though on some accounts not the least interesting, portion of the structure. Norman details are apparent here and there in the exterior, and more prominently in the interior, the crossing arches being Norman except the east one; but there is much more Norman influence in the interior, even as it now stands, than is apparent at a glance.

The foundation of Sherborne dates back to the Saxon period, and of the church of that period no remnant remains in the shape of the plain stones and part of the raking head of the original Saxon doorway of the north aisle, built into the later masonry of the west front, and apparently *in situ*, showing that westward at all events the Saxon church was of the same extent as the later one. Eastward it was probably much shorter. To that succeeded in due time the Norman church, of which there is now remaining the crossing piers and the portion of the tower below the roofs, the lower stage of the south-west porch (rebuilt, but with the same stones) and some minor portions. True to the almost invariable practice of the Mediæval church-builders, the next additions were to the east end of the church; church-building in the Middle Ages almost always progressing from east to west, commencing with the most sacred part of the structure. Accordingly a Lady Chapel was added in the Early English period, which has now, as such, disappeared, and the arch leading into it from the eastern aisle of the choir is blocked up; but some beautiful details have been kept in unusually good preservation from being built up in two houses which cover the remains of this chapel. About 1436 was commenced the rebuilding of the choir, on the Norman foundations, and also a new upper stage to the tower; and it was at this period that the conflagration took place which was the most notable incident in the history of the church.

The mention of this incident leads us back to the west end of the church, from the peculiar architectural distribution of which arose the quarrel which led to the deed of "arson" which has been commemorated by Leland. As in the case of many or most other Benedictine abbeys, there was provision made for celebration of divine service for the town population, in addition to the more regular and ceremonial service of the monks themselves. In

some cases this secular service was provided for in the nave or in one transept of the church itself, in some cases in a church partially attached or affiliated to the abbey church, but within separate walls. Apparently at Sherborne there was a double arrangement. A church, dedicated as "Allhallows Church," was attached to the west end of the abbey, continuing westward in a line with it, where the services of the townfolk were performed by secular clergy; but the more solemn portions of ritual to which the laity were admitted, such as baptism, were performed within the nave of the abbey itself, and we may presume by the regular clergy. Of the west-end church thus built in the fourteenth century, there remain four responds against the existing west wall of the abbey, and the lower portion of the wall of the north aisle; all in a very dilapidated condition, but sufficient to give the scale and general disposition of the building. The four responds, corresponding to the lines of the arcade and outer aisle walls of Allhallows Church, have been taken to indicate that there was a break between the abbey and the secular church, spanned only by open arches, the solid walls of the aisles stopping short of the west front of the abbey; an arrangement which would explain how the abbey could retain its central west doorway without being blocked by the altar of the church, which would have stood away from it at the western side of the passage of intercession thus formed. The history of the jealousy which existed between the townspeople and their clergy on the one hand, and the abbey clergy on the other, and the violent breach to which it led, is well known to all who are interested in ecclesiastical history. It is unnecessary to recapitulate it in detail here. The portion of the history which influenced the building, or which bears upon existing portions of it, is that the townfolk, who seem to have been cunning to invent grievances, had assumed the right to have a font of their own in the church and celebrate the rite of baptism there, on the ground that the regulars had removed the abbey font from its proper position near the west end of the nave, to a less easily accessible position, and that they had narrowed the door leading into the south aisle, so that processions could not pass with decency or effectiveness from the secular church into the abbey for baptismal celebrations. The then Bishop interested himself in the matter, and showed, at all events, his impartiality of mind by recognising all the principal grievances of the townspeople as valid, and giving orders, in January, 1436, that the font should be restored to its old position and the offending doorway to its original width. Some delay ensued before these alterations were, or could be, carried out, and affairs came to a crisis in what, a few years ago, at Oxford would have been called "a town and gown row," in the course of which the townsfolk broke into the abbey, and a butcher among them, inflamed, like Jenny Geddes, "with holy zeal," broke up or defaced the sacred font of the regular clergy; an outrage which was outdone by that of an ingenious secular priest of the All Hallows faction, who shot an arrow with some burning substance attached to it into the thatch of the choir roof, thereby burning down what was probably a temporary roof to cover in the new choir until the vault was constructed, considerably damaging the tower, and bringing down the bell-floors and all the bells. The abbot, however, had influence enough to compel the town to pay for all the repairs rendered necessary, and the vaulting in of the choir was soon after completed. Not long after this followed, in natural course, the rebuilding of the nave to render it worthy of the new choir; a rebuilding, however, which was carried out in a peculiar fashion.

As the west end now exists, it shows, built up, the doorway which stands as a silent memorandum of the strife of those turbulent times. There are the jambs and archivolt of the original wide Norman door through which the baptismal processions originally passed from the secular church to the font in the abbey, and there is also the smaller door, which the monks in the early part of the fifteenth century built within the Norman arch, thereby narrowing the entrance and causing all this umbrage to the townsmen. The rest of the front is of late date, and of no special interest, excepting a little crucifixion subject carved in an unusual position on the south side of one of the buttresses. The west window is a rather poorly-designed one, with

the faults rather than the beauties of the late style. Originally the sill was higher up than is usual, owing to the necessity of allowing room for the abutting roof of All Hallows Church. At the restoration of the nave, under the late Mr. Carpenter, it was cut lower, and a new range of lights added, excusably, perhaps, but with rather badly-executed stonework, jointed in a very peculiar fashion. The upper portion of the south-west porch is modern Norman, replacing the late Gothic work which formerly connected it in design with the late work of the nave. This porch was so dilapidated that it had to be rebuilt, when the restoration of the nave was carried out by the late Mr. Carpenter; the lower portion, as before mentioned, being built up with the original stones; and it seems to have been considered that it was best to make it a complete design while it was being rebuilt. We should hesitate to express a decided opinion on the point without having seen the work which was removed. If it were in good preservation we should have recommended retaining it. By the way, what became of the stonework thus replaced by new Norman work?

The interior of the nave, which has been very well and carefully restored under the same hands, presents a very fine and unusual effect. We see unusually solid-looking arcades in Perpendicular style, the impost marked by a very small cap to one of the roll mouldings on either face, so small and so flat in execution that it hardly strikes the eye, and seems like a mere survival of the impost. The wide hollows, which are the usual characteristic of the pier and arch mouldings of this date, are given a new and unaccustomed effectiveness by being made to assume the appearance of a succession of shallow niches by the introduction of trefoil heads at regular distances, interrupting the continuation of the moulding. The unusually massive character of the piers, for their date, arises from the fact that this is really somewhat like another William of Wykeham job, a great proportion of the masonry of the Norman piers having been retained as a core, and cased with the later stonework. The bay next the crossing is narrower than the other arches: so the fact is stated in all the published accounts we have noticed; but that is not the way to put it. The real point is not that the arch is narrower, but that the solid mass of the crossing piers is extended eastward to form a better abutment for the great arches, after the manner of the Normans, as shown still more remarkably at Tewkesbury and Pershore. This is a peculiarly Norman characteristic, though it wears now the outer mark of the Perpendicular mason; the eastern piers are correspondingly extended towards the choir. No account of the building gives the real constructive motive of this, nor did we hear it notified in any way on the occasion of the visit to the church by so many architects on Tuesday last. Above the main arcade begins the real work of the fifteenth-century builders, who did not understand the meaning of the Norman abutments, or despised it if they did, and who accordingly ignored the extension of the pier, and divided the clearstory into equal bays, quite independently of the ground-floor piers, with very odd and very unsatisfactory effect. If this were done now, it would be called both bad building and bad design; and it is both, whether it were done in the fifteenth century or the nineteenth. The vault is a very fine, rich, and effective one, of the date when the assemblage of ribs was just beginning to suggest the form of the complete fan vault, the plan of the main compartments assuming a polygonal form which only needs to be carried one step further to resolve itself into the circular line which bounds the conoidal or fan vault. The main ribs, however, run through to the ridge and continue to rise to it, instead of leaving the flat spandrel left by the fan vault in its completed form. This is a constructive advantage, and gets over a constructive difficulty, but does not alter the fact that the fan vault is the more completely logical form of vaulting design. The appearance of the vault is a little impaired by the fact that the alternate ribs stop short of the springing, thus giving an appearance of weakness where all the lines ought to be strongly knit together. The choir vault has the same defect. The place of the triforium, both in nave and choir, is occupied by a shallow wall arcading, which is flat and tame in effect, and forms the weakest portion of the design. The manner in which the bosses of the vault, and the armorial or quasi-

armorial bearings on the corbels of the vaulting shafts, have been coloured, leaving all the rest plain, is hardly to be commended; it has a rather gingerbread look, the more so as some of the colouring is very raw and crude.

The crossing is wider from north to south than from east to west; on three sides it displays Norman arches with plain square soffits, springing from caps of the ordinary character of the style, with coupled wall-shafts below: the western arch is low, a segmental arch,* the north and south ones stilted. The north transept is very similar in character to the nave; the south transept has a fine and massive low-pitched timber roof, panelled and with heavy carved bosses at the intersection of the beams. But the main point in this transept is the great south window, filled with stained glass designed by Pugin and executed by Hardman. It is a *Te Deum* window, with groups of two figures in each compartment; of course, the figures are stiff and archaic, as Pugin thought it right they should be, but there is a breadth and originality in the whole which lifts it quite above the ordinary range of stained glass design, and in point of aesthetic it is a splendid example of what stained glass should be: not a succession of pictures with numerous groups, and with "furniture" accessories, but merely ideal figures treated entirely in one plane, and interwoven with decorative scrolls containing texts. This is the kind of use to make of stained glass; and putting aside the affectation of archaism, which, of course, we do not recommend, it is a work which every one concerned in that class of design would do well to study, and endeavour to reproduce as much as possible of its excellence of conception without its defect of style in regard to drawing.

The eastern arch of the crossing presents a remarkable appearance. The idea of the builders of the present choir seems to have been to carry on the new vaulting across the crossing space, instead of merely abutting it against the eastern wall of the tower; to which end they both boldly and cleverly built an arch in the wall over the Norman arch, took out the latter, and worked the jamb and soffit of the new arch in foliated panelling to harmonise with the vaulting surfaces. The boldness of the builders in cutting this great void under the weight of the tower is certainly more remarkable than their prudence. The incident serves to remind one, however, how much variety there is in Mediaeval buildings: in spite of the universal prevalence of one style at any special date, there is hardly a church of size and importance which will not present some feature peculiar to itself, and not to be found elsewhere. The general character of the choir is the same as that of the nave, with differences only in minor features. A complete scheme of colouring has here been carried out, the lines of the ribs being marked in gold and colour, and the spaces filled in with decorative work in flat colouring. This has been executed by Messrs. Craze, and the general effect is very harmonious; it is an example (rather rare, unfortunately) of colour having been applied in an elaborated manner to a Mediaeval interior, without any crude or violent effect. This is not the way the original builders would have coloured it, certainly; but it is none the worse for that.

The choir was restored under Messrs. Slater & Carpenter, and presented a great deal more than merely architectural or artistic problems. The south wall had settled outwardly to a considerable extent, and the vaulting had consequently dropped so much that many of the voussoirs were only hanging together by their upper edges; and a rude warning had been given some years before the actual restoration by the sudden fall of a considerable portion of one of the ribs. The wall has been straightened, and the restoration of the vaulting to a state of security has been successfully accomplished. The state of the remains of the Lady Chapel is, to our thinking, one of considerable difficulty. It seems a pity that they should be left blocked up in the walls and cupboards of a house (though, as before observed, they have remarkably well preserved there); but we can hardly say that we think it worth while to rebuild the Lady Chapel, working in the present remains. What is left might be cleared and protected, so as to preserve it and at the same time render it easier of access.

* It is very slightly pointed, but we presume this has been done in the course of wedging up and repairing these arches during the restoration. As a flat, segmental arch, it would look a very dangerous one for the weight that is on it.

One vaulted compartment (quadrupartite Early English work) at present spans the ceiling of a bedroom, where it has been duly whitewashed with the rest. The finest bit is a singularly beautiful capital, as sharp and clean as if now, which is to be discerned by the light of a candle held in a dark recess on the stairs; and very curious and interesting this relic of Mediaeval art looks when thus seen by artificial light amid its incongruous surroundings. Adjoining the north aisle of the choir is an Early English chapel, at present used as the choir vestry, formed by building two walls against the transept and choir walls so as to enclose a space; so that we have here an apartment which is Early English on two sides and Norman on the other two, the south side showing among other things some intersecting round arches, forming part of the external architectural design of the north. To be noticed about the choir is the fine and rich tone which the stone has derived from the effects of the fire, which are still quite visible; indeed, we heard it proposed that conflagrations might be ordained for the purpose of obtaining the same tone in other buildings; a proposition akin to the practice of Elias's Chinese, who, in their early discoveries in cookery, set fire to their houses to obtain roast pig. The experiment must be practised on good, hard, close-grained stone, however, to meet with success.

The tower at Sherborne has gone through great perils. The crossing arches had settled so that the masonry courses cut downwards from the angles to the centre, and are still in that position; and the effect of the bells, the heaviest swinging peal in England, of course did not mend matters. In 1830 measures for its security were taken by a Mr. Percy, who is respectfully spoken of in the local guide-book aforesaid, for having spoiled the Norman arcade above the tower arches by bricking up a good deal of it, but who, nevertheless, probably saved the tower by the system of iron ties which he inserted, and by the introduction of two timber trusses under the bell-frame, to take its weight off the two weaker (east and west) walls, and throw it on to the other two. This was the more necessary as the east wall has a large crack in it. The upper late portion of the tower is much thinner than the substructure, being set back 1 ft. 6 in., resting, it is true, chiefly on the arcade, but getting rid of a great deal of weight which might, probably would, have brought the whole down if it had been carried up full thickness. The main external line is carried up, to the eye, by buttresses. The upper portion of the tower looks, however, somewhat ruinous, on the east side especially, where the disintegrating effect of the fire was added to that of settlement. The peal of bells, which we had the opportunity of seeing in full swing, looks a formidable moving load for a tower in that state (the largest bell weighs nearly three tons), but the vibration imparted to the walls is much less than might have been expected, and there seems no reason to suppose that the ringing is attended with any danger to the tower, for a long time to come at any rate. The bells have been altered in position; they all swung in one plane formerly, and the effect on the tower of the two largest, swinging simultaneously in opposite directions, is said to have been rather formidable. The tenor bell is now swung at right angles to the others. Whether this ought theoretically to lessen the shaking effect of the heavier bells is a scientific question still open to dispute; but it appears to have practically that effect in this case. The sight of this large and closely-packed mass of bells and bell-gear, metal and timber, hurrying round and back again, the wild clang of the treble bells, and the thundering stroke of the tenor each time it comes round, heard and seen at close quarters, produce an effect on eye and ear to be remembered.

Of the conventional buildings little is left, but that little includes two very fine specimens of timber roofing, on a small scale, but of very effective and solid design. Illustrations of these are to be found in the *Journal of the Archaeological Institute*, which give the design, but produce an appearance of greater massiveness than is the fact, or than would have been in any way necessary. These and the few other portions of the old buildings are being worked into the new King's School buildings, which have been in progress for some time, under Messrs. Slater & Carpenter, and their present representatives, Messrs. Carpenter & Ingelow. They are all

modern Gothic, for the most part admirable in style, and keeping up the architectural traditions of the site in a very worthy manner, and on another occasion would merit more detailed description and illustration; but the Abbey Church has exhausted our limits for the present.

ON THINGS CURABLE.

Not in vain will the alarm have sounded from Egypt and Asia, and sped through what we are pleased to call the civilised world, if the dread fear of cholera will have aroused the Governments of all nations from their somewhat indolent way of grappling with the questions concerning the sanitary conditions of cities to bolder measures. Though that disease may happily not reappear here, hundreds die yearly from typhoid and preventable diseases. Mr. George Buchanan, medical officer to the Local Government Board, says, in the very lucid and sensible circular which the authorities have issued to the local sanitary authorities on the precautions to be taken against the infection:—

"It may fairly be believed that in considerable parts of the country conditions favourable to the spread of cholera are now less abundant than in any former times, and in this connexion the gratifying fact deserves to be recorded that during recent years enteric fever, the disease which in its method of extension bears the nearest resemblance to cholera,—has continuously and notably declined in England. But it is certain that in many places such conditions are present as would if cholera were introduced, assist in the spread of that disease. It is to be hoped that in all these cases the local sanitary authorities will at once do everything that can be done to put their districts into a wholesome state; measures of cleanliness, taken beforehand, are of far more importance for the protection of a district against cholera than removal or disinfection of filth after the disease has actually made its appearance.

It is important for the public very distinctly to remember that pains taken and costs incurred for the purposes to which this memorandum refers cannot in any event be regarded as wasted. The local conditions which would enable cholera, if imported, to spread its infection in this country are conditions which, day by day, in the absence of cholera, create and spread other diseases: diseases which, as being never absent from the country, are in the long run far more destructive than cholera, and the sanitary improvements which would justify a sense of security against any apprehended importation of cholera would, to their extent, though cholera should never reappear in England, give amply remunerative results in the prevention of those other diseases."

If then there be places still in so unsanitary a state, how is it that with the special powers conferred upon the vestries and district boards with regard to the dwellings of the working classes by the Artisans and Labourers' Dwellings Act 1868 to 1882, and which would seem to provide for every contingency, the Act appears to still remain in some cases a dead letter? Who is it that has the power to enforce the necessary measures being taken for so cleansing this city that should the disease approach our shores it will take no hold? In Paris Dr. Faurel, in a report he made in July to the Academy of Sciences and also to the Academy of Medicine, laid the whole blame of its appearance on India and on English negligence. And however absurd or unjust such an accusation must be, it behoves us to prove we are not negligent. In the House of Commons, July 24th, when questioned as to the distribution to every household in the kingdom of the instructions as to the necessary measures to be taken to prevent the outbreak of cholera, the Right Hon. Sir Charles Dilke, President of the Local Government Board, stated his department could not issue such instructions, as it could not supersede the action of the local authorities. If, however, the danger should become imminent he had no doubt such distribution would be undertaken by the local authorities. The authority of the parish of Kensington had already done it.

Are we to wait for the danger to become imminent? There are in this splendid city, in all our great towns, plague spots, Stygian styes left as uncleansed and uncared for as in the Middle Ages, and which are like Lazarets at the gates of the Dives of this world. Why in each district, and for the contemplation of the vestry-

men, is not a map of London hung up on the vestry walls, and on it painted, in some vivid colour, the spots under their immediate jurisdiction most needing their supervision and inspection? And let it be incumbent on their position that once a fortnight one of their body inspect personally these different places. The Government can surely afford, out of the rates and taxes we pay, lime-wash and good water.

Then take such an apparently simple yet such an important matter as the clearing of dust-bins. As we have the benefit of knowing one or two of the most earnest sanitary reformers of the day, we are naturally not merely enthusiastic but practical, so every Friday the dustmen clear the bin. Placid and calm, with a feeling that "all's well," I step on to the balcony to enjoy the moonlight night, to murmur "Com e genti," when, oh! ye gods, from neighbouring dust-bins uncleansed, arise odours that turn the dulcet words on my lips to the parody a rising young aviator tells me he sings as he flies at night past Covent Garden-market,

"Oh, ye stinks of London,
Ye cruel stinks of London!"

That excellent little pamphlet, the *Pall Mall "Extra,"* tells us the remedy is in our own hands,—to lodge a complaint at the vestry against our neighbours, and have them indicted as a nuisance whenever such a state of things occurs. Have I the courage to make myself odious? Yes, I have, once. But have I the courage to do so every Friday? No, no, no. To run the gamut of the whole street? No, no, no. But there should be no necessity to do so. This is also a thing curable. We will suppose an order be issued that the dust-bin in every street be cleansed every week: say they take our street (A) every Friday, and clear every house in the same street on that day. If the owner refuse to have his bin cleared, let him be fined. Let another entire street, say B, be cleared on Saturday, another on Monday, and so on. By this means once in every week every house in London would be cleared, and instead of dust-heaps and mounds being allowed to accumulate to enrich some golden dustman, why should there not in various parts of London, in open spaces, a field be left walled in and paved with concrete, where all refuse matter should be shunted and cremated? Much stress is laid, also, on the cleanliness of cisterns. This also is a question that should not be left to the ignorance or indolence of the proprietors of a house. Some time ago I dined at a very fine house, and had a very splendid dinner: the question turned on this very subject. "Cistern," said the lady of the house, smilingly; "must cisterns be cleaned? I've never had mine done." "How long have you been here?" said a gentleman (who had been quaffing the harmless beverage pretty freely) in a rather appalled tone. "Three years," was the reply. He turned somewhat pale. I merely beckoned to the butler, and, putting down my glass of water untested, murmured "champagne," to which beverage I remained faithful at that dinner-party. Were an inspector to call at every house once in six weeks with a book, in which every household had to inscribe when he had last had his cistern cleaned, this would be another state of things made curable.

The foe so dreaded comes, when it comes, swift and terrible; it loves neglect and dirt, which forge for it the weapons with which to strike from those abodes of misery into the very strongholds of the rich, rousing them from their dreams of security. It may not, please God, approach these shores. Should it, let it find our cities so swept and garnished, our crooked places made so straight, that it will depart un-harming from our land.

But it is not merely a possibility of evil that should rouse us when, as Mr. Buchanan says, an ever-present danger is here, and one that can be vanquished if all would help, and no one is too humble, no one is too insignificant (and it is not for the clever and intellectual, but for the poorest to whom, by some happy chance, this paper may filter down, that I write), too indutiful in the vast scheme of creation, not to do his or her part. It is a duty (too often neglected on the part of ladies of a high social rank) to see personally to the hygiene of their home,—that it is well-ordered, clean, not merely venerated over with refinement, as it is the duty of a woman in humbler life to make her home to her husband a counter-attraction to the gin-palace by a cleanly room, well-cooked food, a trim person, and a quiet tongue. Dirt and ignorance are the legacies of ages. Are we to

pass away adopting the somewhat indolent Italian motto, "Do not disturb Camarina?" They think, possibly, if the mud is left undisturbed at the bottom of the still lake no miasmas will arise. But we know that to drain the mud and flit away, to leave the lakes, the Camarinas of this world, very pools of Bethesda,—things of beauty, joys for ever,—is, or ought to be, the work of the nineteenth century; the preaching of things curable will bear fruit; a happier Aurora is breaking for the coming ages, and even now we could exclaim, with a slight alteration of the poet,—

O God,
What we might make of thy fair world
Did each but do his best and highest here.

Notwithstanding the onslaught of Doctor Faurel, London, with all its faults, is supposed to be the healthiest city known. What better reply to his philippics than to draw his attention to those canker-spots eating into the heart of lovely, brilliant Paris? It is not from Egypt or from Asia alone the Parisians dread pestilence when it is seething in very hot-beds of things curable. An excellent French writer, M. Robiquet, has not faltered in showing the necessity of ameliorating this state of things. If we belong, he says, to those who think it is a duty of the Government to quell, with all the greatest energy, the criminal attempts of all those who are incorrigible enemies to social order, we, at the same time, must admit that no Government has the right to view with indifference the conditions of existence of the poorest portion of the population. The question of the misery of the masses is too vast a one to be settled in a few lines. It requires treating in detail, and, for the moment, we could only enter on the question of what sort of places are inhabited not only by the indigent of the city, but by the numerous workmen, not only Frenchmen but foreigners, who are drawn to the capital by the desire to make money. The Census of 1881 proved Paris counted, amongst her inhabitants, 677,253 workmen and artisans; 255,604 shopmen and clerks; and every year foreigners flock in greater numbers to Paris. The indigent population of Paris mounted in 1872, when it was estimated at 19,000, to 123,735. Let us see how this great army of poor are lodged, and at points tend to agglomerate. It might be thought the piercing of large and magnificent thoroughfares had given an ever-increasing salubrity, and, of course, in those parts of the town where large Boulevards, fine trees, and plenty of water abound, they have. But the workmen who energetically asked for work, and had it to the heart's desire, have in erecting palaces destroyed their own homes, driven themselves and their families from the centre of the town to the extreme outskirts, and over-crowded the already crowded *arrondissements*, such as La Gare, Saint Lambert, Gare Charonne. Such agglomeration becomes insalubrious, and according to Doctors Brouardel and Muller, the number of victims to epidemics of typhoid fever and diphtheria have more than doubled since ten years ago, and the augmentation and spread of diseases are noticeable in all those *arrondissements* where the overcrowding in poor dwellings is taking place,—an overcrowding due not only to the wants of the poor, but to the rapacity of the landlords: so apartments are let and sub-let, divided and sub-divided *ad infinitum*, and entire families are crowded into a single room, icy in winter, torrid in summer, and which in many cases only receives daylight from a festid staircase or *courrette* saturated with miasma. The latest returns show that there exist in Paris 3,000 lodgings for the poor, which have neither stoves nor chimneys, and 5,000 lighted only by a *tabatière*, 1,049 families having four beds in one room. There is also a striking want of equilibrium in the progression of the number of dwellings for the poor to live in, and the population crowded into them in the proportion, in fact, of 80 per cent. to 20 per cent.

These statistics of M. Villard to the municipal council prove it is only possible to house the increasing number of poor by decreasing the accommodation at present afforded them. This deplorable situation is not peculiar to Paris; in 1876 in Berlin a tenth of the population lived and perhaps still live in cellars without light, without air, frequently inundated by the overflow of water and the reflux of neighbouring drains. In Vienna, also, an onslaught has been made on England, charging her with a neglect of precautions, when in their very midst they have a crying scandal to any Government, to

any municipality, and that the Viennese themselves call the "Blot of the Kaiserstadt." Through the heart of the town flows a filthy stream of putrid matter past some of the finest palaces and boulevards in Europe; it is called the Wien-fluss, and has for years roused the indignation of the population, and only recently the press have demanded it should be covered over and its course changed. But to return to France. The law of 1850 on sanitary conditions of insalubrious dwellings is never carried out. In Paris and Lille, in large towns such as Marseilles, Lyons, Bordeaux, and Nantes, the Commission for Insalubrious Dwellings performs its functions in the most intermittent way, or does not exist at all, and even in Paris, notwithstanding the very real activity of the Commission, all competent men acknowledge that the law of April, 1850, is a perfectly illusory application. The proprietors, protected by administrative injunctions, know how to profit by all the delays and means of resistance that the law itself has naively taken pains to put at their disposal; thus there exist in the heart of brilliant Paris groups of so-called dwellings which the very dogs brought up in a good house would disdain as a kennel, and which are very hot-beds of infection. Accursed spots there are like the Cité Jeanne d'Arc, which consists of a colossal building of five stories high, containing 1,200 lodgings and 2,486 lodgers. A terrible epidemic of small-pox denuded this place in 1879. The reputation of the Cité Doré is not much better; and Dr. Bournville cited this "ante-chamber of the cemetery" to the Health Committee. One could multiply details about things which are shames to modern Paris. The Cité Grand Rue des Meaux, where 1,700 individuals inhabit a long building in ruins; the Cité Philippe, where seventy rag-pickers burrow like rabbits; the *clos* of the Rue Secretan, a stinking marsh, which serves as an *asile* to 300 people; the Cité de Biffins, Rue des Gourmais, another haunt of the rag-pickers, in rooms or cellars; and in the Rue des Boulangers, a house where 210 Italians and street musicians herd in a state of indescribable dirt. But why dwell on such miseries? Let the remedies be found. What is the use of spending millions on the construction of underground improvement, when above it ignoble and filthy spots are left open to the skies. Things, alas! must be spoken of as they are; and these are spots that must be done away with entirely.

Many proprietors refuse to let to workmen who have large families, and proper dwellings are too dear for them. Many schemes to meet this great and serious question are now under consideration by the Government. The *Builder* gave some weeks ago a long and exhaustive article on the subject, detailing them in *extenso*, and the Commission who have been over here lately to study our system of sewers have also under consideration the ingenious combinations of the Building Societies, the Industrial Dwellings Company, &c., who have constructed many thousands of workmen's dwellings.

Thus, we may hope, the example of these two united countries, the first in civilisation, will induce other nations, even Indians and the heathen Chinese, to join in this crusade of cleanliness, and the preaching of things curable. The very countries that attack us are in such dire need of precautions that they would do well to have Mr. Buchanan's excellent circular translated and disseminated; it ought not to need a panic (the thing indeed most to be avoided, and it is by using wise precautions and creating a feeling of security such an evil is to be avoided) to rouse countries and municipalities to the doing of their duty, and Continental cities would do better to stamp out the far worse evils than ours that exist in their midst than to blame us.

CARLEON.

Proposed New Theatre at the Crystal Palace.—At the half-yearly meeting of the shareholders of the Crystal Palace Company, the Chairman (Mr. McGeorge) moved the adoption of the report, which stated that continued experience in regard to the cost and difficulty of insurance proved to the Board the desirability of removing the theatre from the building, and acting in accordance with the resolution of the general meeting in February, 1882, the directors had determined to advertise for designs and plans with a view to obtain an estimate of the cost of a theatre, to be erected outside the Palace, but in the company's grounds, should it be found advisable for economical and other reasons,

PROFESSIONAL PORTRAITS. No. 1.

"I cannot but remember such things were as were most queer to me."—SHAKESPEARE (adapted).

PORTRAIT-PAINTING is, just now, much in fashion, and every artist in turn tries his hand thereat. I claim to be, in some sort, an artist. Let me, then, be in the fashion, and attempt a portrait of "Our Firm," as it existed not very long ago. I have had the subject of my sketch before me these many years, and in the best of all attitudes, that of an unconscious sitter; I have watched our firm attentively in all its moods; I know every lineament well, and could lay them in from memory, and I have studied from the originals those little "bits of truth," which put life into every picture.

Our firm comprises (I shall speak in the present) three members,—and this I take to be the golden number. By a suitable division of labour, and a prudent concurrence of effort, the greatest good of the greatest number may be obtained by this triple arrangement. No one exactly knows how our firm has grown to its present state, or what chances brought (and kept) together three persons of such widely varying character and divergent tastes. The senior member carries us back to the very early years of the present century. He belongs to the old school, and is every inch a gentleman: tall, slight of build, erect, white-haired, punctilious in dress and demeanour; he is the beau ideal of a professional man. He wears a white cravat, a close-buttoned antout coat, and the neatest and shiniest of little Wellington boots. His bearing is full of dignity, tempered by a gracious suavity; he is, in short, a good specimen of a type which is, alas! fast dying out.

He arrives with mechanical regularity at eleven o'clock, and passing with airy tread through the outer office in which we sit, never fails to greet us with a courtly bow and a cheery "good morning, gentlemen." He repeats the formula,—varied to suit the occasion,—when the office-boy is the sole occupant of the apartment.

He has a room to himself, furnished with good old dark mahogany furniture; a Turkey carpet (they were costly luxuries when it was bought) covers the floor. The walls are hung with faint, ghost-like drawings,—architectural studies, when the Greek taste, and what may be called the "Compo-Tudor" taste, prevailed, drawn in the finest of lines, and washed in with the hottest of sepias. The delicate distances fade into imperceptibility, and the foregrounds are peopled with groups of figures, strangely clad, wandering over a site preternaturally rugged and broken, and admiring the surprising beauties of the architecture.

It is not known how our senior member occupies the circling hours. He is believed to have built largely for the aristocracy in his youth. Now and then he will have out some old plans, and patiently re-arrange some minor accessories of the building they represent; and then he will carry off the result into the country, where he will linger for weeks round the scenes of his early exploits, a welcome guest, no doubt, wherever he goes. One morning he will re-appear with his courtly bow and his accustomed salutation, to disappear behind the mahogany door of his private room, and resume his mysterious round of duties. He goes daily to his club, about two o'clock, and does not hurry back; but returning when the afternoon is well spent, he is "left sitting" when we close our day's work. It is whispered that he "manages" a great town estate for a wealthy friend, and that the emoluments arising thence are an important item in the revenue of the firm. In what this management consists we cannot guess. He never requires our assistance,—occasionally he will ask for a cake of hard colour, or a scrap of tracing-paper. He writes letters of which he never requires copies, and he posts them himself. The only service he demands of the office-boy is that his writing-table shall be in perfect order when he arrives; his gold pen, pencil, two-foot rule, &c., spread out in order due on a clean piece of white blotting-paper. In politics he is a Tory of a pronounced and uncompromising stamp, and in religion he is a moderate High Churchman. He reads the *Times*, the *Morning Post*, and the *Guardian*. He occupied the position in which we now find him when the eldest servant of the firm entered the office, and he bids fair to outlast us all. He was never known to offend, or even to momentarily annoy, any

one, and he has the hearty respect and goodwill of all.

The second member of our firm is a very different person. He bursts upon us at all hours, and always at high-pressure speed. He is fat and florid; wears loose light-brown overcoats; is partial to white waistcoats, which his figure gives him peculiar opportunities of displaying, and he does not despise a white hat. His gold rings, chains, eye-glasses, and jingling trinkets, are a standing aggravation to the younger clerks. He bustles through the outer office tearing open his letters, without a word for anyone. His bell is ringing all day long, and directions are hurled at us thick and threefold through his half-open door.

"St. George! a stirring life they lead
That have such neighbours near."

He is the business man of the firm, and looks it,—that is, he looks like a clerk of works who has come into a thousand a year, and has not yet learnt how to "dress the part." Of course he never dares. It has been positively asserted that he never did draw anything. He never writes a specification, nor, indeed, anything but letters, which he writes well, and at an amazing rate,—and cheques. He is punctual in his payments, and for this virtue many things are forgiven him. He runs all over the three kingdoms bringing home budgets of work,—much of which is wrested from unwilling clients, and never really comes to anything. He is knowing in all financial matters, and has his hand in a good many schemes. He is a Liberal in politics, and in religion a Nonconformist, and in everything he is impatient of contradiction or argument. His room is not furnished like that of his senior. Fractured iron grinders, bricks, concrete-slabs, dusty old models of bridges, cubes of stone and marble, what not?—these litter his den and jostle on his crowded shelves. His table is strewn with papers in the wildest disorder, the newer crop overlying the accumulation of years,—and yet he is able to pounce upon any document he may want,—striking it with the swift precision of a falcon. He has a loud voice, and a hearty, infectious laugh,—makes a good chairman at a business meeting or a dinner,—has a store of anecdotes of all sorts. He was never known to go out of his way to be agreeable to any one from whom he had nothing to expect, but on the other hand none of his employees can accuse him of having done them a bad turn, and every one is ready to grant that if he is a little rough his heart is in the right place. He knows all about ancient lights and party-walls, and the provisions of the Building and Local Management Acts are A B C to him. His strong point is in managing refractory builders, and for them he has no mercy. He regards himself as holding a brief for his client, and he shrinks from nothing that will further his client's interest, for which in turn he makes that client pay. The stoutest builders quail before the storm of expostulation, invective, banter, with which he overwhelms them,—of biting sarcasm and loud, irritating, exasperating laughter. They retire discomfited and crestfallen, uttering in their retreat remarks intended for our ears,—terse, but not complimentary; Partisan shots fired with fierce intent, but which fall blunted against the closed door behind which our second member,—who has effaced the scene from his mind,—is already deep in another subject.

The architectural work proper is done by the junior member of the firm. He is a young man,—a comparatively recent importation, having been brought in on account of his artistic gifts and family connexions. He is an exponent of "culchaw" in its latest phase, and by the help of some real ability, a certain languid grace, and a fluent tongue, he contrives to pass for a much cleverer man than he really is.

He wears a bronze-brown velvet jacket without a collar, and his necktie is invariably a knot of strange pleasant colour. His room is decorated with photographs, original sketches for pictures by the lesser men of the modern Renaissance school; bits of carving, stained glass, Moorish tiles, and pottery and faience of all kinds. He is a ready and versatile designer and draughtsman, and does understand his part of the business. He has travelled all over Europe, and has seen all that should,—and much that should not,—be seen, and he has read largely, especially in certain forms of literature. He is well aware of his own value, and only unbends with us to poke fun at his absent partners, and air his pleasanties on

the old-fogeyism of the one, and the brusque vulgarity of the other. He is at no pains to conceal from us his complete contempt for both. In their presence he is to each of them studiously polite and bland. His forte is in church work, and he is really learned in all matters of Medieval ecclesiology and ritual, and an expert in iconography, archaeology, hagiology, and such like recondite matters. He has no politics to speak of, and in regard to things of higher import avows himself an agnostic.

He completes this strange company,—

"Where under in variety we see,
And where, tho' each one differs, all agree."

The members of our firm move in separate spheres, and never collide. The energetic man gets the work and "sees it through"; the artist gives it a suitable form and expression, and whatever he does passes unquestioned, so strong is the faith in him; and the oldest member throws over the whole an air of unimpeachable respectability. He will die some day, and the spell will be broken. The artist and the practical man will not work together, and can neither of them work successfully alone, and "our firm," like the "wonderful one-hoss shay," in Oliver Wendell Holmes's delightful ballad, "will go to pieces all at once, just as bubbles do when they burst."

THE LAST OF OLD CAREY STREET.

The poetry and romance of Carey-street, Lincoln's Inn-fields, is passing away. Seven years ago Mr. John Diprose wrote, "Carey-street is in a transient state, only a few houses and inhabitants are left," and when the old inn once known as the "League and Seven Stars," so named from the Seven United Provinces, now abbreviated into the "Seven Stars," shall become the prey of the house-breaker, the street will only be suggestive of law and lawyers and their prosaic surroundings.

Travel back somewhat farther than two hundred years and we behold Samuel Pepys, F.R.S., passing up Clement's Lane, turning off into Yates's-court, and "Then to Cary House, a house now of entertainment next my Lady Ashly's, where I have heretofore heard Common Prayer in the time of Dr. Mossum," Dean of Christ Church, Dublin, and afterwards Bishop of Derry. We also find the chatty Secretary to the Admiralty "at my Lord Ashly's by invitation, to dine there." Another pretty thing was my Lady Ashly's speaking of the bad qualities of glass-coaches; among others the flying open of the doors upon any great shake: but another was that my Lady Peterborough being in her glass-coach, with the glass up, and seeing a lady pass by in a glass coach whom she would salute, the glass was so clear that she thought it had been open, and so ran her head through the glass!" But there were other attractions in the neighbourhood for Samuel Pepys. He had but to turn round at the corner of the street, named after an ancestor of Sir George Carey, who at one time filled several high offices of State, to pass to the Duke's Playhouse, and see the never-to-be-forgotten performance of the play of "Macbeth." "The king and court there; and we sat just under them and my Lady Castlemaine, and close to a woman that comes into the pit, a kind of loose gossip, that pretends to be like her, and is so, something. And my wife, by my troth, appeared, I think as pretty as any of them; I never thought so much before. The king and Duke of York minded me, and smiled upon me, at the handsome woman near me: but it vexed me to see Moll Davis" (an actress and afterwards a mistress of the king, "who was dancing in a shepherd's clothes did please us mightily"), "in the box over the king's and my Lady Castlemaine's, look down upon the king, and he up to her; and so did my wife; but when she saw Moll Davis, she looked like fire" (and the time was coming when she would speak of and to Moll in words of burning flame), "which troubled me." This favourite theatre of the diarist was originally a tennis-court, and was converted into a theatre by Sir William Davenant, and opened in the spring of 1662, "having new scenes and decorations, being the first that were e're introduced in England." "The Tragedy of Macbeth," as witnessed by Pepys, altered by Sir William Davenant, "being dressed in all its finery, as new cloaths, new scenes, machines, as flying for the witches with all the singing and dancing in it: the first composed

by Mr. Lock, the other by Mr. Channell and Mr. Joseph Priest; it being all excellently performed, being in the nature of an opera";—that is, Shakespeare as diluted by Davenant,—so sayeth John Downes, in his "Roscius Anglicanus," written 180 years ago.

In Carey-street stood the "Grange Tavern," where now stands King's College Hospital, with its old picturesque yard and its gardens, the frequent resort of the players at the Duke's Theatre. Davenant, in his play, "The Playhouse to be Let," says, and in the quotation it will be seen that the phrase "special trains" was long anterior to railways:—

"HOUSEKEEPER. The post has a special train behind him; though they look lean and empty, yet they seem very full of invention."

PLAYER. Let him enter, and send his train to our house-inn, the Grange."

In the gardens of the "Grange" Pepys may have chewed a quid of tobacco and drunk a glass of "buttered ale" to toast his friend, William Cartwright, one of Tom Killigrew's company, who, dying, left his books, pictures, and furniture to Dulwich College. "To the King's playhouse, and there saw 'Henry the Fourth,'" and, contrary to expectation, was pleased in nothing more than in Cartwright's speaking of Falstaff's speech about "What is honour." The house full of Parliament men, it being holiday with them: and it was observable how a gentleman of good habit, just sitting before us, eating of some fruit in the midst of the play, did drop down as dead, being choked; but with much ado Orange Moll did thrust her finger down his throat, and brought him to life again." A great favourite among the aristocracy she seems to have been, for Pepys records that on the 23rd of August, 1666, he "Found Sir W. Pen talking to Orange Moll of the King's House." "Orange Nell" had by this time been promoted from the Coal-yard, Drury-lane, to Drury-lane Theatre. "Nelly, a most pretty woman, who acted the part of *Celia* to-day very fine, and did it pretty well. I kissed her, and so did my wife; and a mighty pretty soul she is"; but long before this Pepys had been love-stricken at the corner of Carey-street. He had seen her previously in the bloom of her girlhood in his morning walks through the hedges and green banks of Drury-lane. "To a play at the Duke's of my Lord Orrery's, called 'Mustapha,' which, being not good, made Betterton's part and *Ianthé's* but ordinary too. All the pleasure of the play was, the king and my Lady Castlemaine were there; and pretty witty Nell Gwynn, at [of] the King's House, and the younger Marshall which pleased me mightily." "Mrs. Pierce tells me that the two Marshalls,"—Nan and Beck, and Pepys was mightily pleased with both,—"are Stephen Marshalls, the great Presbyterian's daughters; and that Nelly [Gwynn] and Beck Marshall falling out the other day, the latter called the other my Lord Buckhurst's mistress. Nell answered her" in language that savoured strongly of the Coal-yard, the place of her birth, and at the same time had the best of it. One more reference to the Duke's Theatre, which was soon to become a tennis-court again. On the 9th of April, 1668, Pepys writes, "I up and down to the Duke of York's playhouse, there to see, which I did, Sir W. Davenant's corpse carried out towards Westminster, there to be buried. Here were many coaches and six horses, and many hacknies, that made it look, methought, as if it were the burial of a poor poet."

On the 30th of June, 1662, Pepys introduces us to a notable lady whose memory lingers in Carey-street and neighbourhood. "Told my Lady Carteret how my Lady Fanshawe is fallen out with her for only speaking in behalf of the French, which my Lady wonders at, they having been formerly like sisters." Lady Fanshawe, in her "Memoirs," writes:—"Upon New Year's Day (1656) my husband fell very sick, and drew his upper lip awry, upon which, that day, we came to London, into Chancery-lane, but not to my cousin Young's, but to a house we took of Sir George Carey for a year." Lady Fanshawe's second son, Henry, was born in Portugal-row, a nameless street in Stow's days, so named in consequence of her husband, Sir Richard Fanshawe, having been ambassador to that country.

There was a time when the Grange Inn was a grange for the storing of the crops that grow in

* The searcher for the remains of Romantic London will travel Drury-lane in vain to discover this yard. Its name has been altered to Goldsmith-street. Why? We gave a view of it long ago.

the fields now covered by Lincoln's Inn and its square, and extended beyond the "foul and miry" pathway which, in after time, was called Chancery-lane, and hence, perhaps, the name given to the tavern, the Plough, now in process of demolition, which stood closely adjoining to the Grange Inn. The following is from *Notes and Queries*:—"Willis, writing from Dunstable, April 27th, 1748, Wednesday night, to John Duncombe, esq., att His Seat at Barley End, near Ivinghoe, Buckingham County," says, "If you will send me any papers to London at the Plough, Inne, Carey-street, &c." Willis was the author of "A Survey of English Cathedrals," and many works on architecture, antiquities, and topography. The Plough at one time had for its landlord John Gully, the prize-fighter, the conqueror of Cribb and champion of England, and representative of Pontefract in Parliament. Seymour, in his "History of the Parishes of London and Westminster" (1734) writes:—"St. Clement's-lane comes out of Butcher's-row, and fronts Clement's Inn. Then, passing by St. Clement's Inn and Boswell-court, it runneth northwards into Clare Market, and in its passage takes in St. Clement's pump or well, of note for its excellent spring-water. A little above this is Plough-alley, which, with three turnings,"—as may be seen in Roque's "Plan of London" (1726),—"goes into a street by the Plough stables, which fronts the playhouse by Lincoln's Inn Grange, in Little Lincoln's Inn Fields," passing close to the lodging of Hollar, the engraver, who writes to Aubrey, the antiquary, in 1661,—"Myself do lodge without St. Clement's Inn back door as soon as you come up the steps and out of that house and door on your left hand two pair of stairs, into a little passage right before you."—Clement's passage, leading to Clare Market, Butcher's-row, which extended along the north side of Clement Danes' church, has passed away within the memory of the oldest inhabitant; the site of Boswell-court is covered by the High Courts of Justice; Clare Market, which was once, but is not now, a market, and Clare-street, in which the market is held, are doomed; Clement's-lane, the "Bond-street" of London in the days of the Stuarts, is vanishing rapidly, and not too soon; Yeates's or Yates's court, which led from Carey-street to Clement's Inn Gardens, is in process of demolition; the watch-house and stocks which stood at the western angle of Carey-street were removed some sixty years ago, and the street in which at one time only one lawyer dwelt, Sir William Blackstone, is now given over to his successors in the profession which he so greatly helped to honour and exalt.

THE WORKING OF THE PUBLIC HEALTH ACT.

It is a gratifying sign of the progress in sanitary improvement to find an example of the real efficiency of the working of the Public Health Act, 1875; and it is clear from this particular instance that if Local Authorities will vigorously enforce this statute the sanitary condition of our towns will be more rapidly improved than we could have expected. The example which we refer to is to be found in the current number of the *Law Reports*, Queen's Bench Division, vol. xi., p. 191, in the case of *ex parte Saunders*. The case itself really requires very little comment, for it stands out plain and clear. The 94th section of the Public Health Act enacts that the Local Authority shall, if satisfied of the existence of a nuisance, serve a notice on the person by whose act, default, or sufferance it arises or continues, and it then proceeds to deal with cases where the person causing the nuisance cannot be served, and so forth. Then the following section states that, if the person on whom a notice to abate a nuisance has been served fails to comply with the requisitions within the time specified, or if the nuisance, though abated, is likely to recur, a summons may be issued against the person who was served with the notice. Next, the 96th section enacts that the court may make an order on this person requiring him to comply with the order to abate the nuisance or to do any works necessary for this purpose under penalty.

In the present instance an order under the 94th section was made on certain persons in the town of Taunton, and by it they were directed to remove a closet from the centre of the house and place it near an outer wall where there might be efficient ventilation, and also to

fix the soil-pipe outside the walls and carry it up above the eaves and cap it with a ventilating cowl. The notice further specified that the drains were to be well examined, if necessary relaid with stoneware pipes, and the joints made with cement covered with clay. The flushing arrangements were also to be re-arranged, and a waste-water preventer placed where necessary.

We give these details somewhat fully, because they appear to be an example of a thorough carrying out of the Public Health Act, and not a mere formal compliance with its provisions, and to show a praiseworthy determination on the part of the Local Authority at Taunton to take care of the health of the community, which might be well followed at other places. The persons served complied with some of the requisitions, but did not remove the closet, and a complaint was accordingly lodged against them under the 95th section, and the justices made an order that, as the nuisance was likely to recur, the water-closet, soil-pipe, and drains should be removed within fourteen days from the centre of the house, and that the other terms of the notice should be complied with.

Here again the justices appear to have acted with a vigour, common sense, and promptitude, which, we fear, would not be found everywhere in England. It was not very wonderful that the case was appealed, and, on the whole, it is satisfactory that this course was taken, for it has given both more publicity to the case, and has been the cause of an authoritative decision of the High Court of Justice, who upheld the decision of the justices. "I should have thought," said Mr. Justice Cave, in his judgment, "that, upon the terms of the section, it was as clear as could be that they, the justices, had jurisdiction to make the order." Again, Mr. Justice Smith concludes his judgment by saying, "It seems to me that this order is clearly within the terms of the Act." It is true that in some respects this decision is a little difficult to reconcile with that of *ex parte Whitmarsh*, decided in 1881, in which the justices ordered a person to fill up an ash-pit, abandon a certain privy, and to construct a proper and sufficient soil-pipe in lieu thereof, and the High Court held that the justices had no power to order the erection of a particular closet, but merely to order that the nuisance should be abated, as Sect. 35 dealt with the erection of particular things. "But," said the judges in *ex parte Saunders*, "the previous decision is distinguishable, because there the judges made an order to erect a particular kind of closet. Here the order is not for the erection of a particular kind of closet where no closet existed before, but, there being already one, the order is for a removal to a place where it will not be a nuisance." Apart, however, from this distinction, it must be borne in mind that the words of the 96th section of the Public Health Act are to abate the nuisance within a time specified in the order, "and to do any works necessary for that purpose; or an order . . . directing the execution of any works necessary to prevent the recurrence." Thus, in *Whitmarsh's* case, we confess the directing of the erection of a particular kind of closet seems to be a work necessary to prevent the recurrence of a nuisance; for what would be the use of abating the nuisance in one place for it to appear in another place or another form, where it would again recur, and again be abated, and so on *ad infinitum*? It is true that, under Section 36, fresh proceedings to enforce sufficient privy accommodation can be taken, thus carrying out the same purpose in a different manner; but the multiplication of proceedings can benefit no one. Thus, though we are willing to consider the distinction between the two cases we have referred to to be sound in law, we have no dislike to consider the previous case of *ex parte Whitmarsh* not only considerably lessened in authority, but on the high-road to be overruled. At any rate, the recent decision of the Taunton magistrates and of the Queen's Bench Division shows how efficacious the provisions of the Public Health Act of 1875 may be made if they are worked with proper vigour and attention by Local Authorities.

The Makers of the "Otto" Gas Engine. Messrs. Crossley Bros., Limited, whose names have become almost universally known, have removed their works to Openshaw, near Manchester.

SOME RECENT FOREIGN WORKS ON HYGIENE.*

As an important branch of hygiene the question of ventilation has largely occupied the attention of the specialist. How are we to ensure by ventilation a renewal of the air we breathe, rendered impure by the presence of carbonic acid and the consequent diminution of its vivifying oxygen? At what point does this air become dangerous to breathe is a question which has been submitted to much inquiry. We are all, without the aid of science, capable of ascertaining when the air of a room has become "close." Some authorities would have it that this condition, so familiar to every one, is the result not alone of the exhaustion of the oxygen in the atmosphere, but is largely produced by a somewhat mysterious and very foul-smelling substance exhaled by the human lungs, and which, submitted to chemical action, reveals the presence of ammonia.

It is generally admitted, however, that it is the presence of an excess of carbonic acid which is so noxious in the air we breathe, though scientific experiment would tend to prove that the injurious action of carbonic acid has been somewhat exaggerated. It is oxide of carbon which is shown to constitute the really harmful element of exhausted air, the same baleful poison given off by a red-hot cast-iron stove, and present in large quantities in ill-prepared coal-gas. So fatal are its effects that the experiments of Leblanc—quoted by M. Radan—show us a dog asphyxiated in an atmosphere composed of 3 per cent. of carbonic acid and only 1 per cent. of oxide of carbon, while the same animal was able to bear as much as 20 per cent. of carbonic acid when administered alone.

Though scientifically this is known to be the case, it is generally admitted that the impurity of the air may be measured by the amount of carbonic acid it contains.† What may be the limit of its presence in the air so as not to endanger life is a point far from satisfactorily settled, and, of course, largely dependent on very varying conditions. When we take the theoretical position of a hermetically closed space, the presence of as little as even 1-1000th of carbonic acid in the atmosphere may be taken as the extreme limit; taking this basis,—given by M. Radan,—and allowing with him that the carbonic acid exhaled from the lungs is about 20 litres an hour, the volume of air which must for comfort be supplied to each person every hour is 33 cubic metres or yards, and more than this will be necessary where there are candles or lamps, which each consume as much oxygen as a human being; though, it is true, not giving off carbonic acid. This condition of a hermetically-sealed room is, however, impossible, though it is surprising how nearly this theoretical position seems to be attained in certain assembly-rooms, concert-halls, theatres, and even private houses. The period at which the air of an enclosed space becomes unhealthily vitiated is, of course, largely dependent upon the size of that space, a factor also in the question of its ventilation; for a same influx of air will naturally affect in a less perceptible and inconvenient manner a large space than a small, while the larger space will necessarily require less frequent renewal of its atmosphere,—a point of some importance if we are to accept the opinion of M. Putzeys, who objects to the introduction of air into large halls at more frequent intervals than three times an hour. Ventilation, of course, being very different from mere draught, its management requires the utmost consideration. That open windows produce in hospitals sufficient ventilation would appear to be an error. In all places intended for the reception of large numbers of individuals, lecture-rooms, theatres, barracks, and so forth, artificial ventilation must perforce be resorted to; one of its chief advantages lying in the fact that by its means an equable temperature can be obtained both in winter and summer, in the former case by the admission of warm air, in the latter by the introduction of air obtained from the cellars.

Provided, however, that the space be not too small the natural ventilation of open windows and fire-places is sufficient. Leblanc urged forty years ago, as the result of his experi-

* See p. 175, ante.

† The presence of carbonic acid is easily detected by placing in the room a saucer of clear lime water. At the end of a short time a thin white film is formed on the surface of the liquid, consisting of carbonate of lime.

ments, that 50 cubic metres or yards per head are absolutely necessary in all dormitories. Yet in France the law prescribes 16 metres per head in the barracks, in England we allow 17, in Germany 18, the *Paris conseil de salubrité*, in a recently-published report, urging 20 as the mean. In Paris the mean cubic amount of air for each hospital patient is 43 metres, we in London allowing 42 metres.*

M. Bouchardot gives some curious details respecting the Paris and London hospitals. The Hôpital Lariboisière is ventilated by artificial means, yet strange to say it is not found that the death-rate is less than in the other Paris hospitals. M. Bouchardot speaks in terms of great praise of the simple yet effective system of ventilation in vogue in our London hospitals, which, by open fireplaces, succeed in obtaining a constant renewal of the air, while affording to the patients a pleasant amusement. M. Proust, in his "Traité d'Hygiène" (Paris, 1881), is, however, somewhat opposed to this as excessive. "The importance of pure air," he writes, "has, perhaps, been exaggerated in certain cases by the English doctors and the Americans who have followed their example. They say, leave open the windows of all dormitories, barracks, and sleeping-rooms, day and night, winter and summer. This precept, followed largely in England and America, presents in our opinion great inconveniences." Such is the view of an eminent hygienist. Who shall decide when doctors disagree? Yet it seems difficult to admit the possibility of the harmful consequences of an overdose of pure air. These disagreements simply serve to show how unsettled are as yet the very laws of the modern science of hygiene still in its infancy. Fortunately, the subject has at length aroused the attention of the ruling authorities, who in every direction are displaying most praiseworthy activity. In our own country, Parliament, so constantly abused for its inefficiency in dealing with home questions, has, nevertheless, succeeded in passing of late years many important Bills regulating the sanitary affairs of our great cities, though it is sad to reflect how many more Bills still remain to be considered. In Paris, an equal activity has been displayed by the authorities. In one direction, the regulations respecting the erection of new houses, we learn from MM. Napias and Martin, whose excellent "Étude et le Progrès de l'Hygiène en France," between the years 1878 and 1882, is worthy of attention, have been recognised to be far from perfect, and a new series of regulations is being prepared. The height of the houses will, it appears, be even more than in the case at present, proportioned to the width of the street or thoroughfare on which they stand, the minimum elevation of the stories will be fixed, and many other points which, previously laid down, have been reconsidered in their relation to the modern exactions of the science of hygiene.

The examples of Paris and London are already being followed largely in other great cities. The vast agglomerations of human beings who now pour into the centres of population urgently demand the immediate application of the principles advocated by the hygienists, who, if they may differ in questions of detail, are unanimous in counselling humanity at large to "live cleanly." Aided by the artist who, working with his scientific brother, will make the world beautiful, we may yet look forward without despair to the possibility of at length realising what till now has been regarded as the perfection only of Utopia.†

Chester Cathedral.—The Dean of Chester has decided, after a pause of six years, to endeavour to complete the restoration of Chester Cathedral, under the advice of Mr. A. W. Blomfield, M.A., who was appointed architect of the cathedral in succession to the late Sir Gilbert Scott. Dean Howson makes an appeal for 15,000*l.* for the execution of the work, which he proposes to spread over three years. The sum of 1,800*l.* is wanted for works requiring immediate attention. Mrs. Platt, Stalybridge, has already contributed 2,000*l.* towards the erection of certain mosaics in the cathedral.

* See Bouchardot, "Traité d'Hygiène Publique et Privée," Paris, 1881.

† Among other foreign books mention should not be neglected of Dr. Riant's admirable little work on the "Hygiene of the Work-room and the Study," *Hygiène du Cabinet de Travail* (Paris, 1883), to which, at a later date, we may have occasion to refer.

SIR ROBERT RAWLINSON.

We hear with extreme personal gratification that H.M. the Queen is about to confer the honour of knighthood on Mr. Robert Rawlinson, C.B., the chief Engineering Inspector of the Local Government Board. Mr. Rawlinson's career has been a remarkable one, and greatly to his credit. He has worked his way from the mason's "banker," and never fails to say so at times when the statement may serve as an encouragement to others. From the time that he first came to London, now many years ago, we have seen this progress, and have had pleasure in recognising it at times when there were objectors in the way.

Mr. Rawlinson was appointed an engineering inspector under the first Public Health Act, 1848, Lord Morpeth, Lord Ashley, and Mr. Edwin Chadwick, C.B., being commissioners. Mr. Rawlinson held the first inquiry and wrote the first report (Dover). Subsequently he visited, inspected, and reported upon the principal towns in England, from Berwick-on-Tweed to Penzance, from Liverpool to Scarborough. He drew up suggestions for the use of local surveyors and sanitary engineers as to main sewerage, house draining, water supply, and sewage irrigation. These suggestions have, from time to time, been extended, and diagram plans of details of main sewers and reservoirs added, so as to be suitable not only for Great Britain, but also for British India and the colonies. These suggestions and plans, many of which have been published in the columns of the *Builder*, have been accepted by English engineers, and also by engineers on the Continent. In the spring of 1855 Mr. Rawlinson was sent as engineer member of the Sanitary Commission to the British Army on the Bosphorus and in the Crimea. In 1863 he was sent by the Home Secretary to Lancashire as Engineer Commissioner, to devise "work for wages" in the distressed cotton district during the cotton famine, and with Mr. Arthur Arnold, who was his colleague, advised and saw executed in the ninety-four towns and places in Lancashire and Cheshire works of road-making, public parks making, waterworks construction, street and road forming, main sewerage, and land draining. The sum of money expended under the signature of Mr. Rawlinson was 1,850,000*l.*, upwards of 400 miles of roads and streets were formed, drained, sewered, channelled, and paved, the manual labour being done, for the most part, by cotton operatives. The administration did not cost the Government 3s. 6d. per cent. The money was advanced for a period of thirty years at 3½ per cent. The entire sum advanced has, up to this date, been regularly repaid. Mr. Rawlinson has served on three Royal Commissions in England and on one for Dublin, and since 1862 has been a member of the Army Sanitary Committee. In 1862 he reported on Windsor Castle, and subsequently upon Sandringham and Marlborough House for the Prince of Wales. At present Mr. Rawlinson is a member of the Council of the Institution of Civil Engineers, and a vice-president of the Society of Arts.

While offering him our hearty congratulations, we cannot but regret the tardiness with which this honour has been conferred upon him. We trust he may live many years yet to enjoy his distinction, coupled as that enjoyment must be with the consciousness of having faithfully performed his duties no less as a public servant than as a citizen.

Presiding at the Crystal Palace Engineering School on Saturday, Mr. Rawlinson, in presenting the certificates to successful students, said it gave him great pleasure to meet his young friends, who were entering upon a profession that had been to himself a source of pleasure and delight during the whole course of his life. In his time, great things had been accomplished by engineers as the pioneers of civilisation, in the construction of roads, railways, docks, bridges, shipping, and other works. He was present at the opening of the beginning of one of our greatest railway systems, — the Liverpool and Manchester line, — and had lived to see the benefits of railways extended to all parts of the civilised world. When he entered on his profession he thought, as they did probably, that he was too late, that the work of the engineer was finished: that was a mistake, great progress had been made, but the world

was not yet completed, and there was a vast field open for them. There was still very much to do, and it was such as they that would have to do it. They must ever bear in mind that there was no royal road to success, and their living useful and pure lives, achieving and sustaining a good reputation for themselves and their country, depended upon the use they made of their opportunities and advantages. They had in this school the means of laying an excellent foundation for a useful and successful future career. His experience in colonial and other work enabled him to say that they would find it of the utmost importance, as engineers, to be able to turn their hand to anything, and what their hand found to do let them do it, and not be too nice or hesitating in the matter of choice. The branch of engineering with which he was connected had come to him rather than that he had gone to it. He had early in life a desire to acquire as much and varied practical ability as possible. His father had been a working-man, and he had been a working-man himself, first a stone-mason, and afterwards a bricklayer, a sawyer, a blacksmith, and an engineer. When a very young man he served under one of the most eminent engineers of his time, Jesse Hartley, at the Liverpool Docks, and afterwards occupied the same position as Brindley in connexion with our first canals. In 1855, he went out to the Crimea as sanitary engineer. The mortality among the troops, from the ignorance and inability of soldiers and generals to design and execute necessary works, was dreadful, 10,000 out of 33,000 men perishing from preventable causes. The following year things were much improved; the French had 40,000 cases of typhus fever, and we had not one! His (Mr. Rawlinson's) position now was that of Chief Sanitary Engineer for the Government of Great Britain, which he was by following the line into which he had been pushed. His young friends had entered upon a noble profession, he counselled them to do their duty now and in the future; to enter upon any sphere of usefulness open to them; and to command and reflect honour and trust upon themselves, their connexions, and their country, using their lives and ending their days with a deservedly good reputation.

SARACENIC DESIGN.

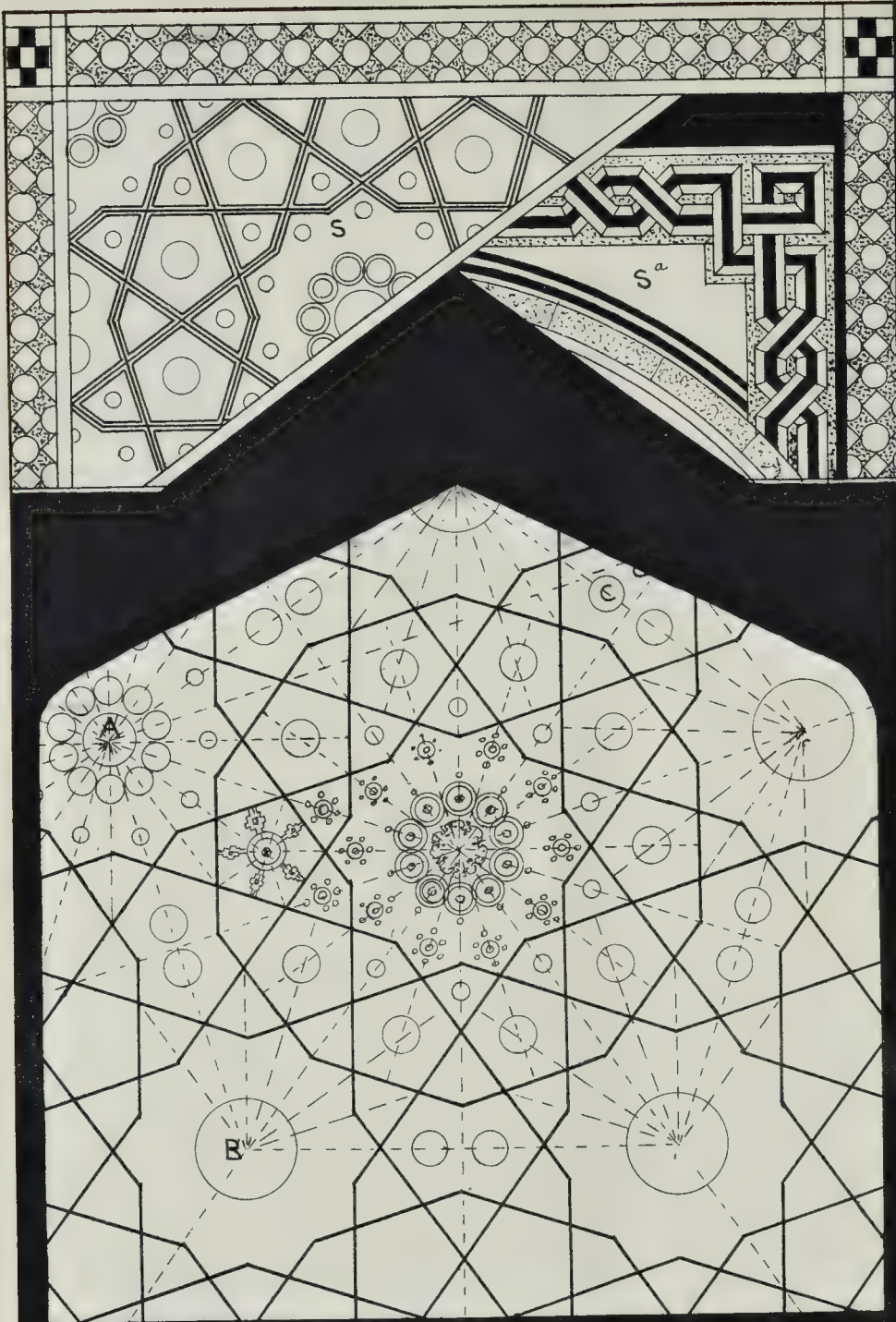
The illustration shows that it was not the Japanese only who avoided centres and centre lines in setting out ornament, but that Persians and Arabs were equally conscious of the pleasing and very pleasant effect of accidental arrangement. When, however, examples are examined they are nearly always found to be a section, or part, of a perfect geometrical design, — see A, B, C, and S. To some Western eyes, Oriental examples of this principle create a surprise, which is more or less pleasing on account of its novelty.

The example from Ispahan is formed of highly-glazed richly-coloured tiles, of square form, a very small portion of the general design occurring on each tile. The general ground is pale orange-yellow, the tracery in black lines, the ornament white and darkish blue. Where rich marbles do not occur, the whole building is faced with tiles of richest hues, producing perfect harmony. The arches below the spandrel are somewhat acutely pointed, having straight lines instead of curves for the greater part of their extent, except at the spring, where are curves of small radius. They remind us very much of later work in England, and suggest the indebtedness of Northern architects to the East for many of their ideas. The ornament is only slightly indicated in the illustration. The spandrel from Cairo has a centre of red porphyry and black and white border, which a Western draughtsman would certainly have continued all round.

Perhaps an occasional departure (and it was only occasional in the East) from our rigid adherence to centering in design might at least aid in producing novelty, — generally, a pleasing effect.

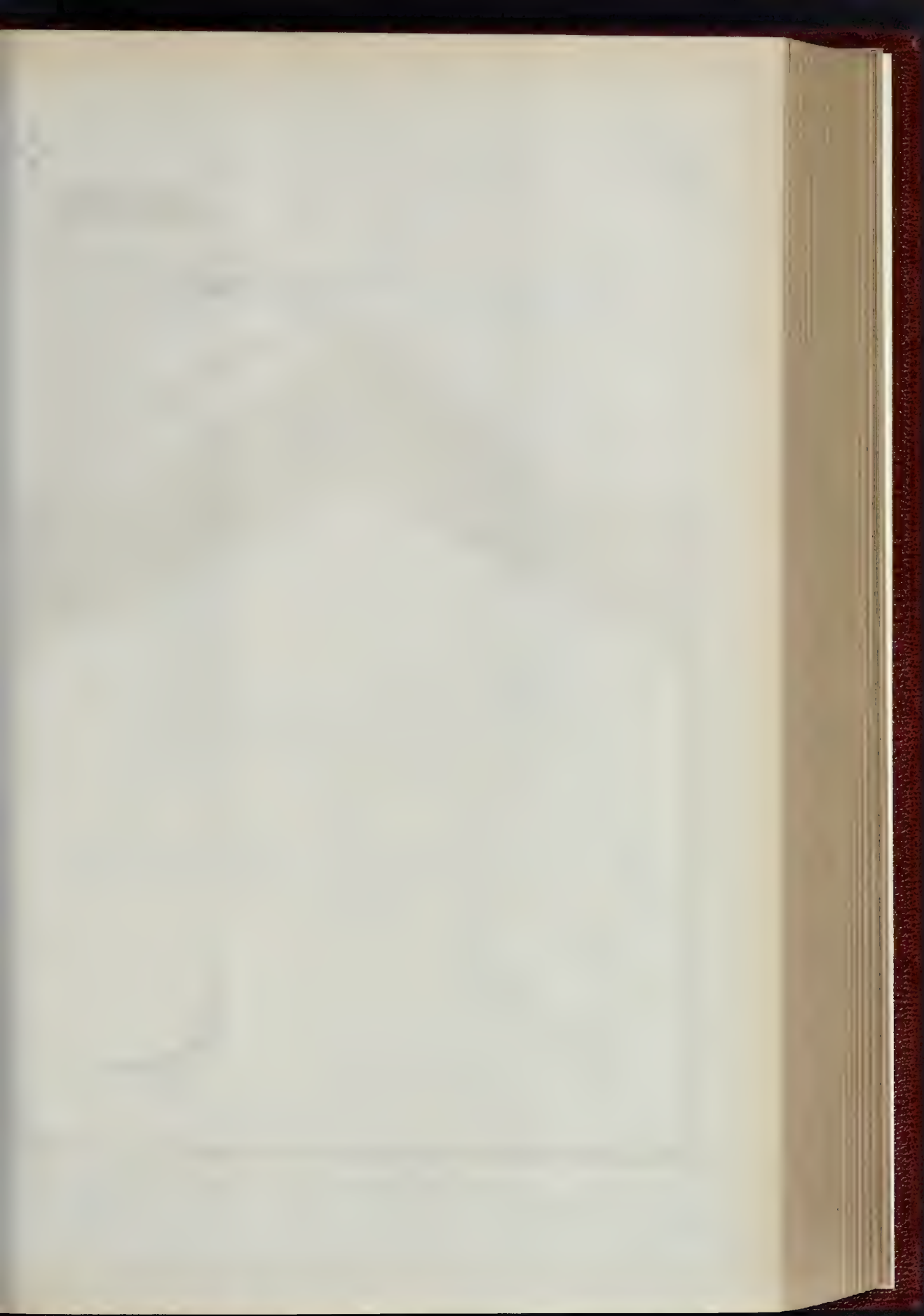
Merry Men All.—The employees of Messrs. Clark, Barnett, & Co., Limited, had their annual dinner on Saturday, August 4th, the men of the New Cross Works proceeding to Farnborough, in Kent; the men of the New York Works to Spynet Duvil, on the Hudson River; and the men of the Paris Works to Bongival, on the Seine.

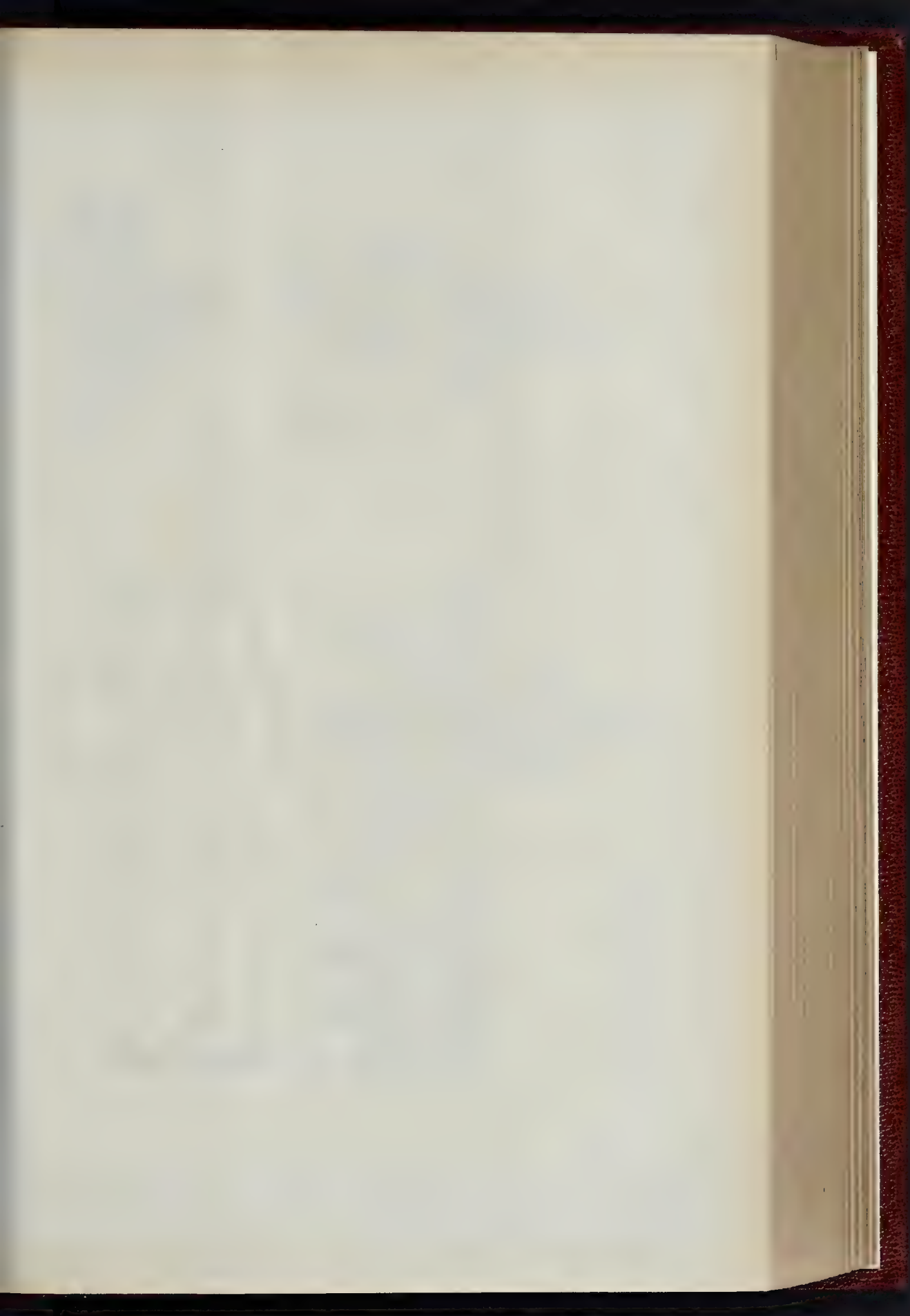




S Spandril Medressah College, Spahan :: S^a Spandril, Cairo. ::
see dotted lines A B C below



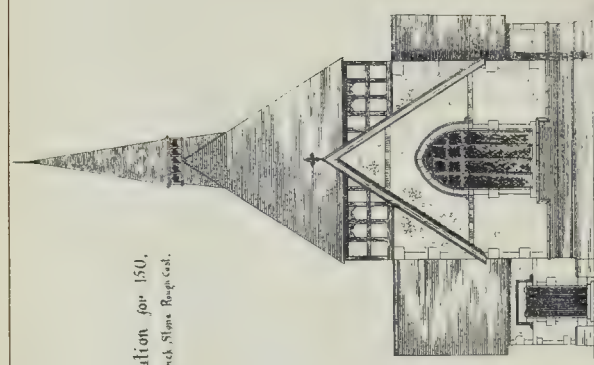




THE BUILDER, AUGUST 18, 1883.

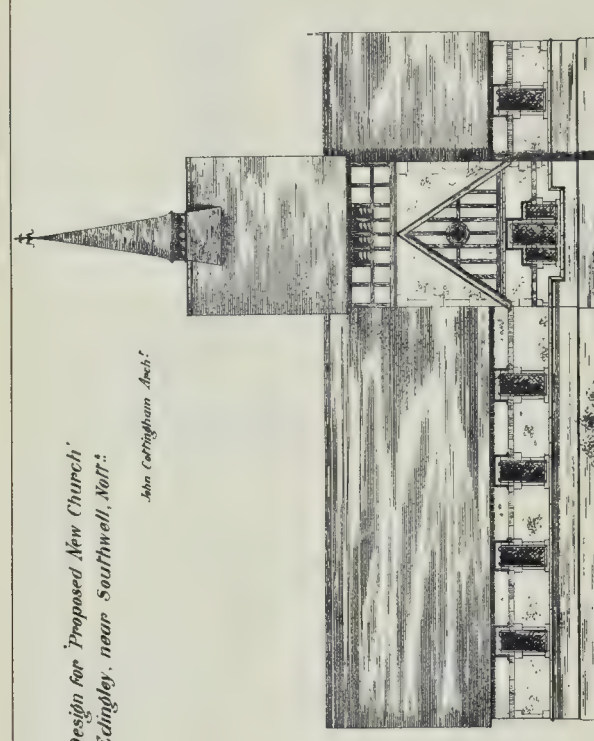
*Design for Proposed New Church,
Edingley, near Southwell, Nott.*

John Catlingham Archt.

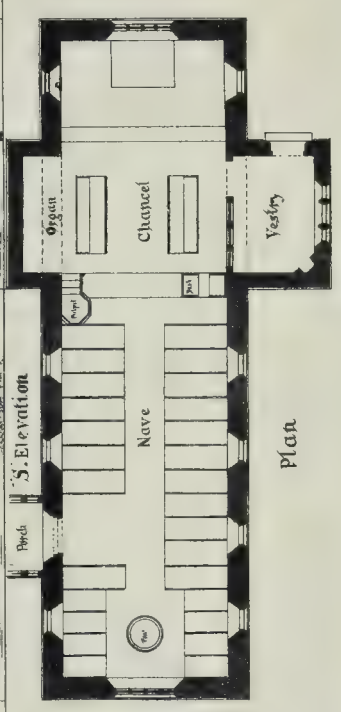


East Elevation

Accommodation for 150.
Materials, Bricks, Stone, Range-Gl.

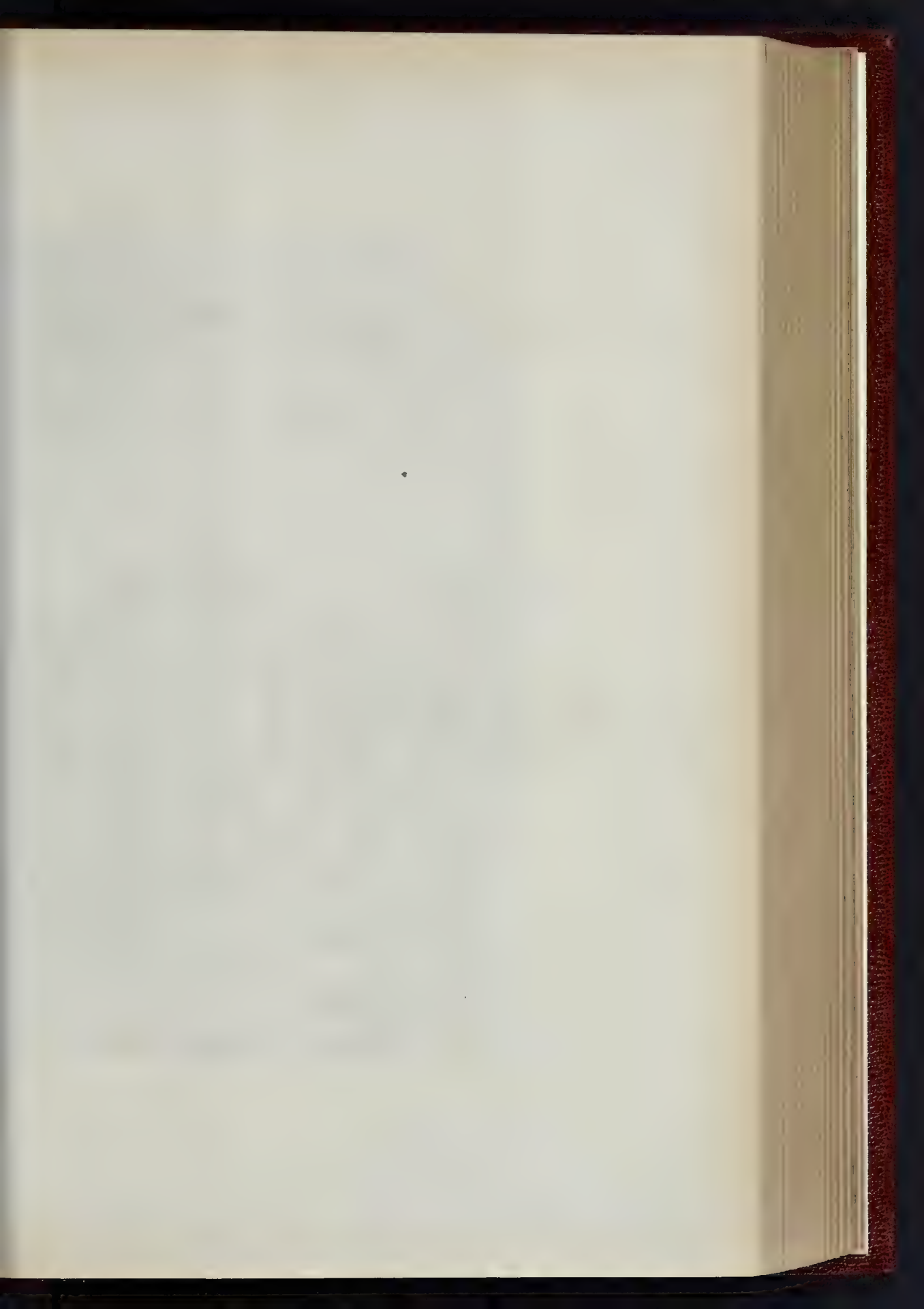


S. Elevation



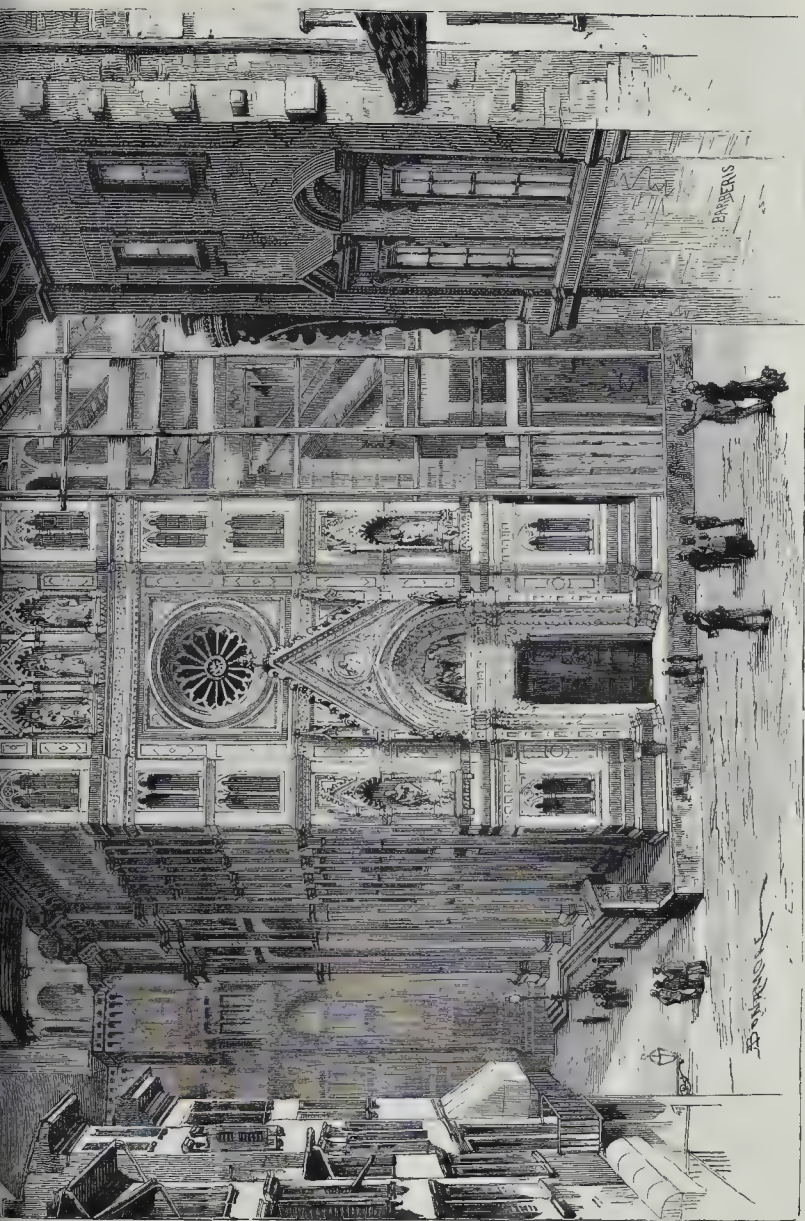
Plan





THE BUILDER, AUGUST 18, 1893.





THE NEWLY-CONSTRUCTED PORTION OF THE FAÇADE AT SANTA MARIA DEL FIORE, FLORENCE.

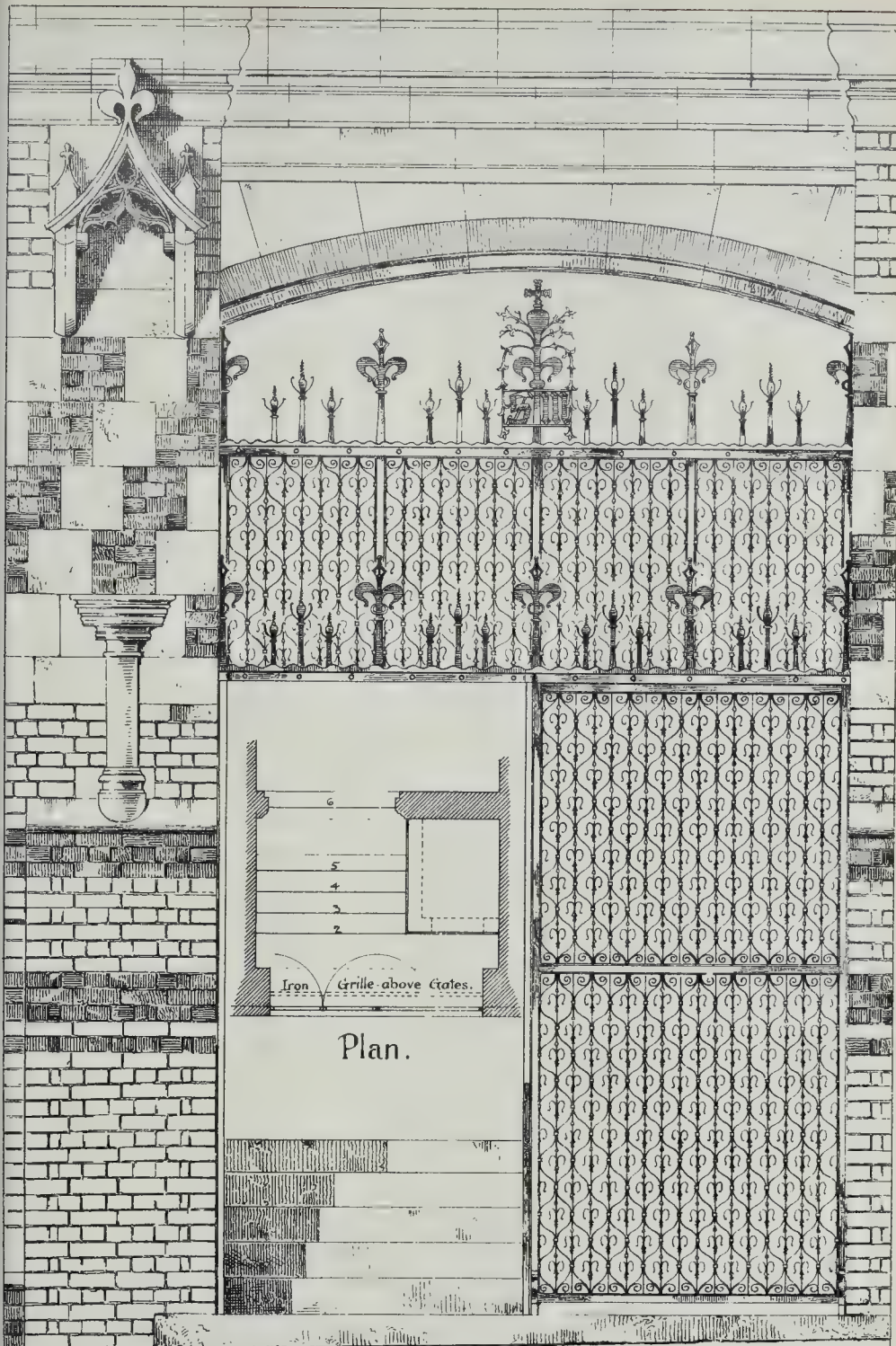
PROF. DE FABRIS, ARCHITECT.



Whitman & Bass, Engravers

Wyman & Sons, Printers

ST. GEORGE'S CHURCH, PRESTON.—MESSRS. GARLICK, PARK, & SYKES, ARCHITECTS.



Entrance to Finsbury Hospital. *J.D. Sedding, Archt.*

Thos Gurratt del. 83.
 F. Keil, Photo Litho, Castle St. Holborn, London, E.C.

Wymark & Sons Printers, Queen St.



Whitman & Bass Photo Latho 235 High Holborn

Wyman & Sons Printers 3 Queen St

FILLING-IN AND BORDER.—DESIGNED BY GEO. C. HAITE.

Handwritten text, likely a title or header, possibly mentioning "The History of the County of..."

Main body of handwritten text, appearing to be a list or index of entries, possibly organized by date or location.

TOMB OF THE PRINCESS MARGARET, LINCOLN ABBEY, DUMFRIES.

The tomb of the Princess Margaret, daughter of Robert III., King of Scotland, forms one of the principal and best preserved features of the Abbey of Lincoln, a ruined religious house, interesting to all visitors to the "Land of Burns," alike from its charming situation at the "meeting of the waters" of Cluden and Nith, and its associations with the "Ploughman Bard" in his "Vision of Liberty" and other poems.

The chancel has been termed "an architectural gem" by no less an authority than Mr. M. Holbeche Bloxam, and the tomb, which is situated on its north side, is certainly quite worthy of its surroundings: like the rest of the buildings, it is formed of the local red sandstone, and although it has for at least two centuries been exposed to the fierce south-easterly rain storms there prevalent, the mouldings and carved work, where unbarred by the rustic visitors, are still sharp and clear.

The royal occupant of the tomb being the wife of Archibald, fourth Earl of Douglas, the armorial bearings relate principally to that family. The spandrel at the apex of the arch and hood moulds,—as may be seen from the drawing,—contains three chalices with muller-shaped star attached to each, surrounding a heart,—the leading emblem of the house since the time of the "Good Sir James," who died while conveying the heart of Bruce to Palestine. The original symbol of the family,—the St. Andrew's cross and stars, may be seen on one of the shields on the base, another containing the same bearing with the heart added, while four others show the family arms, as Lords of Douglas, Galloway, Annandale, and Eskdale. Two of the shields remain blank.

At the back of the recess the inscription is cut, as shown, running as follows:—"A l'Aide de Dieu! Hic jacet Dna. Margareta Regis Scotie Filia, quodam Comitis de Douglas, Dna. Galloway et Vallis Annandae."

Here lies Lady Margaret, daughter of the King of Scotland, Countess of Douglas, and Lady of Galloway and Annandale.

Our photo-lithograph is from a drawing by Mr. J. Glover-Anderson.

PROPOSED EDINGLEY CHURCH.

The present unsightly building at Edingley (an out-of-the-way village in Nottinghamshire), used as a place of worship, is, like many more country churches in the shire, a mere "white-washed hovel." The proposed new edifice is simple in construction and design, and of a picturesque character, in harmony with the natural beauty of the neighbourhood. The materials would be Bulwell bricks and Mansfield stone dressings, with rough-cast in the tower and vestry. Edingley being a very poor parish, it is feared some time may elapse before the work of rebuilding can commence. Accommodation is provided for 150 persons. Mr. John Nottingham is the architect.

FLORENCE CATHEDRAL AND ITS NEW FAÇADE.

Florence Cathedral, or "il Duomo di Santa Maria del Fiore" (so-called from the lily which figures in the arms of Florence), was erected in 1294 to 1462, on the site of the earlier Church of Santa Reparata. According to Villani, the Florentines had, at an early period, determined to erect in their city a monument which should surpass all that had preceded it. This imposing temple of Italian Gothic was designed by Arnolfo del Cambio, to whom the execution was confided by a decree in 1294, and the foundations were laid on the day of the Feast of the Nativity, 1298, and the name of Santa Maria del Fiore given to it. Arnolfo del Cambio superintended the work down to his death, in 1340, when the work stopped, until Giotto (who acted as architect-in-chief for thirty-three months) was requested to continue it in 1331, with an order that he should remain as a resident in Florence to ensure its progress. He erected the bell-tower and the façade of the cathedral, which he carried up to two-thirds of its height. Amongst the other eminent architects who were employed after Giotto, and till the completion of the church was entrusted to Brunelleschi, the names of Francesco

Talenti, Alberto di Arnolfo, Taddeo Gaddi, Andrea Orcagna (a man of extraordinary powers, as his loggia in the Piazza Gran Duca amply testifies), and Filippo di Lorenzo are mentioned. The nave and aisles were completed in 1355.

On August 19th, 1418, the public competition for models for the dome was announced, of which Vasari has given so racy an account, and in which the genius of Filippo Brunelleschi secured the victory, in spite of the jealousy of rivals, and the doubts of the cognoscenti. The construction of the cupola took up fourteen years (1420-1434). The church was finally consecrated in 1436, but the lantern on the top of the dome, also designed by Brunelleschi,—according to another source, his plans for it were lost,—was not completed until 1462. The whole length of the building is 500 ft.; its height from the pavement to the summit of the cross is 387 ft. The transepts and cross are nearly 306 ft. long; the width of the nave and aisles is 128 ft.; the height of the nave, 153 ft.; that of the side aisles, 96 ft. 6 in. The nave was intended by Arnolfo del Cambio to consist of five bays or arches; but as the families of the Falconieri and the Bischeri refused to give up some buildings on the east required for the choir, that architect was compelled to reduce its length, so as to include only four. Brunelleschi's cupola is octagonal, and is 138 ft. 6 in. in diameter at its base, and from the cornice of the drum to the eye of the dome the height is 133 ft. 3 in. Nowonder that the Florentine citizens who formed the building committee refused at first to believe in the practicability of Brunelleschi's scheme. No such dimensions had previously been attempted. The domes of St. Mark at Venice and of Pisa Cathedral are far below it in dimensions, grandeur, and simplicity of construction. It served as a model for that of St. Peter's to Michelangelo, whose admiration of it was so great that he used to say, "*Come te non voglio, meglio di te non posso.*" The cupola is the largest dome in the world, for though the summit of the cross of St. Peter's is a greater distance from the ground than the summit of the cross on Florence Cathedral (in consequence of the greater dimensions of the whole building), yet, dome compared with dome, that of Brunelleschi is the higher. The Florentine dome has also a greater circumference. It is, too, the first cupola that was ever raised upon a "drum," and the first double dome that was ever built. It exceeds in elevation what Arnolfo had designed; for, according to the original plan, the dome was to have sprung immediately from the arches and piers on which, in fact, it rests. But, Brunelleschi carried up perpendicular walls in the shape of an octagon to a certain height, and, placing the dome upon these walls, secured for it the elevation which he desired.

The illustration which we present with this week's issue, besides supplying a view of that part of the façade which has been reconstructed, also furnishes an excellent opportunity for comparing the grand dimensions of the dome with the rest of the building. It seems a pity, however, that such a work of art should be so crowded round with buildings; but regrets will not alter that stubborn failing of human nature which leads to the making as much of a piece of ground as convenience will permit, and which appears to have descended from our forefathers in an even more highly developed form, for it is an open question whether ancient builders,—who, moreover, were often compelled by circumstances over which they had no control to make the most of the space at their disposal,—sinned more in this respect than their descendants do at the present day. But to return to the façade of Florence Cathedral. The façade was commenced by Arnolfo del Cambio, but in 1332 his successor Giotto designed a new and more imposing front (of which copies still exist in the cloisters of San Marco, Florence), and executed one half of it himself. The façade,—which, as nearly the whole of the outer walls of the cathedral is entirely cased in marble,—subsisted till the sixteenth century, having been adorned with statues by the best masters, including Donatello, when in 1588 it was removed, or rather destroyed, by the Provveditore Benedetto Uguccione, for the purpose, as he professed, of re-erecting it in the then modern style. So eager was he to effect the demolition that, instead of carefully detaching the precious marbles, which might have been employed again, the facing was plucked off so hastily that, according to a contemporary, not a slab or column was

left entire. The façade was to have been replaced by one designed by Buontalenti, Dosio, Cigoli, and others, but the project was not carried out. In 1636 another façade was begun, but the works were soon again suspended. The cathedral (like Santa Croce, San Lorenzo, &c.) was thus left without a façade, and was then decorated with frescoes by way of supplying the defect. A fresh attempt was made, in the reign of the last Grand Duke of Tuscany, to erect one after a design of the Cavaliere Matas, but nothing came of it. But the regeneration of Italy was to bring a remedy also in the case of Florence Cathedral. In April, 1860, King Victor Emmanuel laid the foundation stone of a new façade; the work, however, was not begun until the autumn of 1875. The design, of which we now show the completed portion, is by the architect De Fabris, whose work was selected after a most severe competition.

ST. GEORGE'S CHURCH, PRESTON.

It is proposed to reconstruct this church (with the exception of the outside walls, communion, and vestry). The view shows an entirely new nave and chancel. The estimated cost of the work is 5,000l. The architects are Messrs. Garlick, Park, & Sykes. Our illustration is reproduced from a drawing by Mr. Catterall.

WROUGHT-IRON SCREEN, LEONARD-SQUARE.

The accompanying drawing represents the wrought-iron screen and entrance-gates to the Children's Hospital, Leonard-square, Shore-ditch. The screen is next the street, and protects the entrance to the house and a lift to the basement. The work is designed by Mr. Sedding, architect of the building, and executed by Messrs. Longden & Co., of Oxford-street, who deserve credit for the tasteful manner in which the work is carried out.

SURFACE DECORATION.

The enclosed filling-in and border is a severe treatment of the chrysanthemum adapted to suit the manufacturing process of "Lincrusta Walton," which has taken a place as a method of flat surface decoration.

Patterns for this process require a different handling and treatment than for printed work, as unlike coloured or raised flock papers, the pattern is pressed up in rounded relief. The nature of the petals, leaves, and growth of the chrysanthemum particularly recommend it for this purpose.

The chief feature of the Lincrusta is supposed to be the necessity for hand colouring when *in situ*. This is capable of very rich and satisfactory treatment when in the hands of an artist, but it is almost of necessity generally left to the house painter, or, at least, to the staff of the usual house decorator, with a result at once disagreeable and vulgar. The material in its own colour or bronzed is far more pleasing and satisfactory than when in colours, and for dados for halls and staircases particularly, while it may often be used with effect on ceilings and door-panels. It is a welcome and far from inartistic addition to the various methods of flat surface decoration.

THE BERLIN GALLERY OF SCULPTURE.

According to the *Vossische Zeitung*, a bronze statue from Kyzikus has been added to the collections of the above institution. It is unfortunately not in a complete state of preservation, the left leg and the right foot being wanting, as well as part of the upper portion of the figure. The search made for the missing portions has so far proved unsuccessful. Bronze statues of life size are rare, it is remarked, so that even in its fragmentary condition this work is considered an acquisition of some value. It is supposed to be of Grecian origin.

Amsterdam International Exhibition.

We are informed that Messrs. Priestman Bros. have been awarded a Diploma of Honour, being the highest award at this Exhibition, for their patent dredging, excavating, and elevating machinery.

DISCOVERY OF ROMAN REMAINS AT MAINZ.

Owing to extensive excavations for the new railway line which is to intersect the south-eastern outlying works of the citadel of Mainz, massive Roman buildings have been laid bare, the existence of which has never been suspected. The most remarkable features are three massive walls, two running parallel to each other, the third inclining towards the first, leaving only narrow passages between them. The middle wall consists of heavy square pillars, which, together with the arches, consisting of double layers of vaults, must have been isolated. It has not yet been discovered what purpose the remains served. Their construction is of a most solid nature, and no doubt supported heavy loads. As the remains are exactly in the line of the new railway, they must be completely removed. An exact survey of the whole and the separate parts will add, it is stated, considerably to what is known of Roman Mainz, the extent of which must have been far larger than was hitherto believed.

EDINBURGH.

It having been announced to the Board of Manufactures (which has the control of the Scottish National Gallery and Art-Classes) that "a gentleman of great public spirit and patriotism had offered the sum of 10,000l. for founding a National Portrait Gallery, in connexion with, and under the management of, the Board, provided a similar sum were forthcoming from any other source," the Government were approached with the view of securing State assistance. The result of these negotiations is that a supplementary estimate of 10,000l. for the purpose has been prepared by the Treasury. The whole sum of 20,000l. thus provided will be reserved as a fund for the maintenance of the gallery and the purchase of pictures. As regards the location of the new gallery, a scheme has been started for the transference of the Antiquarian Museum from the rooms now occupied by the Society of Antiquaries in the Royal Institution to new and commodious premises in the addition to be built to the Museum of Science and Art. This arrangement will be of advantage to the public when inspecting the antiquarian collection, which is inconveniently crowded, and the present rooms, having been originally constructed as picture galleries for the Royal Scottish Academy, and for many years used as such, will require no alteration to fit them for a National Portrait Gallery. The picture galleries will thus be concentrated on the Mound, and the antiquaries be provided with more ample accommodation. The society, we understand, stipulate that the accommodation to be given them in the Museum of Science and Art shall be quite distinct, and not in any way subject to the powers at South Kensington. It is anticipated that at the outset there will be a considerable number of portraits available from the National Gallery, which is overcrowded, and that public bodies in possession of historical portraits may transfer them to the national collection. Judging also from previous experience it may be probable that patriotic individuals will furnish contributions either during their own lives or by bequest. That abundant materials exist for such sufficient proof exists in the present and previous loan collections in the National Gallery. It may be added that no money from the National Exchequer has ever been spent in the purchase of pictures in Scotland.

In the recollection of frequent recent casualties from fire in theatres, attention was called to the Princess's Theatre here, and the proprietor was required to make certain alterations in the interior with the view of lessening the risk from fire. Whatever precautions, however, may be taken, it is manifest that a theatre situated in the rear of a range of buildings, the only approaches to which are two long and not very wide corridors, cannot be considered safe. The lessee, who is deservedly popular, has been for some time on the look out for a site for a new theatre, and made advances to the City authorities for one on the ground recently acquired by the City opposite the University; but the ultimate appropriation of the ground in question has not yet been decided upon.

The new Lyceum Theatre is approaching completion, and will shortly be opened, with Mr. Irving and Miss Ellen Terry as the leading stars.

It was somewhat of a surprise to us, when passing along Princes-street lately, to observe that the spire of the new Free Church at West Port forms a distinctive feature in the distance, looking southward through the open space between the Castle rock and St. John's Church. The spire in question, and the church to which it is attached, have a marked individuality, and are in good keeping with the surroundings.

In Brandon-street we notice a large and ornate building, which we took to be a new school in connexion with the Heriot Trust. Upon inquiry, we ascertained that it was indeed designed by Mr. Chesser, the architect for the Trust, and who designed most of the schools belonging to that body, but the purpose of the new building was that of a printing-office. Printing and education are, of course, intimately connected.

THE MANCHESTER SHIP CANAL.

THE news of the rejection of the Manchester Ship Canal Bill by the House of Lords' Committee has been received by the manufacturing interest as nothing short of a public disaster. It is true that we cannot point to a precedent for the passing of a measure at once so novel and so important in its first Parliamentary campaign. But, after a gallant struggle, first before the Standing Orders Committee of each House, then for thirty-nine days before the House of Commons Committee, and now for ten days before the Committee of the House of Lords, it cannot be doubted that the promoters are somewhat taken by surprise by being told that they had better call again another day.

It is true that the Committee had so far cut down and hedged in the provisions of the measure which they ultimately recommended to the House that what remained for the Lords to reject was but the mutilated trunk of a Bill. In any case an application to Parliament next session was required. We can only wish the promoters better luck next year. And we venture the remark that it cannot fail to add to the strength of their cause if they give more prominence to the important evidence as to the superior cheapness of transport which the foreign manufacturer now enjoys,—a point that is brought into some relief by the evidence before the Select Committee on Canals.

THE TOLHOUSE, GREAT YARMOUTH.

This building was rescued from destruction after much anxious effort, and it has now been made over by the Mayor and Corporation to trustees, who have agreed to raise funds for the repair of the building, which will be devoted to some useful public purpose. The trustees, we learn, have made themselves responsible for a considerable outlay, in the hope that public support will be rendered to them. We commend the subject to the notice of our readers, feeling that if the requisite funds are raised with but little anxiety in this case, it will be a very material encouragement to others who may be disposed to put forth efforts for the preservation of old and interesting buildings. Doubtless many a building needing outlay has been demolished because of the difficulty of getting any one to undertake the responsibility of obtaining funds for the necessary works of restoration. Besides several local gentlemen, the trustees include the Mayor and the Vicar of Great Yarmouth for the time being.

We may add that the work is in good hands, Mr. E. P. Loftus Brock and Messrs. Bottle & Olley being joint architects for the work of restoration. In their report to the Trustees, they say that "the main fabric of what was originally a detached building is fairly sound, considering that the bulk of the walling probably dates from the middle of the thirteenth century. Settlements have taken place, but three are of old date, and do not require special attention, beyond the cutting out of small decayed portions in various places." They go on to say,—"The interior of the Tolhouse-hall has (owing to the works of 1622) but little of its original appearance. It is encumbered with the poor seats and fittings of the late court, and its proportion interfered with by the gallery over the entrance. We consider that the gallery seats and fittings should be removed, the low flat ceiling taken down, and the old roof utilised

by being opened out. By these works the proportion of the hall would be apparent, and good height obtained. The present Seat of State and its canopy, brought from St. Nicholas's Church, should be carefully retained, and also the whole of the mullioned windows. These latter are the works of 1622. The roof-timbers will require careful examination and repair, as well as a very considerable amount of new work. Among other works they recommend the entire removal of the modern rough-cast and cement-work from the walls. This is at present in very poor and ragged condition. It covers not only the ancient rubble work, but also the dressed angles and quoins. Its removal will effect a remarkable improvement in the appearance, for the walls, which now appear modern, will resume their ancient aspect. The cost of the various works they estimate at about 1,200l., and it is recommended that the works should be done by instalments as funds may admit.

COMPETITION FOR MURAL PAINTINGS AT DUSSELDORF.

In connexion with the new Hall of Art at the above city, a competition recently took place of designs for the mural ornamental painting. The merits of two competing artists, Herr Carl Geberts and Professor J. Scheurenberg (now in Berlin) were so nearly equal that a prize of 150l. was awarded to each of them. This circumstance has led to a discussion in the local press as to which of the designs should be carried out. Public opinion and the feeling of artistic circles at Düsseldorf favour the work of Herr Geberts, himself resident at that city. An address, signed by leading artists, has been sent to the Prussian Government, asking for him to be entrusted with the work in question.

FOREIGN COMPETITIONS.

THE plan for sending in plans for the new Polyclinic Hospital at Rome, at which foreign architects may participate, has been extended to January 11, 1884.

In the international competition for the building to be erected for the Finnish Society of Arts at Helsingfors, the first premium of 4,000 Finnish marks (135l.) has been awarded to the architect Arthur Walter, of Berlin. The second, third, and fourth premiums (40l., 34l., and 27l.) have been given to Professor Victor Schröter, of St. Petersburg; architect Axel Berg, of Copenhagen; and architect E. Langlet, of Stockholm, respectively.

THE ARTISANS' DWELLINGS ACT.

ITS COST AND VALUE.

MR. SELWAY, the representative of Newington at the Metropolitan Board of Works, appears to have a very low estimate of the value of the Artisans' Dwellings Act as passed by the late Government. At a recent meeting of the Newington Vestry a letter was received from the Home Office requesting the Vestry to instruct their medical officer to make a special inspection of the parish under the Artisans' Dwellings Act, and to make a representation to the Metropolitan Board of all areas he considered unhealthy, with the view that the Metropolitan Board might be able to make provision for improvement schemes.

Mr. Selway, advertising to the objects of the Act, and to what extent it had been carried out, said it had already cost the ratepayers of the metropolis nearly a million of money, and had done no good to any one whatever except the landlords of the wretched properties. What was really wanted was that the Metropolitan Board or some other body should have power to condemn places which were absolutely uninhabitable, without buying the owners out. The Act, however, had been amended, and was not quite so bad now, but the fact remained that the new dwellings that were erected were not occupied by the class of people that had been turned out. Mr. Silvester added that the Act offered a premium to bad landlords; but Mr. Giles, on the other hand, strongly denied that the Act had done no good. The fact that whole some sanitary dwellings had been substituted for bad ones, was of itself a benefit to the public health. He admitted, however, that the improvement had been a costly one.

THE LIEBIG MONUMENT.

THIS monument, erected at Munich, has the central figure in Carrara marble. It was modelled by Michael Wagnmüller, and, after his death, was executed by his pupil Wilhelm Bumann. The features of the eminent man are said to be admirably reproduced. The pedestal is of light grey Milan granite, and two steps lead up to it. Two sides contain appropriate inscriptions, and on the others are marble reliefs. It is in contemplation to erect at Giessen another Liebig monument in accordance with Wagnmüller's model.

THE NORTH AND EAST SUBURBAN INDUSTRIAL DWELLINGS COMPANY.

OVER-BUILDING AND REDUCED RENTS.

THE above-named company, whose chief estates and houses are at Tottenham, has just held its annual meeting. The report which was presented stated that, having regard to the depressed condition of house property in the vicinity of the Metropolis, the shareholders would be prepared for the statement that the past year had not been as successful as former years. The last report drew attention to the general reduction in rents, and that reduction had continued during the past year. Since the commencement of the current year, however, the income from rents had steadily and largely increased, and the directors believed that the worst had passed. The directors recommended a dividend at the rate of 4 per cent. per annum.

The chairman said the report was not of a very satisfactory character, still he saw no reason why the shareholders should not be satisfied with it, seeing that the directors had to present it under like circumstances with those in which all building property of a similar kind was now placed. With the depressed state of house property in the vicinity of the Metropolis, the directors had done the best that they could with the property of the company. It was generally admitted that London had been overbuilt, and not merely in their own district, but all round, there was a considerable number of empty houses. He did not know whether they had been worse off than others in this respect, but it was true that the company had had for some time a number of empty dwellings, chiefly consisting of those which by a resolution passed last year the directors were instructed to build. Lately, however, they had had a very considerable increase in the number of their tenants. Their rentals averaged, during the year just closed, not much more than 85s. per week, but at present they had reached 115s. per week. The number of empty houses was something like 10 per cent. upon the whole of the company's property.

A dividend at the rate of four per cent. per annum was declared, and Mr. Wilkinson, one of the retiring directors having been re-elected, said he could corroborate what had been said by the chairman as to the general reduction in the value of house property, as he was the holder of property in Tottenham apart from the company, and he himself experienced the difficulty referred to. But on that account he was not prepared to write down the value of the property in his stock-book, inasmuch as it was not his opinion only, but that of others, that what existed now was a purely temporary state of things.

PRIDDY, NEAR WELLS, SOMERSET.

THIS church has just been re-opened, after complete reparation as regards the fabric, the seats, chancel-stalls, and prayer-desks being still wanting. The building is a very interesting one, probably originally of Norman foundation, as the bowl of the ancient font appears to be of that period. It was rebuilt in the fourteenth century. There is a very well preserved fifteenth-century group in the porch. The tower arch, of three chamfered orders, is acutely pointed, and of early fourteenth-century date. The structure had been in a most dilapidated condition, quite unfit to hold service in. The rain and wind penetrated through the defective roofs, and damp prevailed everywhere. The tower and stair-turret in the upper stage were ruinous, and the buttresses tottering. The old oak roofs to the body of the church and the tower were found to be quite decayed, and it was necessary to put new pitch-pine roofs

(copies of the old ones). The chancel roof was modern and poor, and has been replaced by a handsome English oak panelled barrel ceiling, with carved bosses. The south aisle wall and the south chancel arch pier were defective, and had to be rebuilt, as also an arch between the north aisle and Chantry Chapel, and the angles of the east chancel wall. All the roofs have been re-covered with lead, re-cast from the old. The missing stone parapet to the north aisle has been supplied, and a parapet put to the chancel roof. There are new gable copings, the old saddle stones being re-used. Proper external channel courses and down-pipes have been placed everywhere, and the ground lowered. The seats were modern, except the return chancel-stalls, which, with the elegant Perpendicular screen, will be refixed after repair. The interesting Decorated stone pulpit has been repaired. The whitewash internally has been removed, and new rough stucco applied. The nave, porch, and tower have been re-paved with Keinton stone, and the same material is used for the steps. The chancel has been laid with Godwin's tiles to the architect's design. The floor under the area for seats is paved with solid wood blocks. New oak doors with floriated hinges have been executed. The glazing is of cathedral rolled glass in various patterns and tints, mixed with seconds Newcastle crown glass. A warming-apparatus on Perrett's system has been supplied. The architect has been Mr. B. Edmund Ferrey, F.S.A.; the builder, Mr. H. Hawkins, of Glastonbury.

PARLIAMENTARY JOTTINGS.

The Wellington Statue at Hyde Park Corner.—In the House of Commons on the 9th inst. Mr. Shaw-Lefevre, First Commissioner of Works, replying to Sir H. Holland, who asked a question on behalf of Mr. R. Paget, said:—The House will recollect that a few days ago I informed them that I had invited the committee who had advised the removal of the statue of the Duke of Wellington to the site in front of the Horse Guards to reconsider the question with the experience of the model which has recently been placed there. The committee have made the following report:—

"The committee appointed to consider the question of how best to deal with the statue of the late Duke of Wellington have now had the advantage of seeing a model of the colossal figure erected upon the site recommended by them in St. James's Park, opposite to the Horse Guards. This site was only selected by them under the conviction that, having regard to the huge size of the statue, and to the fact that when raised upon a suitable pedestal, it would in its present position overtop and crush all its surroundings, it was impossible to retain it in the neighbourhood of Apsley House. They felt strongly, however, that it was only on grounds of extreme urgency that it would be justifiable to separate the monument raised to the Great Duke from a spot which it had occupied for nearly forty years in the immediate vicinity of the houses given to him by the nation. Reluctantly, therefore, they recommended its removal, in the hope that in the new position (for which much was to be urged on account of its association with the military achievements of the Duke, and with his high office as Commander-in-Chief of the Army), the great size of the statue would be less objectionable, and its artistic defects less glaring. That hope is not realised by the result, and the experiment made shows that there is no position in London suitable to such a colossus, or in which its faults would not be as salient as in the two localities which have been tried. The committee, therefore, strongly urge that the statue should be re-cast; the old metal being used again in the production of a new statue of suitable proportions. They recommend that this statue should be erected in the place opposite to Apsley House. In this way the Duke may be commemorated by a monument in the place above all others best suited to receive it."

We greatly regret that the statue is to be broken up, and consider the act uncalled for. In the course of the discussion Sir J. Eardley-Wilmot asked, is not the right hon. gentleman aware that that horse was modelled from the celebrated Copenhagen, on the back of which the illustrious duke won many of his victories in the Peninsula, and that he also rode that horse on the occasion of the Battle of Waterloo? Mr. S. Lefevre.—Yes, I am informed that that is the case. The new statue will probably be equestrian also. Lord J. Manners.—Is the competition for the commission for making the new statue to be limited or unlimited? Mr. S. Lefevre.—Unlimited.

The Proposed Improvements in Whitehall.—In the House of Lords on Monday evening last,

Lord Lamington asked whether the Government would delay the erection of any building in Parliament-street until the plan of the whole proposed improvements from Whitehall to the Houses of Parliament had been submitted to Parliament. The noble lord said that he contended for the one principle that there should be a concentration of the public offices, and he was most anxious that the Government should avoid committing the grievous error which he thought they were about to fall into. He understood, as far as he could judge, that it was now intended to take down Parliament-street; but, to his great regret, he saw that it was not intended there to concentrate the public offices, but to let the land on building leases. He ventured to point out to the Government that in doing that they would make a complete blunder. There would be space on that ground to concentrate all the departments of public offices. By doing that they would save 30,000l. a year, and the buildings could be erected for about 800,000l. Lord Thurlow, in reply, said that he was directed to say that it would be necessary to apply to Parliament for further powers before proceeding with the erection of public offices in Parliament-street, and when that application was made it would be accompanied by a complete plan of what it was proposed to build.

The House Duty.—In the House of Commons, on the 9th inst., on the motion of Mr. Alderman Lawrence, a return was ordered of the number of houses assessed to the House-duty in the year ending the 5th day of April, 1883, in each county and division of a county and borough in the United Kingdom, distinguishing the number charged as follows:—At 20l., above 20l. and under 30l., 30l. and under 50l., 50l. and under 100l., 100l. and under 150l., 150l. and under 200l., and so on, rising progressively 50l.; and showing also the total amount received in each county and division of a county and borough (in continuation of Parliamentary paper No. 384 of session 1872).

THE ART-UNION OF LONDON.

THE pictures selected by prize-holders of the Art-Union of London are now on view at the galleries of the society, No. 112, Strand, and they will remain on view daily from ten till six until September the 1st. Although the collection is somewhat smaller than usual, in consequence of the cost of the print, it contains some very good works selected by the fortunate possessors from the exhibitions of the Royal Academy, Society of British Artists, the Grosvenor Gallery, the two Water-colour Societies, the Royal Albert Hall, and the Society of Lady Artists. The principal prize is a painting by Mr. Arthur Stocks (No. 21).—"One generation passeth away, and another generation cometh." The subject is a cottage interior; an old lady, seated in a high-backed arm-chair, with spectacles in her hand and Bible on her lap, sits meditating over the cradle of a healthy-looking baby (presumably her grandchild) who is fast asleep. The figures and the furniture are exceedingly well painted. There are several good landscapes in the collection, some of the best being those by lady artists. The print for the current year, representing a scene in the Tuileries, June 20, 1792.—Marie Antoinette and her children face to face with some of the desperados and viragos of the Revolution, is also on view. It has been well engraved by Mr. C. W. Sharpe from the admirable picture by Mr. A. Elmore, R.A.

Prizes for Turning.—The Master, Wardens, and Court of Assistants of the Worshipful Company of Turners, according to their custom, propose to give this year their silver medal, the freedom of the Company to, and (subject to the consent of the Court of Aldermen) will also obtain the freedom of the City of London for, any workman in the trade in the United Kingdom who may send in the best specimen of hand-turning in wood, ivory, or metal. A bronze medal will be given as a second prize, and certificates of merit, as well as money-prizes, will be awarded in both the wood and ivory competitions at the discretion of the judges. Among the sums placed at the disposal of the Competition Committee are 50l. by the Baroness Burdett-Coutts, and 35l. by Mr. W. L. A. Burdett-Coutts. The different objects must be delivered at the London Mansion House during the week ending October 20th.

PROVINCIAL NEWS.

Darlington.—The *North Star*, a halfpenny daily newspaper started two years and a half ago in the Conservative interest, appears to have been so successful as to need larger premises, which were opened on the 11th inst. From the description which has been forwarded to us the new building appears to be well planned for its special purpose. It is situated in Crown-street, and externally is of red pressed brick, with Dunhouse stone dressings, the facade being designed in the semi-Queen Anne style of architecture. The architect is Mr. G. G. Hoskins, and the following were the contractors,—Messrs. McKenzie, excavators, bricklayers, and masons; Mr. R. T. Snaith, carpenter and joiner; Messrs. G. Pattison & Sons, slaters; Mr. R. M. Ormerod, of Carlisle, plasterer; Mr. Emmerson Smith, plumber; Mr. John Law, painter; and Mr. William Liddell, ironwork.

Birmingham.—Mr. J. T. Harrison, Local Government Board Inspector, held an inquiry in Birmingham on the 7th inst., with respect to the application of the Corporation to borrow £4,500, for the purchase of a site for a hospital; 16,085*l.* for a new fish-market; and 4,700*l.* for the new street from Sparkbrook to Small Heath; and several smaller sums. Evidence was given to show the necessity for these works, and the Inspector said he would report to his Board.

OLD PLASTERING.

Sir,—Whilst examining the "Manor-house," Brigstock, Northampton, for the purpose of putting a new roof, &c., I found the plastering of the rooms in the roof,—and of the ceilings below,—was laid on "reeds," obtained from Whittelease-mere, more than 122 years since! They are secured to the joists and rafters by oak laths,—in the same direction,—and are about 1 in. deep. They are perfectly sound. I enclose you a few,—one of which I made into a pen to write this with.

I cannot obtain any more reeds to patch up the work with, so I must thicken out with other materials.

Another peculiar thing was that the roof is constructed *without* a ridge-piece, the principals and common rafters being halved and pinned together with oak pins; all the timber being of oak, even to the *very thin* slating laths. The slates are from Colley Weston, and are perishing. All the roofs about here are of a very steep pitch, and Welsh slates are commonly laid with a 24 in. lap (Countesses). Perhaps the other ancient buildings about here are too well known to your readers to need comment. The church (opposite) I know is.

HARRY T. PERCIVAL.

SUB-CONTRACTS.

Sir,—I am very much averse to wishing to intrude on your pages, or to attempt to thrust my opinion before your readers. It is only fearing that what is quite pertinent to the case may be left unsaid that I venture to say another word. [See *Builder*, pp. 31, 62, 97, 130, 199, *ante*.]

Nocturnously a very wrong impression prevails respecting the profits of the sub-contractor. The statement by a clerk of works that a specialist gets 50 per cent. higher prices than most builders is very wide of the truth. "Clerk of Works" speaks very lightly of 10 per cent. as if it formed but a moiety of the profits arising from work. It is a difficult matter to bring proof as to the amount of profit derivable from any particular branch of the building trade, but competition will not allow any extravagant gains to be made. The writer, as representing several of the largest London firms, has for many years estimated for work at 5 per cent. on the cost, and in no case does he remember more than 10 per cent. being added for profit. Therefore to speak loosely of such a sum as 10 per cent. or to insinuate that if one party did not get it as a perquisite another did, is too revolting to be seriously repeated.

Domestic engineers are not only subject to competition, like builders, but they are often-times put to great expenses in travelling, time for arranging and developing schemes and preparing drawings and specifications, and sometimes revising and submitting them two or three times, and afterwards to be told that he would be allowed to "tender in competition," when he would find the bases of his own scheme

and specification used for the works to be executed. The experience and toil of years will be displayed and allowed to be traced by the first and every comer who shows a business card, and allowed to enter into competition with those who have borne the burden and heat of the day with an equal chance of success.

A sub-contractor's as well as the contractor's work represents so much cash which he expects and ought to receive in full. If any amount is required to be deducted, as the architect thinks the builder should receive 10 per cent. or less, why not let it be stated in the specification that provision be made for the sum, so that all competitors alike may know and add it to the cost of his work?

As to the incidentals and exigencies of all work coming under the builder's contract, they are, or ought to be, provided for without looking to the sub-contractor an element by which his gains are to be increased.

ROBERT CRANE.

PROPOSED WATERWORKS AT BUNGAY.

A MEETING was held on Friday, August 10th, to consider the above question, Mr. W. Hartcup in the chair, supported by the parochial committees appointed by the Rural Sanitary Authority under the provisions of the Public Health Act, 1875, for the parishes of Bungay St. Mary and Bungay Holy Trinity. There were also present, and invited by the committee, Mr. J. Compton Merryweather, M.I.C.E., and Mr. J. Howard, C.E., of the firm of Messrs. Howard & Baker, to discuss the water supply of the district.

The discussion resulted in an offer being made by Mr. Howard to construct the waterworks within four months, upon an entirely new and economical principle, and which has engaged the attention of Messrs. Merryweather and Howard for some considerable time. The offer [was accepted by the committee.

BAD BUILDING AT HIGHGATE.

THOMAS BARR, builder, was charged at the Highgate Police-court, on an adjourned summons, issued at the instance of the Metropolitan Board of Works, for using improper mortar in the construction of two houses in Lunot-street, Highgate New Town. The defendant promised to amend the work, but it was stated that he had not done so, and had filed a petition in bankruptcy.

Mr. Borill, the District Surveyor, said the mortar used was simply garden mould, and the work could not be rectified unless the houses were pulled down. Mr. Bodkin said he quite agreed with Mr. Borill that the houses should be pulled down. Not only had the defendant used this bad mortar, but, after notice was served upon him, he completed them in the same bad style. A fine of 2*l.*, and 10*s.* a day from the 23rd of June would be imposed in respect of each house, and steps must be taken to prevent the houses being sold to any unsuspecting person, who would be liable to put them into a proper condition. He would also report to the Board of Works that the Magistrate thought a summons should be taken out against the Defendant to compel him to pull them down. The fines, in the aggregate, amounted to nearly 100*l.*

Books.

Electric Lighting. By Le Comte TH. DU MONCEL. Translated by R. ROUTLEDGE. London: Routledge & Sons.

Practical Electric Lighting. By A. BRUNLEY HOLMES. London: E. & F. N. Spon.

Two small treatises on a subject of present interest, but dealing with it in different ways. The first goes pretty deeply into the phenomena of electric lighting, its history, mainly from a French point of view, and its scientific aspect, and prefaces the whole by a chapter of definitions of terms which, worse than Greek to the ordinary reader, are here clearly explained. The book is copiously illustrated, and chapters on the cost of electric lighting and its possible applications are both valuable and interesting. Why, in enumerating the European cities which have adopted the electric light for public use, the author should add, "Even America has made repeated attempts to reach an immediate solution of the problem," we cannot guess. America is generally first in the field of progress, and in this instance was certainly no laggard.

Mr. Holmes's book is written to explain, in language which every one may understand, the principles involved in the production of the electric light, and it entirely succeeds. The real discoverer of the electric light appears to have been Sir Humphrey Davy, who, so long ago as 1810, produced the light by means of a galvanic battery and two pieces of carbon. Since that date the progress of the science has been fitful, and it is "only within the last few years that the possibility of employing the

electric light for purposes of general illumination has been seriously considered." All writer agree as to their inability to explain what electricity is. They can only systematise the observed phenomena, and the means by which they are rendered subservient to man's use. The least expensive form of producing the electric current is found to be in mechanics motion, and the transformation of this motion into electrical energy is dealt with in detail. Elaborate drawings of Siemens's and other electro-magnets, with their allied machinery, are liberally given. It is stated that there is scarcely any limit, but the safety of the machine, to the strength of the electric current producible by the revolution of armature coils. The peculiarities and relative values of the arc light versus incandescent lamps are fully discussed; but the author of this work purposely abstains from recommending any one form of light for all purposes. Each case must, however, be taken on its merits, except that for domestic use he considers the incandescent lamps unequalled. The storage of electricity, upon which its general usefulness for lighting purposes mainly depends, forms one of the most interesting chapters of an interesting book.

Modern Perspective. By WM. R. WARE. Boston: Osgood & Co. London: Trübner.

THERE are some subjects which cannot be learned from books, and perspective is one of them. It is a simple matter in itself, and a competent teacher could show an apt pupil in a few hours how to put into perspective the most difficult subject. It is easy to find by simple rules the true position of any given point, and if of any point, then of any number of points. But a number of points will enable us to trace a line, and thus any line and any assemblage of lines may be easily and correctly drawn in perspective. Yet for 300 years or so some of the acutest minds have been exercised on the rationale of the art, and have contrived to entangle it in a mesh of complexities which might drive one mad in the attempt to understand or unravel. This book is not nearly so involved as many of its kind, yet it is made up of paragraphs of which the following is a fair sample:—"The perspective of the trace of a plane, or a system of planes, is found by passing through the station point an element of the system. The line where it intersects the plane of the picture is the perspective of the trace, or horizon, of the system of planes." It is perhaps hardly fair to present this apart from the context; but it will show how abstruse a simple matter may appear when clothed in scientific or technical language. The examples of what is called "parallel perspective" show conclusively that such a method is conventional only, and entirely out of accord with nature. The author is quite right in saying that "the chimney looks very ill-drawn, and it is not easy to make it look quite right," i.e., upon the principle adopted.

The atlas of plates which accompanies the text has been carefully prepared, and the subjects have been well selected. It is some relief to get rid of that old draught-board, and the marble-paved floor, and the four-way cross, and the rest of the stock illustrations found in other treatises on this bewildering art.

A short, clear, and simple treatise on perspective is still to be written.

Limestones and Marbles; their History and Uses. By S. M. BURNHAM. Boston: Cassins & Co. London: Trübner & Co.

This work fully justifies its somewhat comprehensive title. The author classifies and describes the principal limestones and those varieties thereof known as marbles, alabasters, &c., found throughout the whole civilised world. He gives us their geological position, their chemical constituents, and their economic uses and value with elaborate precision and completeness. His efforts have been well seconded by the chromolithographer, who has furnished forty-eight illustrations of polished marbles, which are of a very high degree of excellence indeed. The type, paper, and lithography are, too, the best of their several kinds. We have selected some of the plates for special mention, but we would prefer to send our readers to the book itself, which will, probably, become the standard work on the subject of which it treats.

The limestone formation is at once the oldest and the newest of all, and its presence is almost universal. The accidental admixture of iron,

pper, clay, and other minerals gives it those varied and beautiful colours which render it of estimable value to the architect. Ireland possesses along the Galway coast "one of the greatest displays of limestone in the world," a source of wealth almost neglected; and the marbles of our own island were well known and highly prized in ancient Rome. The chapter on the vast variety of marbles used in the buildings of that city,—ancient and modern,—will be of special interest to the architect. The work is enriched with tables of fossils found in calcareous strata, of the age and locality of the principal limestone ranges, of the decorative specimens exhibited at the Paris Exposition of 1878. It has a really good index, and,—with a fulness he said,—its bulk is not swollen by a batch of advertising sheets.

The chapter on Greek art, *à propos* of the antique marble, is the least satisfactory, and it is not easy to see why the specimens of African marbles should find a place in the chapter on Greece, or the Belgian varieties in that devoted to England. We acknowledge considerable obligations to the author, illustrator, and publisher alike, and hope that their labours will be set with a generous recognition from the public.

Archæological Collections. Vol. xxxiii. Lewes: H. W. Wolff.

An architectural student into whose hands this volume may fall will be especially pleased with paper on Seaford Church, by the late J. S. Webb, which is all that such a paper should be. The drawings by which it is illustrated are admirable; the least attempt at picturesque treatment they are clear and precise down to the minutest detail of design and construction, and carry with them an impression of true trustworthiness. A paper on Warrnambool church and neighbourhood by Mr. André is of interest from its connexion with the late Shelley, whose ancestors had here their seat, and where the poet himself long dwelt.

Mr. Nesbitt discusses in a thoughtful paper a much-vexed question of church restoration, and endeavours to find a basis of agreement between the conservative restorers on the one hand and the leave-alone-at-any-price faction on the other. The recent *fiasco* at St. Alban's is contrasted with the course followed at the most interesting church at Horsham, where the Perpendicular east window was allowed to remain an Early English chancel rather than re-instate the architecturally the triplet which no doubt at one time occupied the same position. In the case of St. Alban's, as the writer says, "a page of history has been torn out," and, he might have added, a false one interpolated. We would like attention to a suggestion of this writer's at architects should be remunerated for their services in restoration works by fee and not as by commission,—the trouble undertaken by them and the skill required from them being out of all proportion to the bare expenditure of money.

There is an interesting article on Sussex kiln-dore, and many other portions of this volume will repay perusal. The series is well planned and appreciated.

Order-making and Bridge-building in Wrought Iron. By ED. HUTCHINSON, M.I.M.E. London and New York: E. & F. N. Spon.

The author addresses himself exclusively to the practical side of his subject, and modestly disclaims even the possession of an opinion as to the merits of a bridge in point of design. As a practical writer he has all the necessary knowledge. He takes up the subject *ab ovo*, and details the processes by which the crude iron is converted into malleable or wrought iron; flows it through the puddling-furnace and the rolling-mills, and thence to the testing-machine. Under the head of "workmanship" he gives instructions as to drilling, punching, riveting, &c., and the rest, and examines the principles on which the parts of a girder are proportioned so as to develop the greatest strength at the least cost.

The second part of the work deals mainly with structures which have been produced at the "Skerne Works." The interests of the Skerne Works here become perhaps a trifle too prominent. The book may be none the less a valuable one on that account, but there are some who will be apt to look upon it as an advertisement in the guise of a scientific treatise. The difficulties of bridge-building,

and the skill and ingenuity they call forth, are well shown in an account of a Swedish example, the details of which are given in full, and are worth examination.

Our Iron Roads. By FREDK. S. WILLIAMS. London and Derby: Bemrose & Sons.

This book deserves a longer notice than we are able to accord it. It is a new edition of a work published thirty years ago, and now brought down to the present date. It opens with a lively sketch of "the good old coaching days," traces the iron road from its first crude inception in the middle of the seventeenth century to the completion of the first accomplished line in 1825, and thence to the close of the past year. There is hardly a subject connected either directly or indirectly with railways that is not carefully discussed. The cost of working, compensation for injuries, the State purchase of the lines, communication with the guard, the application of uniform rates, of vacuum brakes, every conceivable subject, is touched upon by the author. His pages are spiced with anecdotes well told, and pictures well drawn and engraved. We have rarely met with a more instructive or entertaining book of its kind.

VARIORUM.

"COPYRIGHT and Patents for Inventions," by R. A. Macfie, F.R.S.E. Vol. ii. Edinburgh: T. & T. Clark. This is, in fact, a plea for free trade in literature and mechanical inventions, and the moral of it is that "patents are nowadays so exploited by professionals as to hinder the lessening of the cost of production and prevent the use of desirable improvements," and thus are detrimental to the public interests. The compilation from blue-books, committees' reports, &c., in support of this view extends to 600 pages, and presents very strongly one view of an important subject.—"Text-book of Physics," by J. D. Everett, M.A. London: Blackie & Son. Second edition, brought down to 1883. A restatement in clear and perspicuous language of what is to be found in scores of similar manuals. It is handy and compact in size, clearly printed, and copiously illustrated, and will, no doubt, receive with its many rivals its due share of public patronage.—"Pumps and Pumping Machinery," by Frederick Colyer, C.E. London: E. & F. N. Spon. "Facts only are stated and no theories entered into," and "as few words as possible are used." These ought to be strong recommendations to practical men. The matter is mainly descriptive of executed pumping gear, and the whole is illustrated by twenty-three capital plates.—"Liverpool Compensation: a Text-book for Architects and Surveyors," by Joseph Henry McGovern. Liverpool: Mrs. C. B. Bean. The recent improvements in Liverpool have given rise to numerous compensation cases, some of them of a complicated nature, and this book brings together the various newspaper and other reports of the same. It further discusses the system upon which compulsory power of the local and other Acts are exercised, and the improvements of which they are susceptible, and it strongly recommends the fusion into a general Act of the multitude of regulations for the City of Liverpool which are now in operation, to the bewilderment of all who have to do with them. It is a very useful little work.

Miscellaneous.

A Large Clock for Buxton Hospital.—The Duke of Devonshire has just presented a clock to the Buxton Hospital. It is fitted with all the latest improvements. It has four illuminated dials, each 6 ft. diameter, chimes the Cambridge quarters, and strikes the hours upon a 15 cwt. bell. The cost of the whole has been about 500l. It has been carried out by Messrs. John Smith & Sons, Midland Steam Clock Works, Queen-street, Derby.

Hove.—According to the last report of Mr. William Keble, M.D., Medical Officer of Health, taking the mean of the last eight years, the annual death-rate in Hove has been only 13.3 per 1,000, compared with an average of 23.1 in the chief town population of the country, and 19.0 in the villages and country districts. The zymotic death-rate during the same period has averaged only 1.6 per 1,000, against 3.36 in all England and Wales.

Somerlease House, near Frome.—The workmen employed at this house had an outing the other day to Weymouth, for which they are indebted to the liberality of Mr. Geo. Walters, J.P., for whom the residence, now approaching completion, has been built. The residence referred to, which is somewhat unique in appearance, is pleasantly situated on the south side of the valley at Murtry, near the road leading to Mells, and contains twenty-one rooms, all of good height and well lighted. The architecture is domestic Elizabethan or Tudor in character, and was specially designed by the late Mr. C. E. Giles, of London (who was a native of Frome). The main walls are built of selected mountain limestone very carefully fitted together in snail-creep random-work, with close joints, and the dressings are of Beer freestone from Seaton, Devonshire, the main quoins being native stone finely tooled. The walls are lined inside with bricks, and the mortar used has been made from blue lime and ground bricks. The roof tiles and ridges, which are of a warm brown colour, are obtained from the well-known Pen-y-bont works at Ruabon. The interior woodwork of the house is of clean varnished pitch-pine throughout, with brass fittings, the locks being the patent "push and pull" manufactured by Kaye & Co., of Leeds, with oak furniture; the wood floors are stained oak and varnished. The floor of the hall is laid with encaustic tiles supplied by Maw & Co. The fire-places are fitted with dog-grates with metal and marble mantels; these and other kindred fittings have been supplied by the Coalbrookdale Co. and Messrs. Gardiner & Sons, of Bristol, and Messrs. Coomb & Son, of Frome; the splay of the fire-places are formed with encaustic hand-painted tiles made by Minton, Hollins, & Co., of Stoke-on-Trent. The windows are glazed underneath the transoms with single panes of three-eighths polished plate-glass cemented into the freestone, and above with stained glass in lead, the various patterns having been executed by Mr. E. Harwood, of Frome. The windows are all fitted with pitch-pine folding shutters inside, except the bay window of the drawing-room, which has a patent self-acting revolving shutter of pitch-pine made by Salmon, Barnes, & Co., of Ulverston. The wrought iron entrance-gates were designed and made by Singer & Son, of Frome. The stables, coach-houses, &c., will be fitted up with Musgrave's patent divisions, mangers, &c., and pitch-pine woodwork. The whole of the works have been carried out by Mr. Joseph Bird, of Radstock. As stated above, the plans of the main building were prepared by Mr. Giles; the conservatory, entrance, gateway, and stables were built from designs by Mr. W. F. Bird, son of the contractor, who has also supplied the whole of the working details.

Technological Museum of New South Wales.—A Technological, Industrial, and Sanitary Museum was being formed in Sydney, and was about to be opened (several thousand specimens having been got together), when it was destroyed by the burning of the Garden Palace (the late International Exhibition Building) in which it was located, in September last. Fresh premises having been secured, however, active efforts are being made to form an entirely new museum. Many specimens have already been received, and further exhibits from manufacturers and others have been promised. Some of our readers may be able to co-operate with the promoters. Series of specimens illustrative of each of the stages from the raw product to a manufactured article are especially desired. Mr. J. H. Maiden is the Curator and Secretary.

Interesting Discovery in the Island of Delos.—A telegram from the Athens correspondent of the *Daily News* says that during the excavations carried on by the French school at Athens in the island of Delos, a very interesting discovery has been made. Near the Theatre of Apollo a private house has been discovered, probably of the Alexandrine period. A court surrounded by pillars and twelve rooms have thus far been revealed. The floor of the court is of beautiful mosaic containing flowers, fishes, and other ornaments, and in the middle of the court there is a cistern full of water. The gate of the house and the street leading to it have also been dug out. As the excavations continue, an entire quarter of the ancient city may possibly be discovered.

The Eureka Concrete Company, Lim., have received instructions to pave the stables of Marlborough House with their red diamond concrete.

The London Constructive Iron and Bridge Works, Millwall.—On the 4th inst. the *employés* at these works (Messrs. Matthew T. Shaw & Co.'s) had their first annual "banquet" at Broxbourne, proceeding thither in well-appointed brakes. The proceedings of the day revealed a commendable harmony of feeling (based on a consciousness of mutual dependence and of identity of interests) between employers and employed. The chair was ably and genially filled by the manager, Mr. Kirstein, who was supported by several members of the staff. "A message from the firm" was read by the Chairman. It contained the following passages:—

"We may congratulate ourselves upon our success, and although we have had difficulties to contend with, yet we have overcome them, and are now in a well-developed state. If we all strive, our works will certainly be one of the best for constructive ironwork, and we desire that our workmanship may earn and maintain a good reputation. Our desire is that all men employed by us may continue in our employment, and be present upon a similar occasion next year; also, that each and all, both masters and men, may do their duty and be helpful to one another, and work with a right spirit. We trust that all men may be punctual at their work, so that the engagements as to time undertaken by the firm may be duly honoured."

The toast of "Health and Prosperity to the Firm" was enthusiastically received. Mr. Stirling congratulated the assembled company upon the success attained by the firm, and Mr. Hickman testified to the zeal and industry of the *employés*. Mr. Gibson, on behalf of the men, acknowledged the help and consideration those in the shops received from the office staff, and especially owned the help received from their esteemed manager, Mr. Kirstein. The Chairman briefly responded, and other toasts followed.

Plymouth Pier.—The work on the Plymouth pier has been proceeded with rapidly, and has already assumed large dimensions. The approach to the pier from the toll-house, which is about 350 ft. long, is already completed, a few minor details having only to be carried out. The toll-houses at the entrances are erected, and will be finished as speedily as possible. They are made of pitch-pine, with plate-glass windows, and the panels will be inlaid with Minton tiles of a very elegant pattern. Messrs. Handysides & Co. of Derby, are now executing an order for cast-iron gates and lamps, elaborately worked with the Borough Arms in large proportions, to be placed at the entrance. The approach to the pier and the ground around the toll-houses will be laid with tessellated pavement manufactured specially by Messrs. Minton. The extreme length of the pier from end to end will be 560 ft. The work is being carried out by Mr. C. E. Daniel, contractor, of Portishead, under the superintendence of Messrs. D. Dawson (resident engineer) and Drake (clerk of the works), whilst Mr. E. S. Lancaster, of Plymouth, continues to act as honorary secretary to the scheme.

Outbreak of Fever at Torpoint.—A serious outbreak of fever is reported from Torpoint, Devonport. The cases already number upwards of one hundred. At the meeting of the St. Germans Board of Guardians on the 9th inst. Mr. B. Kerwill, the Medical Officer of Health, presented a report detailing the causes of the outbreak. It is the old story,—a scanty supply of water (much of it from polluted wells), and bad drainage. Palliative measures, such as the flushing of the drains, have been adopted, and plans for an improved water-supply, prepared by Mr. Appleton, have been accepted by the Guardians, subject to the approval of the Local Government Board. The Guardians are accused of procrastination with regard to the water question, the need of an improved supply having been apparent, it is alleged, fifteen years ago.

The Pedestal for Drake's Statue.—Of the four or five tenders that were sent in for the erection of the pedestal which is to contain the statue of Sir Francis Drake on Plymouth Hoe, that of Mr. S. Roach, of Union-street, has been accepted by the committee. The pedestal will comprise three flights of steps, with a rusticated granite base, and a red Aberdeen polished granite shaft, weighing over ten tons in one block, surmounted by a granite cap to take the statue. Mr. Roach will commence the work without delay, and under favourable circumstances hopes to finish it by the end of October.

The Forth Bridge.—The report of Major-General Hutchinson, R.E., and Major Marinidin, R.E., of their first quarterly inspection of the works in progress for the construction of the Forth Railway Bridge, has been issued as a Parliamentary paper, accompanied by a plan of the proposed bridge. The inspectors say:—"The engineers have furnished us with diagrams of the strains upon the piers and other parts of the bridge, showing that, according to the result of their calculations, under no possible combination of a 55 lb. wind blowing in any direction, and a rolling load of 3,400 tons to the span (i.e., two tons to the foot), will the stress either in tension or compression exceed one-fourth of the ultimate resistance of the steel to be used in the construction of the bridge, viz., 30 tons per square inch in tension, and 34 tons in compression. The specifications provide for the testing of the steel being conducted in the manner prescribed by the Admiralty regulations, and the specimens of steel and the results of the tests show that the requirements of the Board of Trade, as detailed in the report dated the 8th of December, 1881, R. 11,469, have been more than complied with. In conclusion we can report that the preparations which have been made, and the machinery and plant which we are informed have been ordered, indicate that it is the intention of the engineers and the contractors to carry out the works in a manner suitable to the magnitude of the undertaking, and that, so far, these works have been completed in accordance with the authorised plans, and in a satisfactory manner." The engineers are Messrs. Baker & Fowler; and Messrs. Siemens are manufacturing the steel plates for the bridge.

An Expensive MS.—The sale of the beautiful manuscript of the "Life of Christ," with the series of splendid miniatures by Giulio Clovio, attracted a crowded audience last month to the rooms of the auctioneers, Messrs. Sotheby, to witness the contest for this rare example of the greatest miniaturist of his time. When the magnificently bound volume was placed before the audience, Mr. Quaritch, the well-known bookseller and great connoisseur in old manuscripts and printed books, stated that there had been some difference of opinion as to the authenticity of this fine work, and that he would, therefore, ask the auctioneer whether he would guarantee it. This inquiry was answered by a negative, but also with an assurance that the manuscript would be left with confidence to the appreciation of those who were disposed to bid for it. After this, Mr. Quaritch started the bidding with 250*l.*, and was met with 500*l.* from Mr. Ellis, who continued to advance, though not against Mr. Quaritch. The latter waited until Mr. Ellis bid 1,500*l.*, and then advanced steadily by fifties, in the end carrying off his prize at the large sum of 2,050*l.* We believe that it was intended by the British Museum authorities to purchase this fine MS., but the sum named as a limit was 1,000*l.* This lot formed the most important item in the sale of the Towneley MSS.—*Printing Times.*

Bars to adequate Street Communications.—At the last meeting of the St. Pancras Vestry, Mr. Hoppey moved,—"That the Metropolitan Board of Works be requested in any scheme for making more direct communication between the Strand and Holborn that such communication should enter Holborn opposite Southampton-row, and that in connexion therewith the Board should consider the necessity for removing the gate in Woburn-place, by St. Pancras Church, and so make a direct thoroughfare from Euston-road and the North of London to the Strand.—Mr. Westcott strongly urged that the Woburn-place gate should come down, which would give communication direct from Hampstead to Holborn. What they wanted in St. Pancras was that when the Metropolitan Board of Works were considering the communication between Holborn and the Strand, they should consider the advantage to the public that would arise by the removal of the Woburn-place gate. No parish in London suffered as St. Pancras did through these gates. Millions had been spent in freeing bridges, and why should not the Board help to free the roads by removing the bars and gates?—The motion was passed unanimously.

The Funeral of the late Mr. R. Johns, for many years shop foreman to Messrs. Holland & Hannen, took place on Thursday, the 9th instant, at Finchley Cemetery. Upwards of 150 foremen, clerks, and workmen testified their respect by following his remains to the grave.

Nottingham Municipal Buildings.—At a meeting of the Nottingham Town Council the subject of the proposed new municipal buildings came up for discussion. The committee recommended that of the three premiums offered for the best designs, the first and second, of 300*l.* and 200*l.* respectively, be added together and divided equally between Messrs. Verity & Hunt, of Regent-street, London, and Mr. F. H. Holden, of No. 23, John Dalton-street, Manchester, who had been bracketed for the first place by the adjudicator Mr. Alfred Waterhouse; and the third of 100*l.* be awarded to Mr. G. Corson, of Cookridge street, Leeds. This recommendation was adopted by the Council, and the further consideration of the matter was adjourned. I case the Council decide to proceed with the buildings, the committee advise the selection of the design of Messrs. Verity & Hunt, the carrying out of which would, it is estimated, involve a total outlay of 161,257*l.*

Barnopfield, near Newcastle-on-Tyne.—A presbytery and schools, for the Rev. J. A. Wilson, have just been erected here. The whole has been erected from the designs and under the supervision of Mr. W. H. Wilson, architect. The presbytery is built in the Gothic style, of small blocked-faced stone, with brick and cavity walls. The dressings are of freestone from the adjoining quarry. The interior woodwork is pitch-pine, varnished. The school is built of freestone, to accommodate 200 children, with class and infant rooms. The roof is of collar beam type, celled at 15 ft. 6 in. from the floor. The ventilation consists of several vertical pipes taken up in the wall, and regulated by hinged door inside, also three fresh warm-air ventilators taken through the back of the fireplace.

Improved Industrial Dwellings Company.—The half-yearly report of the Improved Industrial Dwellings Company, Limited, has been issued, from which it appears that the company now possess 32 estates in various parts of the metropolis, on which 4,144 dwellings have been erected and are in occupation, and 615 are in course of erection, making a total of 4,759 tenements. When these are complete, the number of persons residing in the company's dwellings will be nearly 25,000. The expenditure on capital account has reached 814,890*l.* The annual dividend of 5 per cent. is recommended for payment, after carrying 3,000*l.* to the reserve fund for equalisation of dividend, which will then amount to 52,500*l.*

Drawing Lots.—The Bideford Town Council, at their last meeting got out of a dilemma in a novel way. They received two tenders for the construction of a wall in North-street, one from the Town Surveyor and the other from a Mr. Shute. Both were exactly the same as to price and the Council, under the circumstances, were unable to decide which ought to be accepted. They therefore resolved, not exactly to toss up for heads to win and tails to lose, but to adopt the more ancient method of drawing from a hat. Two tickets were placed in a *chapeau* belonging to one of the Councillors, and the business drawing having been carried out with due solemnity, it was found that the lot fell to Mr. Shute.

Destruction of a Music Hall by Fire.—Durand's Star Music Hall, in Upper Southampton-street, Sunderland, was entirely destroyed by fire on Saturday evening. The flames broke out in the interior of the building, near the roof, above the stage. A constable who was on duty reports that the fire broke out at half past seven o'clock, and the first efforts of his self and the proprietors were used to get 6*l.* audience, which he states numbered from 1,000 to 1,300, out of the building. He and Mr. Durand urged the people to leave quietly, as they got out safely in four minutes.

At the Royal National Eisteddfod, held at Cardiff last week, in the art competition W. H. Wormleighton, of Cardiff, took first prize in stone-carving with a Portland stone panel, original design in modern Renaissance style; first prize in wood-carving with a box-work figure of Moses descending from the Mount; and second prize in applied design with a *graffito* panel. There were twenty-two works in the three competitions. The adjudicators were Mr. L. Alma Tadema, R.A., and Mr. Frederick Wedmore.

Free Library and Art Gallery, Dudley.—We may add to the notice of this building: our last (p. 201) that the clerk of works was Mr. Henry Hackett.

The Manchester Art Gallery.—The structural alterations in progress at the Royal Institution, in order to adapt the building for the purposes of the new Corporation Art Gallery, are now completed. The fundamental change is the removal of the old lecture-theatre, which occupied the centre of the building, and extended through its entire height. Formerly the floor of the theatre was raised above the level of the rest of the ground-floor. The floor-level has now been made the same as that of the other rooms of the ground-floor. At the same time, the galleries of the upper floor, which were divided into two parts by the lecture-theatre, have now been made continuous. The ground-floor rooms on either side of the lecture-theatre were formerly broken up by a number of partitions. All these have been removed, and the rooms on this floor now correspond with those on the floor above. Two continuous suites of rooms have thus been obtained on either floor. A large new gallery has been secured on the first floor. The *Manchester Courier* understands that it is intended to appropriate the first-floor, as in former years, to the autumn exhibition of pictures, which will be opened on the 31st of this month. The objects recently acquired as the nucleus of the permanent art collections will be displayed on the ground-floor. The structural alterations have been carried out under the direction of the City Surveyor (Mr. Allison).

New Pier and Baths at Merriem, Dublin.—About midway between Sandymount Tower and the Merriem Railway Station the new promenade pier and baths have been constructed. The new bathing-place, which is situated at the end of the pier, will afford ample depth for a good swim. It is semicircular in form, the walls being built of concrete, and of a sufficient height to prevent those inside seeing either from the road or from the pier itself. A high wall divides the ladies' from the gentlemen's bath, and gives the former a heat of water 120 ft. by 40 ft., with a depth varying from 3 ft. to 8 ft. The gentlemen's bath is the same depth and length, but is double the breadth. About sixty bathing-boxes are arranged for accommodation for dressing, and are fitted up with towels, looking-glasses, &c. By a system of sluices and long pipes running out into the sea beyond the low-water line across the "Cockle Pond," the water in the baths will be continually changed. The pier itself, which is 400 ft. in length and 14 ft. in breadth, and about 12 ft. in height, is built, though firmly, built on iron supports standing on heavy piles sunk through the sand, which is about 3 ft. deep, into the clay beneath. The floor is made of heavy pitch-pine boards. The architect is Mr. Fred. Morley, and the contractors are Messrs. Connolly & Son, of Dominick-street, Dublin.

The Bayreuth Theatre.—The *Mensel* of Paris states that by order of King Louis of Bavaria, several architects are making investigations as to the possibility of removing the Richard Wagner Theatre from Bayreuth, and erecting it at Munich.

Mr. James Kent, of Milton-street, Finsbury, has generously handed over the "fitting" and "repairing" portion of his business to Messrs. Rowe and Silvester, his late foreman and clerk.

Children's Hospital, Paddington-green.—The sanitary arrangements of this new hospital have been carried out under the direction of the Sanitary Assurance Association, of 5, Argyl-place, W.

TENDERS.

For new premises, Upper-street, Kingston. Mr. Herbert Stanley, architect. Quantities by Mr. W. H. Brayshaw.

Morter	£1,709 0 0
Roberts	1,605 0 0
Boyes	1,628 0 0
Brass	1,494 0 0
Kilby & Gayford	1,411 0 0
Woodward (accepted)	1,400 0 0

For interior painting and decorating at No. 85, Cornhill-gardens, South Kensington. Mr. L. Sharp, architect.

Scharie & Williams (accepted).

For alterations, repairs, and interior decorations at No. 1, Bevis Marks, for M. L. Levin, Esq. Scharie & Williams (accepted).

For villa residence, Cromer, Norfolk, for Mr. F. Locker. Mr. John B. Pearce, architect.

House.	Stables.
Cornish & Gaymer	£2,885 5 0
Cubitt & Son	855 0 0
Downing & Son	758 0 0
W. Chapman	740 0 0
H. Wegg (accepted)	685 0 0

For sewers and surface-water drains, for the Sanction Improvement Commissioners. Mr. Samuel Mather, surveyor. Quantities supplied as follows:

Sewers.	Surface Water.
P. G. Pound, Bow-road	£1,783 0 0
W. J. Botterill, Cannon-st.	1,632 0 0
T. B. Hayter, Portsmouth	1,161 0 0
Neave Bros., Stratford	1,286 0 0
J. Cardus, Acton	1,328 0 0
Wilkes & Co., Devonshire-square	5,553 16 11
Cowdery & Sons, Newent	5,417 12 7
T. Adams, Hackney	4,816 0 0
E. & W. Iles, South Wimbledon	4,943 0 0
Hill Bros., High Wycombe	4,842 8 9
J. B. G. Marshall, Brighton	4,539 10 8
T. Rigby, Croydon	4,536 4 3
J. Dickinson, St. Albans	4,600 0 0
G. G. Rayner, Beale	4,250 0 0
Beadle Bros., Erit	4,368 0 0

* Accepted.
For works in erecting houses in South-street, Swindon, for Mr. W. Adcock. Bricks and stones supplied free of cost to the contractor. Mr. W. Drew, architect, Swindon.

Jackson	£825 0 0
Wiltshire	810 0 0
Stratford	800 0 0
Barrett	765 0 0
G. B. Henley, Swindon (accepted)	769 0 0

For alterations to the Workhouse at Homerton, for the Guardians of the City of London Union. Mr. George Judge, architect.

Burman & Sons, Enfield	£10,199 0 0
G. H. Cox, Catford Hill	9,731 10 0
Spratt & Sibb, Finchley	9,240 0 0
B. N. Smith, St. Paul, Paddington	8,835 0 0
J. P. Groome, Islington	8,400 0 0
Lucas & Son, Kensington-square	8,355 0 0
Prestley & Curney, Canon Town	8,350 0 0
S. J. Scott, London Wall	7,997 0 0
Scharie & Williams, South Kensington	7,850 0 0
Outwater & Son, East Smithfield	7,350 0 0
McCormick & Sons, Canonbury	7,950 0 0
J. & H. Cocks, Mile End-road	7,880 0 0
L. H. & R. Roberts, Islington	7,580 0 0
C. F. Kearley, Kensington	7,848 0 0
W. W. Sawyer, Clapton	7,777 0 0
Kilby & Gayford, Finsbury	7,763 0 0
T. Boyce, Hackney	7,727 0 0
J. Harper, Hackney	7,642 0 0
W. Shurmer, Clapton	7,587 0 0
W. G. Larke & Son, Fore-street, E.C.	7,344 0 0
Mark Gentry, Stratford	7,250 0 0
F. Ward, Croydon	7,245 0 0
Parish & Hawker, Mile End	7,200 0 0
J. Holland, Poplar	6,983 0 0
J. Stannan, Kingsland	6,966 0 0
F. W. Austen, St. Albans	6,450 0 0
Stamford Hill	6,450 0 0

For Private Street Improvements in the Township of Urmoston, Contract No. 16 consisting of the sewerage, &c., of Railway-road, and Contract No. 17 consisting of the sewerage, forming, &c., of Chadwick-lane and Back Lane Grove (West). Quantities supplied by the Engineer, Mr. John Price.—Contract No. 16.

W. Pollitt, Bolton	£1,352 1 6
Snape & Sons, Eccles	1,293 15 0
S. Cowburn, Hindley	1,225 0 0
S. Holt, Miles Platting	1,223 1 2
G. Unsworth, Moss Side	1,220 4 10
J. Randall, Waste	1,159 17 2
M. Naylor, Hulme	1,159 15 0
W. Hayes, Bolton	1,119 1 2
T. Cokes, Kearsley	1,024 14 8
E. Bird, Chorlton	1,008 0 0
W. H. Worthington, Rusholme	982 7 0

* Accepted.
Contract No. 17.

J. Oakes, Kearsley	£274 9 6
W. H. Worthington, Rusholme	451 2 7
S. Holt, Miles Platting	445 17 0
G. Unsworth, Moss Side	429 1 8
S. Cowburn, Hindley	426 0 0
W. Pollitt, Bolton	423 6 11
J. Randall, Waste	407 3 9
M. Naylor, Hulme	402 12 0
Snape & Sons, Eccles	393 15 6
W. Hayes, Bolton	375 12 9
E. Bird, Chorlton (accepted)	360 18 0

For alterations to No. 4, Finsbury-pavement for the "Sceptre" Life Association. Mr. James M. Cable, architect.

F. Higgs	£1,400 0 0
G. Sharpe	1,380 0 0
Richardson Bros.	1,337 0 0
Holloway Bros.	1,296 17 2
O. Orskoe (accepted)	1,269 0 0

For the supply of 1,500 yards cube of broken Guernsey granite, broken to pass through a 2-inch ring—

Novell & Robson	15s. 0d.	Per Ton.
Turner & Son	17s. 0d.	15s. 6d.
Mowlem & Co.	16s. 10d.	15s. 4d.
Culverhouse	15s. 4d.	13s. 11d.
Griffiths (accepted)	14s. 11d.	12s. 11d.

* Delivered and stacked in yard at rear of the offices of the Board.
+ Delivered upon any roads within the District of Willesden Local Board.

For repairs and decorations to "Annandale" House, Molesey, for Mr. G. S. Stevens. Messrs. Elkington & Sons, architects.

Holloway Bros. (accepted)

Accepted for the erection and fitting of New Châlet at Goswell-road for the Châlet Company, Limited.

J. Slater & Co. (Engineering Works).
Holloway Bros. (Foundation and Joinery Works)

Accepted for erecting and fitting New "Châlet" at Bishopsgate-street, Without, for the Châlet Company, Limited.

J. Slater & Co. (Engineering Works).
Holloway Bros. (Foundation and Joinery Works)

Accepted for erecting and fitting New "Châlet" at Bishopsgate-street, Without, for the Châlet Company, Limited.

J. Slater & Co. (Engineering Works).
Holloway Bros. (Foundation and Joinery Works)

For the erection of Camden Town Young Men's Christian Association Buildings. Mr. Alfred R. Pile, architect, 44, Bloomsbury-square. Quantities by Mr. J. Rookwood:—

Hayward & Son	£3,630 0 0
Manley	3,407 0 0
Patman & Fotheringham	3,492 0 0
Grover	3,482 0 0
Falkner	3,367 0 0
Williams & Son	3,363 0 0
Toms	3,316 0 0
Smith & Sons	3,017 0 0

For laying-in sewers, providing and fixing gully-traps, manholes, and ventilators, and making roads and foot-paths, and kerbing and channelling same, on the Kingston Estate, Portsmouth, for the National Liberal Land Company, Limited, 26, Charing Cross, London. Mr. G. Pooley, surveyor. Quantities by Mr. A. H. Ford, surveyor, Portsmouth:—

W. Ward	£4,893 0 0
E. Tull	4,484 18 10
C. Light	4,155 0 0
W. F. Winter & Son	4,150 0 0
H. W. Farmer	4,150 0 0
J. Farmer	4,111 0 0
H. & W. Evans	4,090 0 0
E. Boulton	3,993 8 11
T. R. Backett	3,811 8 10
T. C. Cooper	3,800 0 0
T. B. Hayter (accepted)	3,640 0 0

For additions to Pickhurst, Surrey, for Mr. John Hyde. Mr. J. W. Brydon, 5, Cambridge-place, architect.

Quantities by Messrs. Franklin & Andrews:—

House.	Stables.
Birch, Kingham & Co., Farnham	£3,805 0 0
Martin, Wells & Co., Aldershot	3,612 0 0
R. Pink, Milford	3,340 0 0
C. J. Barrett, Croydon	3,283 0 0
S. Elliott, Newbury	3,137 0 0

* Amended estimate, including additional works (accepted)

For proposed warehouse, situate No. 2, Paternoster-square. Mr. R. E. Tyler, architect. Quantities by Mr. Walter Barnett, 40, Queen-street:—

Thompson & Tweed	£2,542 0 0
Holt	2,210 0 0
Jerrard	2,197 0 0
Green	2,185 0 0
Langford & Way	2,130 0 0
Gould & Brand	2,093 0 0
Scott	2,075 0 0
Hunt & Rider	1,988 0 0
Scharie & Williams	1,974 0 0
Cadman & Bundy	1,970 0 0
Salt	1,928 0 0
Phillips	1,920 0 0
Hargrett	1,877 0 0
Batley	1,869 0 0
Burch & Moor (accepted)	1,817 0 0

For alterations and additions to Nos. 266, 268, and 270, Liverpool-road, N., for the executors of Sir J. B. Mansel. Mr. T. S. Archer, architect:—

White	£273 0 0
Brown	629 0 0
Pieton	427 10 0
Haines (accepted)	409 10 0

For making up, metalling, and kerbing certain roads at Mitcham and Wallington, in the district of the Croydon Union Rural Sanitary Authority. Mr. R. M. Chart, surveyor:—

Harcourt-road, in the hamlet of Wallington:—	
C. Fookes, New Wimbledon	£766 0 0
H. Streeter, Croydon	695 0 0
T. Free, Naphill, High Wycombe	597 0 0
W. Nicholls, Wood Green	561 0 0
Iles Bros., South Wimbledon	549 0 0
W. Langridge (accepted), Croydon	468 0 0

For alterations and additions to Nos. 266, 268, and 270, Liverpool-road, N., for the executors of Sir J. B. Mansel. Mr. T. S. Archer, architect:—

White	£273 0 0
Brown	629 0 0
Pieton	427 10 0
Haines (accepted)	409 10 0

For the erection of stables and residential chambers in Trafalgar-square, Brompton, for E. B. Ashton & Co. Mr. C. H. Thomas, architect. Quantities supplied by Messrs. Argent & Woodward:—

Higgs & Hill	£3,600 0 0
Lawrence	3,589 0 0
Green	3,575 0 0
W. H. Smith	3,479 0 0
Kearley	3,347 0 0
Brass	3,300 0 0
Bell	3,275 0 0
Simpson & Co	3,268 0 0
Lee	3,146 0 0
Scharie & Williams	3,000 0 0

For drainage works, Silverdown, for the West Ham Local Board. Mr. Lewis Angell, C.E.:—

Mowlem & Co.	£21,105 0 0
Strachan	1,080 0 0
J. Jackson	860 0 0
J. W. & J. Neave (accepted)	869 10 0
Brightman	867 0 0

For sewer, &c., for the Abingdon Board of Guardians. Mr. George Winslip, engineer, Abingdon and Westminster:—

H. Norman, Fulham	£230 10 0
G. Thatcher, Abingdon	622 10 0
Buckle & Wheeler, Abingdon	615 0 0
H. Potter, London (accepted)	610 0 0

For building eight houses Brook-green, Hammersmith, for Mr. J. Sharp. Mr. L. Sharp, Charing Cross-chambers, architect:—

T. J. Bryant, Turnham-green (accepted)

For alterations, repairs, &c., at Woburn Lodge, Upper Woburn-place, W.C., for Mr. H. H. Finch. Mr. Alfred G. Olley, architect, No. 94, Cannon-street:—

J. B. Axford, Gray's Inn	£276 0 0
R. Perkins, Great Fitzfield-street	850 0 0
B. Beham & Co., Buckingham Palace-road (accepted)	760 0 0

For Hanley-in-Arden Schools, for the Wooten Waven School Board. Mr. W. Hawley Lloyd, Colmore-row, Birmingham, architect. Quantities supplied by Mr. George Kenwick, Unity-buildings, Temple-street, Birmingham:—

W. Sapcote & Sons	£2,645 0 0
J. Moffatt	2,645 0 0
J. Smith & Sons	2,640 0 0
J. Roberts & Sons	2,473 0 0
T. Smith	2,468 0 0
W. H. Coppage	2,462 0 0
Bernard McEvoy	2,347 18 3
C. Lloyd & Son	2,350 0 0
S. Burman & Son	2,207 0 0
Gowing & Ingram	2,133 10 0
G. Whately	2,115 0 0
Trow & Sons	2,080 0 0
F. Bailey (accepted)	1,998 0 0
T. Wilkinson (withdrawn) ..	1,803 7 0

For new German Orphanage, for Baron Schroeder, and the committee. Mr. E. P. Loftus Brock, architect:—

Carter & Son	£2,293 0 0
Brass	2,184 0 0
Dowson	1,192 0 0
Manley	1,165 0 0
Groter	1,933 0 0
Scribner & Co.	1,884 0 0
Mattock Bros.	1,833 0 0
Brown & Roberts	1,643 0 0

For alterations and additions to Clarence Lodge, Maids Vale, for Mr. Drake. Mr. Miller, architect:—

Mytho	£1,261 0 0
Goddard	1,213 0 0
Robinson	1,203 0 0
Keyes & Head	1,068 0 0
Mack	1,046 0 0
Balding	887 0 0

For the construction of a concrete sewer for the Finchley Local Board. Mr. G. W. Bramell, surveyor:—

J. Bell, Wood Green (accepted).	
---------------------------------	--

For alterations and additions to houses, Tottenham-road, Ipswich, for Mr. William Prett, Mr. William Eade, Post-office-chambers, Ipswich, architect:—

B. Catchpole (accepted)	£800 0 0
-------------------------------	----------

For alterations and additions to warehouse, Princes-street, Ipswich, for Messrs. R. D. and J. B. Fraser, Mr. William Eade, architect:—

B. Catchpole	£730 0 0
A. Coe	720 0 0
T. Thurley	719 0 0
J. D. & F. Bennett	710 0 0
J. Pells & Sons	700 0 0
R. S. Smith	699 0 0
K. Girling (accepted)	688 0 0

For further alterations to same, next Friars-street:—

K. Girling (accepted)	£240 0 0
-----------------------------	----------

For extension of Wesleyan School Buildings, Alan-road, Ipswich. Mr. William Eade, architect:—

R. Tooley	£325 0 0
R. S. Smith	325 0 0
C. A. Wyatt	318 10 0
A. Coe	300 0 0
J. Pells & Sons (accepted) ..	276 14 0

For additions, 31, Barrington-road, Britton, for Mr. T. Catling. Messrs. Muggenidge & Powell, architects:—

R. M. Priestly	£215 0 0
B. Cooke	194 0 0
J. W. Nash	175 0 0
G. & S. Fisher	169 0 0

For alterations, 22 and 24, Lower Kennington-lane, for Mr. Wayne. Messrs. Muggenidge & Powell, architects:—

J. Broome	£385 0 0
S. Dellarocca	287 0 0
J. Hoare & Son	284 0 0
J. Tyerman	287 0 0
H. Quennell	279 0 0
G. & S. Fisher	269 0 0
R. M. Priestly (accepted)	240 0 0

For repairs, &c., Gregorian Arms, Jamaica-road, Bermondsey, for Mr. Meacock. Muggenidge & Powell, architects:—

J. F. Gibson	£128 0 0
G. & S. Fisher	94 0 0
G. & T. Radell	87 0 0
R. Whiby (accepted)	67 0 0

For painted decorations at the new Livery Hall, St. Helen's-place, for the Worshipful Company of Leather-sellers. Mr. G. A. Wilson, architect, 2, East India-avenue:—

Battam & Haywood (accepted).	
------------------------------	--

For erecting a new wing for out-patients, &c., to the Croydon General Hospital, West Croydon. Mr. Charles Henman, 84, Cannon-street, architect. Quantities by Mr. Charles Fitz-Roy Doll:—

	New	Additional
	W.R.	10 R.
F. H. Docking, Croydon	£3,141 18 4	£280 3 0
W. Marriage, Croydon	5,775 0 0	234 13 8
Maides & Harper, Croydon	5,696 0 0	213 0 0
J. & C. Bowyer, Upper Norwood ..	wood	5,675 0 0
J. W. Hobbs, South Norwood	5,075 0 0	184 0 0
J. Smith & Sons, London	wood	4,973 0 0

For erecting a laboratory at the High School, Wellesley-road, Croydon, for the Girls' Public Day School Company (Limited). Mr. C. Henman, architect. Quantities by Mr. C. Fitz-Roy Doll:—

J. & C. Bowyer, Upper Norwood	£473 0 0
W. Marriage, Croydon	465 0 0
J. Smith & Sons, South Norwood ..	439 0 0
Maides & Harper, Croydon (accepted) ..	417 0 0

For new male vagrant ward, and other works, at the Union Workhouse, Berne. Mr. Benjamin Adkins, architect, Faversham:—

Cornelius, Whitstable	£1,269 0 0
Cousens, Canterbury	1,214 0 0
Adams, Herne Bay (accepted)	1,160 0 0

Gas Tank, Iford.—The lowest tender for this work (see list, p. 203, last week) was submitted by Messrs. J. & H. Robus (not Robins, as printed), of Lower Sydenham. Messrs. Robus's tender has been accepted. We can take no blame for the misprint.

TO CORRESPONDENTS.

W. C. T. (next week).—F. N. (next week).—F. M. (four correspondents).—H. C. (next week).—J. B. (next week).—P. & Son.—G. R.—F. M.—F. C.—K. E. L. B.—J. C.—P. K.—J. T. B.—M. S.—D. S.—C. A.—T. R. A.—Messrs. M.—R. S. T.—W. B.—J. B.—W. H. W.—E. M. C.—W. E. M.—W. C. K.—F. S.—R. A.—W. M.—Dr. S.—E. D. & Co.—H. H.—O. P.—A. S.—R. & C.—D. H. M.—D. M.—H. B.—H. W.—R. S.—O. J.—W. D.—O. C.—J. U. H.—D. M.—H. B.—H. W.

Correspondents should address the Editor, and not the Publisher except in cases of business.

All statements of facts, lists of tenders, &c. must be accompanied by the name and address of the sender, not necessarily for publication.

We are compelled to decline printing out books and giving addresses.

Not.—The responsibility of signed articles, and papers read at public meetings, rests, of course, with the authors.

NOTICE TO ADVERTISERS.

Persons advertising in the *Builder* may have REPLIES ADDRESSED TO THE OFFICE, 46, Catherine-street, Covent-garden, W.C., FREE OF CHARGE.

Letters will be forwarded if addressed envelopes are sent, together with sufficient stamps to cover the postage.

CHARGES FOR ADVERTISEMENTS.

SITUATIONS VACANT, PARTNERSHIPS, APPRENTICESHIPS, TRADE, AND GENERAL ADVERTISEMENTS. Six lines (about fifty words) or under 4s. 6d. Each additional line (about ten words) 2s. 6d. Terms for Series of Trade Advertisements, also for Special Advertisements on front page, Competition, Contracts, Sales by Auction, &c. may be obtained via application to the Publisher.

SITUATIONS WANTED. FOUR Lines (about thirty words) or under 2s. 6d. Each additional line (about ten words) 6s. 6d.

PREPAYMENT IS ABSOLUTELY NECESSARY. * * * * * Stamp must not be sent, but all small ads should be remitted by Cash in Registered Letter or by Money Order, payable at the Post-Office, Covent-garden, W.C.

DOUGLAS FOURDRINER, Publisher. Addressed to No. 46, Catherine-street, W.C. Advertisements for the current week must reach the Office before THREE o'clock p.m. on THURSDAY.

The Publisher cannot be responsible for DRAWINGS, TESTIMONIALS, &c. left at the Office in reply to Advertisements, and strongly recommends that of the latter COPIES ONLY should be sent.

TERMS OF SUBSCRIPTION.

"THE BUILDER" is supplied gratis from the Office to residents in any part of the United Kingdom at the rate of 18s. per annum. Payment Remittance payable to DOUGLAS FOURDRINER, Publisher, 46, Catherine-street, W.C.

NOTICE TO SUBSCRIBERS.

CLOTH CASES for Binding the Numbers are now ready, price 2s. 6d. each; also READING CASES (Cloth), with Straps, to hold a Month's Numbers price 2s. each; also THE FORTY-FOURTH VOLUME of "The Builder" (bound), price 15s. 6d. each; also SUBSCRIBERS' VOLUMES on being sent to the Office, will be bound at a cost of 2s. 6d. each.

Best Bath Stone.

WESTWOOD GROUND, Box Ground, Combe Down, Corsham Down, And Farleigh Down. RANDELL, SAUNDERS, & CO., Limited, Corsham, Wilts. [Advt.]

Bath Stone.

Facilities for selection and quality unequalled, having upwards of 350,000 Feet Cube In Stock of all known descriptions. PICTOR & SONS, Box, Wilts. [Advt.]

Douling Freestone and Ham Hill Stone, of best quality, in blocks, or prepared ready for fixing. An inspection of the Douling Quarries is respectfully solicited; and Architects and others are CAUTIONED against inferior stone. Prices, delivered to any part of the United Kingdom, given on application to CHARLES KINGDOM, Norton-sub-Hamdon, Dorset. Somerset.—Agent, Mr. E. WILLIAMS, 73, Charlotte-street, Portland-place, W. [Advt.]

Douling Freestone, Of best quality, supplied from the Douling Quarries, and Kilns by STAPLES & HARRIS, Stoke, Dorset. Agent, Mr. E. WILLIAMS, 73, Charlotte-street, Portland-place, W. [Advt.]

BLUE LIAS LIME (Ground or Lump), Asphaltic, Seyssel, Patent Metallic Lava, and White Asphaltes. M. STODART & CO. Office: No. 90, Cannon-street, E.C. [Advt.]

Asphaltic.—The Seyssel and Metallic Lava Asphaltic Company (Mr. H. Glenn), Office, 38, Poultry, E.C.—The best and cheapest materials for damp courses, railway arches, warehouse floors, flat roofs, stables, cow-sheds and milk-rooms, granaries, tun-rooms, and terraces. [Advt.]

Immense quantities of DRY WAINSCOT, DRY MAHOGANY, DRY WALNUT, in all thicknesses. B. J. HUDSON & SONS, Whitfield-st., W., and Great Peter-st., S.W. London. [Advt.]

J. L. BACON & CO., MANUFACTURERS OF IMPROVED STEAM AND HOT-WATER APPARATUS, FOR WARMING AND VENTILATING Private Houses, Churches, Schools, Hospitals, Manufactories, Greenhouses, &c. OFFICES AND SHOW-ROOMS: No. 34, UPPER GLOUCESTER PLACE, DORSET SQUARE, LONDON, N.W. And at DUBLIN, BELFAST, and NEWCASTLE. Illustrated Pamphlet on "Heating" post free.

CHAPPUIS' PATENTS FOR REFLECTING LIGHT.

DAYLIGHT REFLECTORS OF EVERY DESCRIPTION, ARTIFICIAL LIGHT REFLECTORS.

WHY BURN GAS?—CHAPPUIS' REFLECTORS DIFFUSE DAYLIGHT.—They are exclusively adopted by and fitted at Buckingham Palace, all H.M. Government Offices, Houses of Parliament, H.M. First Commissioner of Works, the Metropolitan Board of Works, British Museum, South Kensington Museum, Royal Institution, Guildhall Museum, on board H.M. Ships, also Railway Companies' Offices, Hospitals, Institutions, Banks, Insurance Offices, Manufactories, Private Houses and generally from Noblemen's Mansions to Artisans' Work-shops. 30,000 in use in London alone. Patronised by leading Architects, Engineers, Contractors, &c., &c.

N.B.—For Prospectuses and Diagrams, address Stamped Envelope to

P. E. CHAPPUIS, Patentee and Manufacturer, 69, FLEET-STREET, LONDON.

NOTICE.—The POLYGONAL REFLECTOR (Latest Patent) FOR ARTISTIC AND PICTURE GALLERIES. Its construction allows of the angle of light being readily altered so as to reflect in any desirable direction.

ILLUSTRATIONS.

Architectural Curiosities: The Convento de Christo, Thomar, Portugal (Double-page Engraving)	252
Villa, Mount Park Estate, Harrow.—Messrs. Higgs & Rudkin, Architects	254
New Congregational Church, Robert-street, Grosvenor-square.—Mr. John Bulman, Architect	255
Soldiers' Home and Institute, Aldershot.—Mr. R. H. Hill, Architect	257
Offices, No. 491, New Cross-road, S.E.—Mr. A. H. Kersey, Architect	259

CONTENTS.

The Fortune of Secluded Swanage	239	Villa: Mount Park Estate, Harrow	250	New Parochial Schools at Norwood	267
Horace's Villa	240	Congregational Church, Robert-street, Grosvenor-square	250	Proposed Town Hall for Lambeth	267
MS. said to be 2700 Years Old	241	Additions to the Soldiers' Home and Institute, Aldershot	250	Market Harborough Drainage	267
The Study and the Work-Room, from a Hygienic Point of View	242	Founded by the late Mrs. Daniell	250	From Scotland	267
A Note at Easter	243	No. 491, New Cross-road	250	Building Patent Receipt	267
Professional Portraits: A Country Practitioner	243	Sculpture and Colour	250	The Improvement of Vienna	268
Charcoal Fires and Coal Fires	244	The Regent of Moral Painting	253	Preventable Accidents	268
The Annual Meeting of the Association of German Engineers	245	Notes from Brighton	253	"Coal Yard"	268
Experts on the Beach	246	Sir Robert Rawlinson	254	An Improved Automatic Gas Regulator	269
Technical Teaching at the Polytechnic	246	The Proposed New War Office and Adjutancy, and the Widening of Parliament-street	254	(Glasgow Engineering Scholarship)	269
The Architectural Association's Excursion	246	Draught and "Lifton Junior Architects' Society"	254	Danger from Lightning, &c.	269
Colour in the Streets	247	The Dover Congress of the Royal Archaeological Institute	255	Land Tax	269
Electricity and Earthquakes	247	Somersetshire Archaeological Society	255	Old Plastering	269
Excavations in Rome	247	The New Museum at Berlin	256	Trade Circulars	269
Foreign Notes	248	All Saints Church, Long Marston, near Tring	256	Compensation Cases: Brews & London and South-Western	269
Books as a Decoration	248	St. Saviour's School Chapel, Ardingley, Sussex	256	Railway Company	269
Present and Prospective Railway Expenditure	248	Architectural History of Rome	256	Water Fittings	269
A Budget from Sydney	249	New Buildings in Paternoster-square: A Roman Pavement	256	Dangerous Structures, under Metropolitan Building Act	270
Widening of Peter Lane: Dryden's House	250	Discovery	256	Seven Engines for Electric Lighting at the Fisheries Exhibition	270
Architectural Curiosities: The Convento de Christo, Thomar, Portugal	250	The Giltstrap Free Library, Newark-upon-Trent	257	Miscellaneous	270

The Fortune of Secluded Swanage.

It is too clear,—too clear for those who have long delighted in it,—that the seclusion of Swanage is at an end. It is too late for those who have accused themselves of putting it unnecessarily in peril by publishing their love of the place to hope to save the secret now by trying back upon reticence. The railway, which has hitherto neglected it,—giving it the go-by at Wareham at the protective distance of eleven miles, has for some time had its eye upon the place, and now is about to stretch out its iron hand to grasp it; Parliamentary conditions are fulfilled, capital and conditions of working arranged, and the gap in the chalk downs at Corfe

will soon be traversed by the lines that, giving ready access to an inflow of indiscriminate civilisation, will deprive the Isle of Purbeck of the only conditions under which it has ever been, and some of us think so happily, an island indeed.

As the end must come, let us hope that it may come favourably, and that the transition may be completed in a manner that will not give fresh edge to the poet's bitter reflection,—

"God made the country, but man made the town."

No serious and irreparable mischief has been done as yet to the beautiful locality; but it depends,—must we say on the chapter of accidents, when it ought to depend on well-considered general design?—what may be the outcome for good or evil, for profanation or for worthy development of a great opportunity, of the certainly impending transformation. But dismissing hopes and fears that belong to the future,—or rather resigning ourselves to the future in as hopeful a spirit as we may,—let us indulge ourselves in a parting glance at Swanage as it is.

The heart of many a visitor has sunk at the first sight of the place, and ungrateful thoughts, if not unbecoming words, have been directed upon enthusiasts who sent him thither. There is nothing exhilarating in being driven late in the evening down a narrow, winding road, flanked by low cottages, to be delivered at last where the view of the sea is shut out by piles of shaped stones, built up on the quays to a height exceeding the houses, and covering such

an area and with such an enormous accumulation as to exclude all thought of the encumbrance being temporary. But the morning brings consolation. The stony obstructions have fortunately a quarter to themselves, where they are all together, are escaped from in a few minutes, and leave the main sweep of the beautiful little bay, with its perfectly rural background, and all the beach that is really beach for fair and free enjoyment. The bay is recessed between two advancing headlands. The northern is the termination of the chalk downs, which are continuous, but for one transverse valley, all the way from Corfe; their easy curve is broken off precipitously, and, as usual on a precipitous coast, deep water debars from passage round them, and brings a walk of three quarters of an hour over sand and shingle to an end. An outlying upright oblong stack of chalk has the name of Old Harry, in compliment, no doubt, to the king's highness whom Holbein painted so often with broad front, well-planted feet, and arms akimbo, for one or two more slender needles adjacent are called his wives. The other headland is Peveril Point, the termination of a ridge of lower elevation than the downs, which yielded Purbeck marble to our cathedral-building ancestors, and is quarried still for those beds of stone, the quality, purposes, and abundance of which may be appreciated on the quays. The bay has been formed and extended by the erosion of softer strata which lie between these two elevated ridges. These are, in fact, the familiar sands and clays of the Wealden which rise up from below the chalk in lines which seem making for the Purbeck ridge, which they may probably enough have at one time covered. Now the surfaces of their upturned, smoothed, and variously-abraded edges form a diversified rolling intermediate valley, which, green with meadows and copses, or waving with golden corn, is no less beautiful when, after the removal of the crops, the fresh-ploughed ground is glowing in the sunlight with tints that vary in every successive undulation. "The time will come which nothing can avert," when terrace, esplanade, and all their accompaniments of suburbs,—and, *absit omen*,—slums will interpose themselves between the beach with its gradually sloping sands, so dear to mothers and to mothers' charges,—and the pleasant farms and scattered home-steads which are conspicuous as they nestle picturesquely, or come upon us from time to time by surprise among the slopes and depressions, among the woods and hedge-rows of this cheerful district. It is a district, however, of which the beauties are frequently left only half explored, even after many a summer and autumnal visit; the higher ground, the sea, the sands, and even a wider district close at hand, have attractions irresistible. From the summit of the chalk down, which is reached by a loitering walk of half an hour from Swanage,

we look away and down upon the clusters of elms that conceal the interesting little Norman church, and sparse and primitive village of Studland, and then over the larger and more liberal sweep of Studland Bay to Bournemouth and the tower of Christchurch beyond, to the waters of the lake-like Little Sea behind lines of sand-hills, to the entrance and expanding waters of Poole Harbour, and a far-stretching waste of heather and furze, diversified by rare plantations or patches of pine woods, and here and there a cottage in a small garden with its orchard and beehives, and ferruginous pools with contrasted vegetation among rough mounds and irregular depressions.

The coast from Bolland Down round Swanage Bay, doubling Peveril Point, and thence to Durlstone Head, a limit in this direction to further advance of what is no more than a morning's walk, has been compared to a treatise on geology with the leaves cut. It is difficult for even a devotee of art not to wish here for the companionship of a scientist to turn over some of the leaves for him and interpret a paragraph here and there, if not to read a chapter or two. The words involuntarily rise to the lips,—*"before the foundations of the earth were laid,"*—as even an eye untrained by science marks lines suggestive now of deliberately-built-up structure and now of structure falling or disturbed. But even a moderate tincture of popularised science gives some measure of intellectual interest to the scene for those who are not so utterly enslaved by their predilections as to be unable, even by an effort, to detach their attention from its beauties. It is probable that an expositor familiar with the best conclusions which have been arrived at by study of the crust of the earth all over the globe, could take us along this mile or two of coast line and point out how it contains all the data from which an acute and unprejudiced mind might have deduced half the most important of those conclusions with absolute certainty without going further afield. Indications of subsidence and elevation, their contingencies and consequences, are manifest at every step. Our walk is bounded by sections of two axes of elevation of compact or hard rocks at Bolland Point and at Durlstone Head, and what happened to the soft strata or more fragile that were pushed up with them and between them is what might be expected; it is typical of the danger encountered,—

"When petty natures come
Between the dire and fell incensed points
Of mighty opposites."

The truncated lines of clays and sands in variegated layers are tilted along the bay at general inclinations corresponding to that of the band of green sand below the downs, and as we go on past Peveril Point we have to step over a series of parallel ridges and inclines like gabled roofs of houses of higher or lower pitch laid side by side, which stretch out to sea in reefs, across

which the sea breaks into foam at every change of tide. At an intermediate point, before reaching Durlstone, we see the same effect of lateral compression on the scarped cliff, where the pinched-up strata slope away at an acute angle, and the fracture seems as fresh, with all the splinters of the position as they fell into cracks and crevices, as though it had occurred within twenty-four hours. When we reach Durlstone and, brought to a check under a precipice, take our stand on the detached masses of rock to look at the cavernous base of the cliff, it is impossible not to be reminded of the appearances which we once noted merely for their picturesqueness, about the declivities of Mount Vesuvius. We seem here to be close upon the point of direct leverage in the upward thrust, and of a thrust to the energy of which intense heat was contributory. So we are carried back in thought to the time when the strata, which are now tilted, cracked, and crumpled between these obtrusive bulging elevations, were once in their original horizontal position, and whether in process of subsidence or elevation, continued without important deviation from horizontal level. The suggestion is inevitable that they must then have required a wider area, and the alternatives present themselves that these disturbances must have been due, wholly or in part, to one or both of two grand transitions, to the shrinking of the mass of the earth so that its outer shell necessarily collapsed and was crushed together in the process, or that it swelled and bulged at certain points and along certain lines, and that thus the exaggeration of surface in some parts enforced the squeezing together of the intermediate. The result of the walk and its reflections is a mental memorandum to refer to the scientific books on return to London,—to London, where too certainly work is waiting which will leave no time for pursuing such a subject further.

The figure of a vagrant native geologist was very familiar to visitors to Swanage some years since, but he and his well-worn satchel are now no longer seen. This was Mr. Brodie, whose interest in his subject had the valued reward of recognition by Professor Owen, and the record, more likely to be immortal than many another more pretentious, of the attachment of his name to an important fossil of his discovery, as "something Brodie's." One reference to Lyell's "Geology" furnishes particulars of a fruitful exploration of a cliff just below the refreshment pavilion by the zig-zag path. "From a thin layer of calcareous mud, of an average thickness of only 5 in., Mr. Beekles, in three weeks, discovered in the suburbs of Swanage ('suburbs,' indeed, is an inappropriate word at present, but only anticipates the change which is, alas! too surely coming) on portions of skeletons of six new species of mammalia, insectivorous or predaceous, from the size of a mole to a common polecat, mostly insectivorous marsupials, one allied to the kangaroo rat of Australia." Others, it is added, were found by Mr. Brodie, but we believe that Mr. Brodie was the pioneer.

It is not strange that in a district of such varied geological character, the Flora should be diversified, and the Fauna, of the season at least, not unusually includes some votaries of that inexplicable enthusiasm for botanising which had possession of John Stuart Mill without any production, so far as appears or can be guessed at, of any justifying utility; in his case, not even with that reasonable excuse for ill-bestowed time and energy,—the usefulness that begins and ends with passing a competitive examination. This, however, may be taken as the view of one who has lately been aghast at contemplating a double column of close print of the scientific names of varieties of orchids, and came to the conclusion that the subject is well left to the specialists endowed with very peculiar aptitudes, and honourably eager for such a service of martyrdom.

When an ailing Londoner talks of resorting to Swanage, he is apt to find that medical science shakes its head, and he elicits the observation that convalescence will not be well advised to seek for bracing influence on the south coast of England; that Swanage is within sight of the temperate and over-temperate refuge of Bournemouth seems warning enough. But the difference is here, that Swanage Bay fronts not south, but eastward, and by the lay of the land behind it the present town is sheltered from the extremity of summer heat. If Vitruvius were called in to advise as to the laying out of a more extensive town, he would no doubt

refer us to his chapters on the regard which is due to prevalent winds and special aspects, and would find no difficulty in utilising the slopes of the downs, or even the reverse of the Purbeck ridge, for residences at any season. At present villas are few, and permanent occupants of villas rarer still. At the outbreak of summer holidays, or of autumnal, if summer is to be an obsolete term, a sudden inflow of families fills up all available accommodation, and as the school-bell rings again, and it now rings at the end of August, both for boy and girl all the English world over, the exodus is as sudden and complete. Can it be wondered at if the energies of the inhabitants should also subside, and a visitor should sometimes find that a vacation of ten months has not afforded an opportunity for clearing an offensive dustbin until he is already established in the house, and has to rouse a proprietor to activity in the matter? As little surprising is it that what activity there is available should take intermittent and irregular exercise both as to what it meddles with and what leaves alone, what it does, what it half does, and what it fails to do at all. This is apparently the case even in dealing with stone, the very staple commodity of the locality. So much seems to be wanted in places where it would be gladly missed, that there is none to spare for a pressing urgency. If a ramble finds that a high stone wall passing up hill and down dale like the wall of China, and more insurmountable, obliges him to make an inordinate detour if he is to get out of open country to the cliff again, it was at his peril that he omitted to make observations at starting, and the wall and its owner stand upon unimpeachable private rights. But it is within the discretion of a Local Board to block or not to block convenient access to a quay by stone posts, which are not re-erected when found broken short off by the ground at the ensuing sunrise, or to debar entrance to a new road by a similar obstruction, which gives way almost as easily by the action of more regular law; while year after year the footway and the crossing, which are on the sole and narrow line of communication between the visitors' quarters and the beach, are left unpared, and, thanks to a confluence from more than one slope, are ankle-deep in mud after every rainfall. It is by this road that the Mowlem Institute is reached, a reading-room, which is a most welcome refuge for visitors during the mud-promoting rains that for some years have been too abundant,—albeit, that many a rain-cloud is seen passing across Swanage harmlessly to drench more attractive Bournemouth. This establishment, of which the endowment has recently been increased by the successors of the founder in his well-known firm, has its site by the sea, but, strangely enough, so placed as not to command any direct view of it. It seems also to have been a mistake,—though one which the holiday-makers do not quarrel with,—to have planted an institution which was due to sympathy with the class of quarrymen, as far distant as the whole length of the long street which forms the town, from the district where the quarrymen and their families abide.

A lighthouse has recently been erected on Arvil Point, beyond the picturesque quarries in the cliff of Tillywhim,—welcome guidance assuredly from this side for Channel navigators in combination with that which gleams steadily across from the Needles; and as remnants of wreckage evince, it was appealed for to the Elder Brethren of the Trinity House not a day too soon in the advancing age of the Brotherhood. Further help is provided for the mariner in his direst peril by rocket apparatus at the coastguard station, and the gallant rivalry of a well-manned lifeboat.

But much more remains to be done if Swanage is to have and to render the full advantage of its maritime position. Near as it is to Cowes, it can be but occasionally resorted to by the yachtsmen, to whom it would afford such a refreshing change. There is no presumptuous assertion either of prophecy or sagacity in foretelling that the stone of the district will at a future day be put to one of its proper uses in forming a break-water upon a ready foundation which Nature herself has laid, so that not only yachts but larger craft may find safe mooring in water now so exposed to a south-easterly gale that they ever stand in but mistrustfully, and scatter in retreat at the very slightest threat of the barometer.

Visitors who have come to Swanage as strangers and left it as strangers year after year in suc-

cession have themselves to blame if they have not had sufficient intercourse with the most numerous class of inhabitants,—the less numerous may be told off on one hand,—to have kindly regards towards the Dorsetshire type of English man and woman. May the change which is impending not seriously affect this type. Signs of the change, in other respects, are already too numerous and obtrusive to be pleasant to those who have rejoiced in Swanage for the sake of exclusion from an exterior world and uneasy, harassed freedom within its precincts. Already property is jealous, and stands on the defensive. Careful inscriptions meet us in all directions of the bounds of private estates, prudent warnings it may be, but suggestive, if unreasonably still unpleasantly, of surliness; gates to convenient footpaths disappear, as if by transformation, into walls; walls are raised in height; children are warned against loitering to play in cross-roads which they are conditionally permitted to pass through; the happy days when schoolboys at large had their game at rounders in a park-like meadow seem coming to an end; and young ladies perched on a sand-bill with their painting-rags and water-colours, and interfering with nothing nearer to them than the sunset, are startled by gentlemen with breechloaders, who solemnly warn them to interfere at their peril with the teal and wild duck on Little Sea in their middle distance.

It was within this year or two that our lively and sympathetic novelist, James Payn, lifted his pen between chapters of some general story,—without regard to leaving lovers in suspense,—to contribute a few descriptive notes on Swanage to a magazine; he did full justice to the pleasant place and to excursions available from it,—to Corfe with its ruined castle, to the wave-washed ammonite-paved Dancing Ledge; to Lulworth; to Chapman's Pool (in the ancient maps it stands as Shipmen's Pool); to St. Aldhelm's or St. Alban's Head, which, as he intimated to his readers, is not a public-house, as might be supposed, but a promontory. It is no slight proof of what hold these localities take of an imagination where imagination exists, that in more than one of the novels which the author has produced since, it is impossible not to recognise impressions, however metamorphosed, from their circumstances and scenery.

So we take leave of Swanage, not without a sigh, and abandon it to its chance of what it probably anticipates as an opening career of prosperity; not without some apprehension lest as a usual consequence of an access of fortune it should cease to be quite so lovable, at least by earlier friends,—should get, as our grandfathers were used to state the case, out of God's grace into the warm sun. It was a tender saying of a philanthropic lady that she always had true pleasure when she found her young friends as they grew older dropped her, in the sure confidence that they were getting on in the world. The philanthropist was also a philosopher; our own philosophy extends so far that we shall feel no slight consolation for deprivation of a secluded retreat, if there should really rise upon the site a town, however extensive, which shall be bright and cheerful, well laid-out, of graceful and appropriate architecture, blending harmoniously with the surroundings,—and unimpeachable in general sanitation and an organic system of thorough drainage.

HORACE'S VILLA.

The longest day is come and gone; the autumn with its promise of the annual outing is fast approaching; the long column advertising Mr. Murray's familiar guide-books, has once again made its appearance to tempt the tourist to every corner of our own still too little appreciated island, and the most distant portions of the Continent. Many a be-labelled trunk will, before long, be dragged from the dusty oblivion of the lumber-room, and once more enter upon its normal duties of adding a further share of that worry to the journey which the luggage-laden traveller, we have recently been told by a facetious contemporary, has to bear in companionship with hurry and Murray. Happy the wanderer who, not alone freed from the incubus of trunks with all their concomitant responsibilities, is able to pass the pleasant hours of his holiday uninfluenced by that restless spirit which seems to be so marked a characteristic of our time. He has, perhaps, visited more than once before the spot to which he returns, and un-

affected by that vague nervousness from which all new-comers seem to suffer, he is able, having duly checked off his guide-book, to turn to some of the less tourist-frequented haunts of the locality he may have re-visited. Should he have crossed the Alps and carried out the pilgrim's dream of seeing St. Peter's, he has, we may be sure, drunk devoutly of the fountain of Trevi, and has vowed, as every visitor to Rome invariably does vow, that he will, before long, return to the city of the Seven Hills. But the Rome of United Italy is very different to the Rome of the papal days. Changes radical and many, have of late years been effected, the very life of the new capital has been moved from its old centre round the lofty quiet of the Piazza di Spagna and the narrow Corso to the bustling, new Parisian quarter that has sprung up round the tramway-ridden Via Nazionale and the (once reported malaria-haunted) district which lies near the railway station, the Baths of Diocletian and Michelangelo's cypresses. But in the environs of Rome modern improvement has made little or no way; true, there is a local line of railway to pleasant Albano, and a tramway tinkles along the road to Tivoli, but so much still retains its old-world character, that it requires little exercise of the imaginative faculties to be soon overcome by the associations which crowd every nook and corner of the now so sadly-neglected district which stretches round Rome.

Of all the hallowed shrines on this "classic ground" which Addison trod with such reverence, perhaps the much-disputed site of Horace's villa may be said to have long been the most sincerely sacred. Since the days of the Renaissance and the revival of that interest in classic antiquity which, whatever may be said of the ignorance of the Dark Ages, had never entirely died out, the exact site of the country house of which Horace so constantly speaks, has been a moot point with lovers of letters.

It was but a few weeks since an eminent Irish judge, whose well-earned rest from his dangerous duties was passed in the calm of the sunny atmosphere of Rome, endeavoured to add his suggestion to the doubtful problem. Judge Lawson's delightful letter to the *Times* was read, we may be certain, not alone by every classic student, but by all who have ever come under the charm of a poet whose works reveal fresh funds of pleasant reflections at each period of life in which they may be read. At almost the same moment as Judge Lawson was clambering among the Sabine hills on one of those April days which seem alone to smile on Italy, a French archaeologist, whose studies have given his opinion peculiar weight,—we refer to M. Gaston Boissier,—was, it would appear from a recent paper published in the pages of the *Revue des Deux Mondes*, bent on a similar errand; and if we are to accept his long and careful examination of the question, the much-disputed point of the true site of Horace's Sabine farm may at length be said to have been laid at rest. During the coming autumn the fortunate toiler at the oar who may find time to escape as far south as the banks of the tawny Tiber, may, with the support of accurate authority, expend all his enthusiasm on the scene where the poet passed his happiest hours, cruelly undeceived.

No one who has ever read Horace can fail to have felt some curiosity respecting that pleasant villa of his, to the life in which he has made so many a philosophic reference, but conjecture is all that answers the inquiry as to the site of this quiet retreat of the poet's. Tradition and local pride have, of course, offered no end of solutions to a question which, as we have already stated, has exercised the learned for more than three centuries. Of all those, however, who have devoted any attention to the matter, none can be said to have more closely examined every possible clue than the worthy Abbé Capmartin de Chanpy who, fascinated as so many visitors have been by a few months' stay in the Eternal City, fixed there his home for the rest of his life, the special devotion of his existence being the determination of the site of Horace's villa. This he sought far and wide, leaving not a single spot unvisited that might by a possibility answer to the somewhat vague description left us by the poet. The very horse on which the Abbé travelled was even stated by certain cynics to be about as good an archaeologist as its master, turning aside of its own accord, so it was said, to any ruins with which it might meet

on the road. The result of the Abbé's journeyings was published in three stout volumes, as was the custom of his time, when short magazine articles containing the condensed information and salient points of a whole library of books of reference, were unknown. An attempt on the part of the Roman antiquary De Sanctis, to forestall the French abbé in some of his discoveries was immediately seen through on the appearance of De Chanpy's work in 1767, and to him may be said to belong the honour of first definitely fixing, if not the exact site, at least the locality of Horace's villa.

As a chief point he determined that the poet can alone have possessed one farm, and with this, as he himself informs us, he was amply content, *satis beatus unicus Sabinis*. Each traditional site was visited with the minutest care, all, however, failing to answer to the poet's description but one, and this situated to the east of Tivoli, not far from the town of Vicovaro. Here, certainly, the great similarity of the modern names of many of the localities, to places mentioned by Horace, gave colour to the belief that this was the spot. Horace distinctly tells us that the nearest town to his farm was *Varis*, about eight miles from Tibur. Now it so happens that the modern town of Vicovaro stands at about this distance from Tivoli; below Vicovaro runs a stream which at present bears the name of the Licenza, a very slight variation from the *Digintia* of Horace, which, in his time, bathed the little hamlet of Mandela, which we may not unreasonably believe to be the Bardela of to-day. May we not also regard the modern Monte Corgnato, referred to in the mediæval charters as *Mons Lucretii*, as the *Lucretis* which the poet describes as overshadowing his pleasant home in the country of the Sabines?

This home had been presented to him by his generous friend Mæcenas. Horace, it will be remembered, after the unfortunate battle of Philippi, retired to Rome, and, during several years, supported himself as a satirical writer. His fame led him to an introduction, through Virgil, to the great patron of men of letters, Mæcenas. The superb home which the Emperor's favourite, in defiance of public opinion, built upon the then ill-famed and deserted Esquiline, was crowded with a society in which Horace soon found himself the most favoured member, for his friend Virgil, the simple peasant of Mantua, was no lover of the social gatherings which made the entry to the house of Mæcenas an envied privilege. Horace's intimacy with the imperial favourite soon, however, led him, careful though he was to entirely preserve his independence, to be regarded by the Romans as one whose influence was worth obtaining; the poet found himself pestered by place-mongers, much to the disturbance of his simple nature; worried and distracted from his thoughts. It was one of those delicate attentions which alone men of refinement know how to pay, this gift of Mæcenas of his Sabine farm to the friend whose society he valued so highly, but whose desire for rest from the bustle of town existence he was also fully able to appreciate. Horace's love of the country is evident; not, it is true, that innate love shown so clearly by his friend Virgil; it is the love of the townsman for the calm, the simplicity of rural life. On his dock-tailed mule the poet had visited most of the pleasant spots of the peninsula during those months in which then, as now, it was considered unsafe to remain in Rome. He has sung all these his excursions, but none did he prefer to Tibur except, perhaps, Tarento; and, doubtless, this marked preference for the Sabine country led to the choice of Mæcenas in his gift.

Near Tivoli we know the farm to have been situated; a few hours' journey brings one to Vicovaro,—which, we may accept as the *Varia* of the poet; then the road is taken which follows the banks of the Licenza; on the further side of which lies Bardela, with its quaint castle, and, at no great distance, the picturesque town of Roccagiovine; the road is no easy one, and insensibly the visitor familiar with his Horace is reminded of the poet's reference to the ascent of his "citadel" on his return home. It may be mentioned that Horace in one of his epistles (Bk. i. 10) states that it was written "behind the temple of Vacuna." Now, Vacuna was a Sabine goddess, the Victory of the Romans. An inscription found in the valley states that Vespasian restored a temple of Victory in the immediate neighbourhood, while

a further tradition remains in the name borne by the "Piazza Vacuna" in the little characteristic Sabine village of Roccagiovine. Should this be the site of the temple referred to by the poet, we have reached the entrance to his property, but still there is no ruin or other indication to point to the actual site of the villa. Every reader of Horace will remember the poet's praise of the mountain spring, the *fons Bandusia*, near his home. It is a fact worthy of notice that a little beyond the ruined chapel of the Madonna delle Case there exists a fountain which, gushing from the rock, and overshadowed by a picturesque old fig-tree, answers singularly to the description of the poet's *fons Bandusia*. It is further worthy of note that, locally, this natural spring is known as the *Ponte dell' Oratini*. May we not regard this name, with its slight resemblance to that of the poet, as a reminiscence of the days when his familiar figure might be seen musing over the gurgling waters which suggested to him his own sweetly-flowing verse? Should this spring be the *fons Bandusia* of Horace, his house must have been in the immediate neighbourhood. De Chanpy has ventured to place it below the fountain, that is, further down the slope of the valley, where there exist, in fact, some ruins; these, however, it is the opinion of M. Gaston Boissier, are of a date posterior to the age of Augustus. The authority of so able an archaeologist as M. Boissier must be accepted. Horace distinctly tells us he lived on what may be described as a species of plateau, and it is on this score that Sig. Pietro Rosa has placed the site of the villa a little above the church of the Madonna delle Case, where there exists just such a piece of level ground as might have once formed the foundation of a house. The spot has, it is true, been entirely covered up, but the plough, it would appear, not unfrequently turns up pieces of brick and other materials which strongly support the belief that a house formerly stood on the site. From this point of the slope the view of the valley singularly corresponds with the description left us by the poet of the scenery which surrounded his country retreat. Far below, the Licenza hurries by, and now, as then, the mountains which, in classic days however, were covered with thick forests, long since disappeared, seem to shut in the valley just as the poet describes.

From his own picture of his house we gather that it was only a small house, *villula*, surrounded by a small field, *agellus*; but elsewhere we are told that this humble *agellus* was sufficient to occupy the attention of no less than five farmers; while the piece of ground in the immediate neighbourhood of the house which Horace had not thus let out on lease, required eight slaves to keep in order. We are justified, therefore, in believing that the poet owned a very large tract of land. The actual house, like most Roman country-houses, was, we may be sure, most simple; and the garden,—though Horace has expressly satirised the taste of his day for beds of sweet-smelling flowers,—was, we still suspect, laid out much in accordance with the fashion then in vogue.

It will ever remain a point of regret that Horace, who has described so minutely his life in the capital, should have told us so little of the mode in which he passed his time on his Sabine farm. That he was happy there, is almost all he discloses, and we gather that as he advanced in age his pleasure in his simple country life gained in strength. His pride in being a landed proprietor he has not concealed, and his expression of delight at being able to enjoy his meals with his own surroundings about him (*ante Larem proprium vescor*) is one of those touches of human nature which serve as a link to connect us in our busy present with that now so distant past of the days when Horace penned his verses in his pleasant country home.

When the poet first entered into possession of his new property he found it, we gather, in a sadly-neglected condition. As is invariably the case, the labour of setting all to rights again added only a fresh interest which endeared the spot the more; and his excursions to his friends in Rome to escape to his farm grew more and more frequent. Once there, however, the plans of promised hard work would seem to have been set aside for the simple enjoyments of the country; he would chat with his farmers,—even, spade in hand, aid his slaves, and he tells us gleefully how hugely he amused his neighbours by the energy with which he would often set to work to clear his land of stones. From

time to time he would pass his evenings in pleasant conversation with his simple-minded neighbours invited in to share his meal. The freedom from the restraint of Rome he appears to have enjoyed frankly, and these homely suppers he has not hesitated to declare "divine." His life thus passed between Rome and his farm was occasionally varied by a little outing to some one of the many places of fashionable resort which the Romans, like ourselves, found necessary; but though Bai and Preneste offered all the charms of a fascinating society, of the fairer elements of which the poet has not concealed his admiration, yet it is always with renewed pleasure that we find him returning to the quiet of his villa. As age crept on him Rome became less and less attractive; his oldest friends he saw one by one passing away, among them that dearest of all, Virgil, and with him, Tibullus. His companion, Mæcenas, he lived to see the sport of a frivolous wife, with whom in his old age he, the scoffer at married life, had allowed himself to be fascinated. Horace's, however, was not a melancholy old age; to the last his good humour, that essential characteristic of his whole philosophy, never deserted him, and his picture of the contented mind satisfied with the calm of his Sabine valley, surrounded by faithful servants, a few well-tried friends, and a choice of old-remembered books, has satisfied the doubts of many a hesitating soul, has determined the course of many a man's existence, has cheered many a disappointed life, and thrown for ever a hallowed charm round the spot where this apostle of the doctrine of cultured peace and content practised the philosophy which he has preached so eloquently in the polished verses penned in his villa among the Sabine hills.*

MSS. SAID TO BE 2,700 YEARS OLD.

The students of Oriental antiquity are at present much exercised by certain sheepskin manuscripts written in early Aramaic letters, like those on the Moabite stone; and containing extracts from a much-abbreviated version of the Book of Deuteronomy. The MSS. have been brought to England by Mr. Shapira, a Jewish dealer in antiquities, resident at Jerusalem, who is known to students as having sold, for a large sum, to the German Government an assortment of pottery, said to be found in Moab, but of which the authenticity has been the subject of much contest. The present MSS. are now under investigation at the British Museum, where they have been inspected by Mr. Gladstone and other persons of note. A portion of it is exposed to further view, under glass, in the King's library.

Everything points to the anticipation of a sharp controversy as to the authenticity of these fragments. Three points occur to us as necessary to clear up. The first is the question of the possible preservation of sheepskin for 2,700 years,—for such is claimed to be the age of the MSS. It cannot be denied that leather articles of even a more ancient date have recently been found, in good order, in Egypt; the material being that of the embroidered tent of an Egyptian Queen. But the difference between the durability of leather in a rainless district, such as Egypt, and in the damp climate of Eastern Syria is crucial, and no instance is known of any similar resistance to climatic influences of such a nature for even a third of the time claimed for the existence of the MSS. in question.

The second question regards what we may call the philosophical theory of the MSS. It cannot have been written by a Hebrew scribe, even if we admit the late date of the square Hebrew letters, in which, at the time of the close of the Talmud, it was alone permitted to copy the law. And the substitution of the word Elohim for the special Hebrew name of Jehovah (which, however, once occurs in the MSS.) is not likely to be the work of a Jewish Rabbi. On the other hand, there is no resemblance in the script to Samaritan letters; nor has it been suggested of what faith or nationality could be the dwellers on the east of Jordan who were likely to produce such a version of an established code.

With regard to the letters themselves, they are as closely as possible the same as those on the famous Moabite stone, which dates B.C.

577. The reader will find facsimiles of these letters, as also of the Samaritan letters, and of the Aramaic letter on the Hebrew coins, in Conder's "Handbook to the Bible," which we reviewed on the appearance of the first edition in 1879. The letter Teth is one that does not occur either on the stone or on the coins,—and the mode in which it is given in the MSS. is a subject for interesting inquiry. On the pottery the letter is represented by a circle with a short tail, or projecting line, at each of the four quadrants. Other particulars are known to students of Aramaic inscriptions; one very remarkable fact being that the latest Aramaic of the coins bears a closer resemblance to the earliest inscriptions than to coins or epigraphs of intermediate date. It is a curious circumstance that a point is placed after each word in the Commandments, and after each sentence in the rest of the MSS. We can, of course, only indicate one or two of the points which will have influence with the epigraphist in deciding as to the authenticity of the MSS. As to the opinion to be formed by the criticisms of "unclassical idioms and grammatical blunders" we cannot allow it to possess more than a personal and questionable authority. It is important for the matter to be cleared up. We have little faith in Mr. Shapira.

THE STUDY AND THE WORK-ROOM, FROM A HYGIENIC POINT OF VIEW.

Any careful examination of what may be termed the anti-hygienic conditions of the sedentary life which so large a number of the community are called upon to follow, recommends itself to favourable attention from more points of view than one. In these days especially, when intellectual pursuits, long the privilege of the few, are freely opened to all, when schools are being multiplied in every direction, and the professions growing constantly more complicated under the influence of competitive sub-division, some serious study is called for of the more or less abnormal existence which is thus being fostered. The law has already taken into consideration the conditions under which our crowded factory hands pass the many hours of their active day, and difficult as the task has been and still proves, some marked progress has been realised, as was obligatory when statistics prove each day the constant increase of those who, crowding from the country into our towns, desert the field for the workshop, and individual effort for labour in common. Yet vast as is this movement, still more important has been and is the increasing number of intellectual careers which the progress of science, art, letters, politics, and commerce has opened to the community, and each and all of which are pursued under conditions no less requiring consideration than those existing in the factory and the workshop, while in reality from their very variety more difficult of study.

The condition under which the artist, be he architect, painter or sculptor, the author, the servant, all those engaged in the pursuit of the liberal professions, together with that vast and ever-increasing army of *employés* generally, pursue their daily vocations, has by no means received the study to which the importance of the subject entitles it. It is for this reason that an expression of gratitude is due to Dr. Riant for an admirable little book he has recently published, treating of the hygiene of the workshop and the study, and to which we have already in these columns made a passing reference ("Hygiène du Cabinet de Travail," Paris, 1883). In this work, while the author largely handles the question from a medical and theoretical point of view, the practical consideration of the architectural conditions of the subject form no unimportant feature of his volume. Dr. Riant in no way seeks to render the workshop directly and solely responsible for many of the ills to which those who pursue a sedentary occupation are subject, but it is his desire to show how important is some consideration of the proper hygienic precautions in the planning, furnishing, and use of the study or the work-room.

In the first place, it must be recognised, apart, of course, from exceptional cases, such as that of the painter and sculptor, how universally architect and landlord in the present day are agreed to sacrifice, in the domestic plan, "the study." The house built according to the requirements of the tenant, forms, it will be

admitted, the exception, not the rule. The houses that most of us occupy,—particularly in that large section of the community in which some form of intellectual labour constitutes the chief source of income,—are houses into which we have moved as ready for immediate occupation, and the effort on the part of the proprietors is merely to suit the tastes of all, an effort too often resulting in the position that nobody's tastes are suited. We no longer, as in the past, build with the intention of our house being occupied by our children and grandchildren. The unsatisfactory nature of our leasehold laws precludes such a possibility, and discourages the provident householder from carrying out anything but the barest necessary improvements and alterations. With the constant change of tenants which is the rule in the present day, the ideal, a home arranged for the needs of each occupant, is, under such a system, almost impossible, and our houses consequently are built with a view not to please everybody, but in the most successful cases simply to be decently acceptable by all. The architect, naturally being obliged to conform his plans to the needs of the situation, finds himself sorely distracted. Certain portions of his plan are, of course, determined, the kitchen, dining-room, and such, but there must always remain a number of other rooms the eventual destination of which being uncertain, the chief point in the consideration of their plan has to be omitted. Notwithstanding our thoroughly Anglo-Saxon system of separate houses and consequent command of more space than is accorded to the needs of the dwellers in foreign cities, the same defective conditions exist both at home and abroad. What is suitable for all purposes is generally unfitted for any, and the improvised "study" is, therefore, as a rule entirely deficient in those points which it is necessary a study should possess. The architect, we repeat, is not to blame, but the fact none the less remains that a specially-considered, specially-built "study," answering all the requirements, is a feature not often to be found in a modern house; in the first place, the conditions requisite are by no means familiar to the architect, who is too rarely called upon to consider the question for him to be able to afford special attention to what is, in fact, a most important point. Again, it must be remarked, as Dr. Riant truly urges, that traditional precedent is wanting. In the classic treatises on architecture, no mention will be found of "the study," or the hygienic necessities of its plan. Vitruvius, that master of the science, whose lessons still form the surest guide to the architect, makes no mention of "the study." It is no neglect on his part, we may feel sure; the author who has given to the question of hygiene so important a place among the many requirements necessary to the architect, who has described so minutely, with accompanying reasons for precautions, every condition for the plan of the various elements of a dwelling, even those of the picture-gallery, the library, and conversation rooms, has omitted all mention of the "study," as we understand it, simply because our modern idea of sedentary intellectual occupation is a (generally small) square room, before a table, and surrounded by books and papers, was unknown to the ancients, whose mental labours were usually pursued out of doors. It was while walking that Cicero, we know, composed his brilliant tirades; and Pliny, among other authors, has remarked on the favourable effort of exercise in composition. The study of the classic writers was out of doors, and, though the *cubiculum*, or dwelling-room occasionally, we have evidence, served for study, no room was specially set aside for the purpose. The silent cloister of the Middle-Age monastery,—that ideal laboratory of intellectual research, with its shady galleries, its cool green garden, or often distant panoramic view,—can unfortunately offer in its construction little or no suggestion as to the plan of the modern workroom.

Our rudimentary climate has obliged different dispositions, and the "study," therefore, acquires with us a vast importance, and as it is occupied during a great part of the day, and often far into the night, its hygienic conditions demand serious attention. Situation, aspect, dimensions, plan, ventilation, modes of heating and lighting, both by day and night, colour of the walls, their coverings, the hangings, the furniture, are all points which merit the closest attention.

It is clear that as a first condition, the study, being intended for meditation, all elements of

* In Milman's lovingly-illustrated edition of Horace (Murray, 1840) an interesting letter by G. Dennis will be found: "De Villa Horatii," dated "Post fanum patre Vetus," A.D. 1842.

distraction,—among them that chiefest, noise,—must be avoided as far as possible; but the eyes, too, require as much attention as the ears; the light must not enter too directly, but in a diffused form; the aspect must ensure throughout the day a sufficient uniformity in the light,—a point too often sadly neglected in all dwelling-rooms, which the midday or the western sun will constantly render uninhabitable. The earlier hours of the day being admittedly those most favourable to intellectual labour, an eastern aspect should in every case be preferred; some sunlight in the room being desirable (*ov non steno il sole viene il medico*, says the Italian proverb), and the morning sun the least objectionable. The necessary northerly aspect of the painter's study is a requirement of course dependent on conditions quite different to the ordinary, a uniformity of light having been recognised from classic antiquity as obligatory for the unchanging effect of the colours employed "*ut colores eorum in opere, propter constantium luminis, immutata permanent qualitate*," says Vitruvius.

As for the dimensions of the study, that is a point requiring far greater consideration than is at present bestowed on the subject. The room, because it is occupied usually by only one person, it is considered may be ventilated by the usual (imperfect) means, it being forgotten that the window or windows will probably rarely, if ever, be opened, and that the time passed in the room must necessarily be considerable, and therefore often continued when the air has ceased to be pure. From another point of view the small size of the study is a feature which, if unavoidable, is none the less regrettable; repose from continuous work by occasional exercise is recommended, while the eyes strained by prolonged tension on objects close at hand equally require the repose which is obtained when they are exercised on objects at a considerable distance.

A NOTE AT EXETER.

THE High-street at Exeter is gradually getting interspersed with new buildings in various styles, and as in these cases one erection always leads to emulation on the part of other owners, a considerable change in the appearance of the main street will probably be made in a few years' time. The local circumstances which might be expected to influence style are rather at variance with one another. The presence of the beautiful cathedral might be expected to suggest, as it often does in a cathedral town, a leaning towards Mediaeval building; but the still more immediate presence of the old Renaissance Town Hall in the actual street is a suggestion in the opposite direction. Neither suggestion seems to have been very much followed up in the recent buildings, however. Near the top of the street is the Eastgate Arcade, at right angles with the main street; this, unhappily, has that somewhat tawdry and vulgar style into which arcades seem inevitably to fall, for some reason. Higher up the street a rather good brick building on the same side, with a heavy cornice and mullioned windows, mingles a little the Classic with the Gothic character. Further down, the angle of Bedford-street and High-street is occupied by a large and elaborate block of new brick shops and chambers, in the brick style founded on Elizabethan which has been so largely used of late in London, and seems to be spreading into the provinces in all directions. It is a pity to see local character in county towns getting so much metropolitanised, but it cannot be helped; the tendency is that way, and we must accept it. The building in question is a good specimen of its class; the ground story treated with elliptical arches with carved brick spandrels. Next to it in Bedford-street the new Constitutional Club is in progress, a rather weak Italian building, brick with stone dressings. The information as to the object of the building we learned from a large painted inscription in front of the building, giving also the contractor's name and address on one side and the architect's on the other. That kind of advertising may be very well for tradesmen, but for architects to adopt it is not the way to make the profession respected. Lower down, nearly opposite the Town Hall, Messrs. Wippell & Co. are erecting a new building, which is the only one in which there seems a decided aim at being Gothic. The building runs through to the cathedral yard, the longest front facing that

way, and there seems to have been a praiseworthy desire to make something suitable to the character of the locality in that respect. The general character of the building is entirely modern, but Gothic forms are employed in the way of pointed windows and tracery, part of the wall space being decorated by white stone tracery on a red brick backing, with not quite satisfactory effect, as the stone appears as if merely placed in front of the brickwork with no bond, and this gives an appearance at least of weakness. Next to this a piece of pronounced Queen Anne brickwork is getting up. The elegant details of the upper portion of the old Town Hall opposite might have inspired something better than this. Messrs. Lloyd & Sons' warehouse lower down, a recent though not new structure, shows a certain mingling of Gothic feeling with details mainly Classic; it is a slightly heavy but otherwise satisfactory piece of brick architecture. One or two gaps in the street show where further new buildings are projected, though not come into any shape yet.

PROFESSIONAL PORTRAITS.*

A COUNTRY PRACTITIONER.

"I think his virtual divinites were,—good practical schemes, accurate work, and a faithful completion of undertakings."—GEORGE ELIOT.

THIS sketch, like my previous one, is taken from memory, and necessarily so, for the country practitioner, as I knew him a quarter of a century ago, has ceased to exist. The county gentry no longer go, as a matter of course, to the county town for professional aid; if the church is to be restored or the manor-house remodelled, a specialist from London is summoned for the duty, and the hungry but disappointed resident architect is left out in the cold, and "can but gaze at what he would." This was not always so, or at least not to the same extent; but the change is a part of a much wider change which has imperceptibly but surely passed over the whole face of the country. The farmer's wife no longer drives in the early morn, as in my young days she was wont to drive, to the nearest market-town with her eggs, poultry, and butter, whither I have many a time, delighted, accompanied her. Such commodities are now contracted for by a wholesale merchant in London, and are despatched by the early train with dry, methodical, unpoetical regularity. The farmer's daughters no longer have a gala day every week and do their shopping in their own neighbourhood, chatting freely with the blushing young farmers in their gorgeous holiday finery who drive home late at night so very fast. The young ladies now take frequent trips to the great metropolis, and a Londoner-bred will find if he visit the old farm the peacock's-feather fans and *bric-à-brac* of Kensington have preceded him thither; that its inmates are better acquainted than himself with the geography and the sights even of the great city. Nay, the very servants have enlarged proportionately the horizon of their desires, and gratify, by the aid of cheap trips, the universal passion for travel. As for the real gentry and those who follow their lead, they scamp over half Europe and are citizens of the world. And amidst the attractions they meet with, and the new acquaintances they form, the resident architect has a diminished chance of sharing their favours. A prophet is proverbially without honour in his own country, however meritorious he may be, and an architect has his chances discounted by being too familiarly known. There was a time when the local work went to the local man, and it is more than doubtful whether in this, as in much else, the new system is any improvement upon the old. The London architect may have had a wider experience and his position may be an earnest of superior attainments, but he cannot give the time and personal attention to the work that the other can, and he is not so likely to be versed in the local peculiarities and needs. He is an intruder, and acts as a wedge riving asunder interests which were before his advent interdependent. It is ever the trick of our English nation either to starve a man with neglect or to kill him with overwork, and the fashionable and unfashionable architects are no exception to the rule. We can all remember cases in which the best years of a man's life were passed in fruitless longings for employment which comes at last,—if it come at

all,—too late to be enjoyed and almost too heavy to be borne.

The county architect was a man who had been articled to the cathedral architect, who was also the county surveyor. He had acquired during his articles a thorough knowledge of builders' work as locally conducted; of the native architecture of his district, from the cathedral downwards; of the whole geography of the county, and the status of all the county families. On the completion of his term he removed to Town as an improver, and enlarged the range of his studies, and still further extended his acquaintance with other forms of art by an occasional trip to the Continent. Upon some favourable opportunity he returned to his native place and commenced in earnest his professional career. His father had been the rector of a neighbouring parish; his brother was the head-master of the grammar-school in the next considerable town; and he himself had troops of friends in the local lawyers and others of the professional class. His house (and office in one) was a square comfortable one in the wide clean High-street; the entrance-door, opening directly on to the footway, was resplendent with a brass knocker, and a plate setting forth the calling of the occupant.

The architect was over forty years of age when he settled down to work. Short, square of build, with iron-grey hair, a shaven chin and upper lip, and that traditional form of whisker which has been likened to a mutton chop. He dressed always in a black Melton morning coat with capacious pockets at the hips, a waistcoat *en suite*, and "pepper-and-salt" trousers rather tight, and suggestive of horse exercise, of which, indeed, he was very fond. He wore shooting-boots all the year round, a hint that he was used to the preparation of surveys and rough outdoor work, and the only rakish thing about him was a "Duke of Bedford" scarf fastened with a gold pin. He carried a riding-whip habitually, sometimes wore spurs, and always yellow dogskin gloves. He looked a combination of lawyer and squire, and I never could help suspecting that his costume, adopted on commencing practice, and persevered in, was carefully devised with a view to conciliate the various tastes of his neighbours, clients, and patrons. He kept a dog-cart, the back seat of which carried a builder or workman occasionally, and the receptacle designed for dogs was equally well adapted for paper and plans. He was fairly prosperous, and very happy. In the first place, nothing was done in a hurry. An approaching commission was heralded by many signs, and its execution was deliberately undertaken. Let us suppose that it had been determined to restore some church in an adjoining parish. A day for the survey was fixed well ahead. A morning's drive brought us to the spot; the horse was put up in the parson's stable, or in that of the nearest inn, and we commenced our sketches and measurements to the admiration of the old clerk, who loitered about in expectation of a tip for some imagined service; and of the pew-opener, who was determined that if she was out of mind it should not be because she was out of sight. Lunch at the vicarage, and a stroll round the grounds, a light afternoon's work, and a homeward drive at sundown through a lovely Western shire, made up a day's doings, in which the work and the pleasure were so blended that it was difficult to say which was which. The plans were not got out with feverish haste, and all was done with care. They gave the parson many an opportunity of driving over his daughters, who took an eager interest in the affair, and were never tired of discussing it with the gentlemanly and well-connected pupil who had the drawings in hand. The supervision of the work was the occasion of a series of somewhat similar professional picnics, and new commissions brought, under the name of work, more opportunities for other delightful jaunts. It was the custom of the county, of which we are inditing a few recollections, to obtain separate tenders from each trade. The mason, smith, &c., lived at the different villages round, and this fact multiplied the occasions for travelling, in one direction to look at a quarry, in another to see how the joinery was getting on, &c. The tradesmen were honest, courteous, and hospitable, and, for the most part, took a genuine interest in the work, and strove to do it well.

One advantage incident to the position of our country practitioner "in the brave days of old"

* See p. 211, ante.

was that "competitions" were unknown, or at least unpractised. Through the professional journal, which was taken in with commendable regularity, we heard of such things, but they affected us not at all. The work which came to us was *bonâ fide*, and the accruing profits were not discounted by losses on risky and unsuccessful enterprises.

The country practitioner of to-day is another person altogether. He has an office, or at any rate an address, in London, as well as in the country, and, as Palsgraf says, "one knows not where to have him,"—whether he is a London architect who has reached out a hand to get a grip on the country, or a country architect who, finding employment insufficient hopes to share the more numerous opportunities of Town, we cannot be sure. Moreover, he is not one, but many. In a cathedral town with which I am acquainted, one architect was erst enough for its wants, and where he lived, six or seven now,—perhaps I ought not to say,—*starve*, but at any rate do not live so well. Nor have they, individually or collectively, the status which my old friend enjoyed, and in turn reflected upon the profession which he represented. He took his position, and held it with the best of the local professional men, and it is doubtful whether the gain is wholly on the side of the profession at large, now that his place is filled by half a dozen social nobodies.

What the future may have in store for us if this multiplication of architects is to go on as it has been going on of late, and if the struggle for employment is to be intensified in proportion, I cannot pretend to say. The former system was one which combined work with leisure,—

"For us light labour brought a daily store."

The present one appears to be either leisure without work = starvation; or for a few "favoured" individuals, work without leisure = a life not worth living. For my part, I am sufficient of a Conservative to prefer the old ways; for there is no part of my life upon which I look back with greater satisfaction than upon the years which it was my good fortune to spend under the gentle rule of one of the old school of country practitioners.

CHARCOAL FIRES AND COAL FIRES.

We are rapidly approaching the period when fires will once again be lighted in the sitting-room and drawing-room grates. Time was, in our mothers' youth, when All Saints' Day was the turning-point of autumn, but with chilly Augusts and an apparently changed climate, the 1st of November is a date far too much advanced into the winter for our comfort-seeking generation. We may, therefore, shortly look forward to a commencement of coal fires, and the annual complaint against London fogs, so largely complicated by the presence of unseasoned smoke. We shall once more be inundated with letters, papers, lectures, articles, pamphlets, meetings of societies, exhibitions, and advertisements, urging the necessity of an abatement of the smoke nuisance of London, and, as usual, the mass of us will continue to use the same fireplaces, the same ranges, and the same coal, the same imperfect, clumsy means of heating our rooms, with which we seem so complacently satisfied. We shall, of course, be once more subjected to the flood of statistics, the startling statements of the millions of tons of coal burned in England, and London more particularly, where the latest returns place the consumption of coal at about ten millions of tons, as against six millions fifteen years ago, and half that amount a generation back. We shall once again be presented with comforting calculations respecting the proportion of unconsumed carbon and poisonous acids which escape into the air from all this heat-giving material piled up in fireplaces of the million or so families established in London. But, apart from a few, a relatively insignificant number, of philanthropic householders, how many, we wonder, will this winter endeavour to lessen what is daily growing an acknowledged blight upon our great metropolis? Smoke-consuming grates, anthracite coal, steam-coal, smokeless coal, stoves of every description in vogue are advertised; the carefully black-leaded grate, which in the pleasant summer months is so tastefully shrouded up in rich curtains, or bedecked with the 42d. Japanese umbrella, or with the pretty ferns, the peacocks'

feathers, the fir-cones, or the humble cut-paper abomination, will once again be brought into operation to consume its innumerable scuttles of coal and pour up the chimney its volumes of tawny smoke, its blacks, and sulphurous vapour.

Ours is a country in which new ideas, it will freely be admitted, find but slow, and, still less universal, acceptance, yet it would be, indeed, unjust to say that practical suggestions meet with no support. Doubtless, in course of time, our manifold sins and thoughtless conduct with respect to the consumption of our coal will to some extent be atoned for by a change for the better, and the action of the few may, with advancing years, influence to a beneficial extent the conduct of the many. Without this certainty, example would be useless, precept without effect, and progress impossible. There remains, it is frankly agreed on all sides, much yet to be done even to determine the nature of the nuisance from which each recurring winter we in London suffer more acutely as growing prosperity and population increase the numbers of fires lighted in the metropolis, and while legislation lags, it is felt that individual action may do much.

It is for this reason that we would urge the consideration of the expediency of the greater use of charcoal for the kitchen and the many other purposes for which it is so admirably suited as a smokeless and cleanly fuel. Charcoal, previously to the introduction of coal, was, it must be remembered, as much burned in England as it still is with Continental nations. Ours is certainly a coal country; it would, therefore, be unreasonable to expect that we should burn wood, though by scientific management much of our at present unproductive soil might, as is the case abroad, be turned to admirable account for the cultivation of quick-growing timber for fuel or conversion into charcoal.

We are aware that there exists in our country a prejudice against the charcoal fire, every one glibly referring to the danger of asphyxiation, as if the matter were proved beyond dispute. Yet charcoal is almost universally used abroad for the kitchen fire. It is true that of late years the iron American range for burning coal has been largely introduced into Paris, and the smoke nuisance may be said to be commencing its rule on the banks of the Seine; but charcoal constitutes, in reality, the chief fuel for the kitchen fire, playing a great part in the economy of the foreign household. The blazing coal fire which, in England, winter and summer alike, it is absolutely necessary to "keep up," is unknown on the Continent, simply because by the use of charcoal a fire in the proper condition for cooking purposes can be obtained in a few moments. How much labour, raking-out, and waiting it requires before the coal fire is in condition, the householder distracted by the familiar sound of the kitchen poker at work is fully aware. It is probably only over a charcoal fire, with the regularity of its heat, that the delicate sauces for which foreign cookery is so famous can be produced; a French chef is helpless without his little clean tile stove in which he can obtain in a few moments that cherry-red, smokeless fire over which he can alone concoct with safety his delicate flavours.

There is no small element of interest in the fact that the stove used to this day in the most recently-erected of foreign houses may be said to exactly resemble in construction and principle the stove used by the ancients, as we see from their pictured representations, and by the specimens from Pompeii preserved in the Naples Museum, or the charcoal stove used to this day in China and Japan. In its simplest form a baked-earth pot, with a rough grating to hold the fuel, and an aperture beneath to obtain a draught and rake out the ashes, the most finished charcoal stove of to-day is constructed on exactly the same principle. In many cases the stove is movable, consisting of what may be described as a strong tile-box placed on legs; in the top of the box, according to the size of the stove, there are three or four or more apertures (about 6 in. square) which receive the square iron basket, sloping inwards and grated at the bottom; a simple arrangement on the front side of the stove, a sheet-iron door sliding up and down in grooves, regulates the draught from below. One of the apertures is generally round, being permanently intended for the vessel in which is prepared the "stock" or the national *pot-au-feu*. This is the unvarying form of every tile stove or *poêle* in use throughout Paris, and, therefore, we may say throughout

France, the cost of such a stove being, from its simple nature, necessarily small. When made a fixture the construction is the same; a very wide-mouthed chimney carries off any noxious vapours, a sink with a water-tap being the inevitable accompaniments. Underneath the stove is kept the box containing the day's supply of charcoal, as also the movable box,—the *boîte aux ordures*,—into which are thrown the kitchen refuse and ashes, emptied and removed from the house every morning without fail. To light the fire, all that is necessary is two or three sticks of resin-smear wood (*bûches*), the cost of which is infinitesimal, though strict economists use paper,—a few pieces of soft charcoal (*braises*) from the baker's oven,* or some unburnt coal from a previous fire, a handful of stick-charcoal, a puff or so from the bellows,—a funnel-shaped "drawer" is sometimes used,—and in five minutes a brilliant cherry-red fire is obtained, burning without smoke or dirt. When done with, if the charcoal has not been consumed, a tight-fitting lid is placed over the square top of the basket, the draught-door is shut down, and the fire is instantly extinguished, the charcoal being economised for the next occasion. A wet sponge swept over the light blue tiles cleans away what dirt or grease may have been caused by the process of cookery, and the kitchen-stove is left an object of cleanly beauty, the cook's white apron unsullied by a stain, her patience untired, her face unburnt, the food not spoiled by the flavour of gas or the soot which may have fallen down the chimney, the clean, wholesome taste of the fire has been ensured to everything which has been broiled, and the subtle administration of quick and slow fire regulated to a nicety with the four or five different pots which may have been kept "going" at the same moment. Roasting, as a mode of cookery, one may be told is prevented by this style of fire; we confess to the fact that our English idea of the kitchen "jack," the roasting fire, the judicious and all-important broasting the browned potatoes, and the luscious Yorkshire pudding beneath the twirling joint, is sadly violated by the French process, yet by means which our deficient acquaintance with foreign culinary secrets prevents our explaining, the French cook unprovided with the English range,—though an open fire is not unknown,—is certainly able to produce a by no means discreditable counterpart to our English joint; the French *pigot*, with its skillfully insinuated cloves of garlic, and the succulent *roast*, can be enjoyed abroad in quite as great perfection as at home, the quality of the meat constituting probably the chief difference, while who that has eaten roasted chicken abroad can "find it in his mind" to complain that life would be endurable but for its enjoyments?

In the matter of thrifty management, for there are few ashes and no cinders,—of cleanliness, economy, and absence of smoke, it is simply impossible to conceive a more perfect form of fire for culinary purposes than that produced by charcoal. Gas has long been in use in our kitchens as a valuable assistant, but it has at all times found its detractors among the delicately-palated, while its expense cannot be denied. The ease with which a large dinner, consisting of quite a considerable number of dishes, can be prepared in a Parisian kitchen barely 10 ft. square, is one of the points which further recommend the use of charcoal. Each separate fireplace,—by the French system,—can be kept at the degree of heat required for the food or dish being prepared; there is no necessity for the cook to keep up the regular shifting of heavy pots rendered obligatory with the single fire alone obtainable in the English grate or range. A few ashes heaped on the burning charcoal will obtain the dull heat so necessary for lengthy simmering, one of the secrets of good cookery; while a simple raking-out and fresh charcoal ensure in an instant, if needed, a brilliant flame. Among our poorer classes the economy of charcoal would soon be recognised, it being so exactly suited for those most popular forms of cookery, broiling, frying, and boiling, and ready at the shortest possible notice. For the simple cooking of the favourite *untton-chop*, the sturdier beef-steak, or succulent sausage, who can calculate the volumes of choking smoke which in the preparation and maintenance of the fire are poured daily into the air of London, all which might have been avoided by the use

* In France and on the Continent generally, the bakers are obliged to use wood for their ovens.

of charcoal, so admirably suited for the purpose? If charcoal were more generally burned, how entirely might be avoided that thick pall of smoke which rises above our roofs every morning on the lighting of thousands of kitchen fires simply to prepare our coffee, our tea, our eggs, our bacon, our toast, or more substantial breakfast luxuries. A cleanly, smokeless charcoal fire would have amply sufficed for this earlier meal, even if the dinner require the regular kitchen fire.

In concluding, we repeat that the fears respecting the danger attendant on the use of charcoal are entirely unfounded where the smallest intelligence is exercised. If we can scarcely expect to see charcoal introduced into an English kitchen as a complete and universal substitute for coal, it can at least, as is the case in some of the more modern French kitchens, be tried as an economical assistant for many domestic purposes, while in the summer it might eventually serve as an excellent substitute for the present thriftless, smoke-producing, coal-consuming kitchen range, so largely the cause of much of the smoke nuisance from which Londoners annually allow themselves to suffer.

THE ANNUAL MEETING OF THE ASSOCIATION OF GERMAN ENGINEERS.

The twenty-fourth annual meeting of the Association of German Engineers was opened on Monday, August 13, at Dortmund, Herr Director Dittmar, of Eschweiler, president, in the chair. The members of the association were welcomed, on behalf of the Government, by Herr von Rosen, president of the Arnsberg Government District, and, on behalf of Dortmund, by the burgomaster of the town, Herr Oberbürgermeister Lindemann. After suitably acknowledging the compliments paid to the association by those gentlemen, the President proceeded to give a retrospective glance at the position of German industry during the last decade. He said that the Germans had emerged regenerated from a dire crisis. They felt themselves once more an industrial nation, and able to compete with others in the markets of the world. Adversity had taught them not only to pray, but to work as well. The Association of German Engineers had had a large share in the growth of German industry, and he hoped that they would continue to have that share also in the future.

Herr Peters, the general secretary, then read the annual report, from which we learn that during the past year 576 new members,—the largest accession in any year,—had entered, of which number 80 per cent. belonged to the twenty-eight district associations distributed over Germany. The secretary then entered into details as to the activity of the association, which were received with evident satisfaction.

Herr Professor W. Schulz next read a highly interesting paper on "The Future of Electrical Transmission of Power in Mining." The author first gave some explanations respecting the mechanical effect of the electric transmission of power, and endeavoured to obtain a useful figure for the comparison of so-called electrical energy with other methods of transmission of power, by citing the results achieved in various mines in the use of different electrical motors. Taking account of the latest experiments made by M. Marcel Deprez between Paris and Le Bourget, the author arrived at the conclusion that, using copper conductors, no greater mechanical effect than 50 per cent. could be relied on. The author is of opinion that boring-machines might very well be actuated by electrical transmission of power, and their use would also be greatly cheapened as compared with their being worked, disadvantageously, by air-compressors; but as a substitute for hydraulic boring-machines, electricity would be out of question. For driving underground locomotives, compressed air is dearer than electricity. But the electrical locomotive will probably become a worthy rival of the fireless locomotive of Herr Moritz Honigsmann. The author then discussed the possibility of using electric force for hauling purposes, and summarised the results of his experiments as follows. The electrical transmission of power will, in the first place, be introduced in hauling in headings, and especially where the loads are light. In the second place, it will play a rôle for separate hauling, ventilating, and pumping purposes; and it will also be employed in

mining proper, should it be possible to construct machines driven by electro-motors, and in all cases where the advantages offered by compressed air in working these machines for improving the atmosphere in mines can be dispensed with.

No discussion followed the reading of this paper, for which the President conveyed the thanks of the meeting to the author.

After an adjournment for refreshments, Herr E. Bauer read a paper on "The Present Tendency of the Steam-engine Theory and its Experimental Determination." The author pointed out that electricity and steam should not fight each other, but act harmoniously towards the achievement of greater technical successes, and then proceeded to refer to the defects of the steam-engine theory raised upon the basis of the mechanical heat theory, which takes no account of the assumption of an exchange of heat between the steam and the sides of the cylinder. This theory is inadequate principally because it does not permit of calculating the actual consumption of steam, and is compelled to explain the proved loss of steam in even the best constructed machines by leakage of the valves. The author then described the revolution which has been effected during the last eight years by the investigations of Herr Hirn, who traces the loss experienced principally to the cooling effects of the cylinder sides. The author expects that further experiments will lead to the creation of a satisfactory steam-engine theory.

There was no discussion also on this paper, which, however, was much applauded.

Herr Max Eyth then read a paper on "The Development of the Manufacture of Agricultural Machinery in England, and its chief Cause." The author attacked the supposition frequently met with that the cause of the extraordinary development of this branch of manufacture in England is due to the peculiar conditions of English agriculture. Fifty years ago agriculture was there on as primitive a footing as in Germany or France. The few implements of the agriculturist, the form of which had been peculiar to each district for centuries, possessed an apparently immutable local stability, and the conservative feeling, hostile to all that is new or foreign, was as strongly developed in the Anglo-Saxon rural population as in any other race. The rapid introduction in England of modern implements must be ascribed to the activity of the Royal Agricultural Society of England, which, established in 1833, as an independent association of agriculturists for the promotion of agricultural objects, formed the idea, in the interest of cattle breeding, to at once break down the provincial barriers, which were the principal obstacles to the progress of agriculture, by annual migratory shows. The author described how the society had solved this problem, and concluded with the question,—Is it not time to learn by the example of England what we want? An energetic attempt had been recently made to call into existence for Germany an institution akin to the Royal Agricultural Society. The matter must in the first place be decided by agriculturists, but the industry engaged in the manufacture of machinery must not fail to give it that encouragement and actual assistance which the movement deserves.

The conclusion of the author's paper gave rise to much applause, after which, at half-past three, the President declared the proceedings adjourned until the next day.

On meeting again the next day, under the presidency of Herr Director Dittmar, Herr F. Lümann, of Osnabrück, read a paper on "The Fundamental Differences in the Arrangement of English and German Ironworks." The author first inquired what special circumstances assisted English blast-furnaces in the production of cheap pig-iron. These are the rich and closely situated deposits of all necessary raw materials; next, the favourable position of England towards both seas; and, finally, the arrangement and working of English railways, which are calculated upon a cheap rate of carriage for large quantities of materials. The author hoped that the transference of the railways to the State and consequent saving in administrative expenses, and the employment of steel for rails and sleepers, would lead to a considerable reduction of the rates of freight for raw materials also in Germany. German manufacturers will only be able to export if all factors, more particularly cheap freights and advantageous arrangements,

co-operate as they do in England. The author then described those arrangements of English railways and ironworks, explaining them by giving examples, and illustrating his explanations by drawings, and concluded with the hope that German railways and ironworks would, in future, spare no pains and no expense in enabling German manufacturers to successfully export.

The President conveyed the thanks of the meeting to the author of the paper, after which some minor business of interest only to the association was transacted. A proposal for bestowing prizes for essays was next adopted, as was also one (by 114 against 62 votes) for combining the weekly and monthly publications of the society into a *Zeitschrift* to be published once a week. Herr Becker, of Berlin, was then elected first, and Herr Brauns, of Dortmund, second, president for the year.

Herr Becker, of Berlin, then read the preliminary report of the committee on the Patent and Trade-mark Laws, and their application. The final report is to be presented in October.

Herr Peters, the general secretary, next reported on the labours of the committee appointed to inquire into the determination of standards for testing steam-engines and boilers. As the investigations of the committee have not been concluded, it was resolved to re-appoint the committee for 1884.

Next followed an important report of the committee, of which Geheimrath Engel was chairman, and which had been charged with the collection of statistics and proposals for the better utilisation of the water-power of Germany. The report pointed to the frightful devastations which had been caused last year by floods of the Rhine, the Main, and the Mosel, which led to the question of the regulation of water-courses being taken up by the Reichstag. Under those conditions, the Association of Engineers ought to see that they are represented on the Parliamentary committee which has been appointed by at least one of its members. The report was adopted.

The general secretary next reported on the labours of the committee on the instruction in engineering establishments. The President then adjourned the proceedings until the next day. The annual banquet of the Society took place in the evening.

On reassembling on Wednesday, Bergrath Dr. Schultz, of Bochum, read a paper on "The Coal Industry of Westphalia." The coal-producing district of Westphalia is, as regards production and number of miners employed, at the head of the mining districts of the European continent. In this respect it approaches the two principal centres of coal-mining of the globe,—Durham and Pennsylvania,—and, according to human calculation, it may soon eclipse them. The author, for comparison, stated that the Upper Silesian coal-mining district, which is next to that of Westphalia as regards production, yielded in 1882 about 54 per cent. of the Westphalian output, or 13,790,947 tons, the number of miners employed being 48,213; whilst North and South Durham produced in 1882 a total of 29,238,814 tons, and Pennsylvania in 1881,—for 1882 the author had had no figures available,—28,500,016 tons. The output of the Westphalian coal basin reached nearly half of the total German production, the latter amounting in 1882 to 52,195,000 tons; it has far exceeded the production of all the coal-producing districts of France, which in 1882 reached a total of 20,251,531 tons. The author showed by statistics how rapidly the coal-mining industry of Westphalia had grown. Thus, while in 1857 the total output of coal in Westphalia was only 3,817,018 tons, it had risen in 1882 to 25,757,482 tons; the value of the produce being 32,306,970 marks (1,600,000*l.*) in the former year, and 117,629,944 marks (nearly 6,000,000*l.*) in 1882. The number of miners employed in 1857 was 29,594; in 1882, 88,691. After the author had treated successively of the various Westphalian coal-beds, this part of the subject being illustrated by drawings, the methods of winning coal, and the machinery employed, he proceeded to deal with fire-damp and the safety-lamp [steam-boilers and wire ropes employed, &c. He next spoke of the average annual output per miner, which, from 129 tons in 1857, rose to 191 tons in 1862, 220 tons in 1867, fell to 209 tons in 1872, and rose again to 241 tons in 1877, and 290 tons in 1882. The author concluded by referring to the rate of wages

paid, and the necessity for lower freights, and the construction of canals. The paper was much applauded, the thanks of the meeting being conveyed to its author by the President.

The next paper read was by Herr F. Peters, of Dortmund, on "The Treatment of Coal in the Ruhr Basin (Separation, Washing, Coking, and Patent Fuel Manufacture)." The treatment to which coal is submitted in Westphalia has for its object the removal of slate, pyrites, and other extraneous substances occurring in coal as it is hauled from the mines, and thus rendering it more valuable and marketable, at the same time sorting it, and preparing it for coking. Whilst formerly those processes were very primitive, they have been greatly improved during recent years by the introduction of more elaborate machinery. The author proved the importance of this treatment by comparing the prices obtained for crude coal and "created" coal. He then described the various Westphalian modes of washing coal and the manufacture of coke and patent fuel, adding statistics where to the purpose. He stated that patent fuel was manufactured in France and Belgium in the fifth decade of this century, while the manufacture was introduced in Westphalia only two years ago. The interesting paper was listened to with great attention.

The last paper read was by Herr W. Brüggemann, of Dortmund, on "The Iron Industry of Westphalia." It contained a history of that industry and a description of Westphalian ironworks, to which the author added valuable statistical material.

The President then, after a few suitable remarks, in which he once more thanked the authors of the papers read, at the same time conveying the thanks of the meeting to the managers of the works round Dortmund for throwing them open to the inspection of members, declared the twenty-fourth annual meeting of the Association of German Engineers closed.

The next annual meeting will be held at Mannheim.

EXPERTS ON THE BENCH.

We called attention a few weeks ago to the desirability, in some kind of actions, of judges being assisted by skilled assessors, and we pointed out how valuable was the assistance given by nautical assessors in maritime causes. We are glad to find that the view which we expressed has been that which has also been formally regarded by the Committee of Judges who have framed the new legal Rules of Procedure of which the public have recently heard a good deal. The Seventh Rule of Order XXXVI. states that the court or a judge may at any time order any cause, matter, or issue to be tried by a judge sitting with assessors only, an official referee or special referee with or without assessors. On the other hand, Rule VI. of the same Order seems to give an absolute right to either party to have a trial by a jury. It may be doubted whether this was the intention of the framers of these rules, which have been supposed to be framed so as to leave the mode of trial, except in cases such as slander, breach of promise, and so forth, in the discretion of a judge. There can be no question that in some cases, as we have more than once pointed out, the judge should have absolute power to order the trial of an action with assessors, and we yet hope that the intention of the Committee of Judges will not be found to be nullified by the manner in which the draughtsmen have formulated them.

It is satisfactory, however, to observe that it is not only in actual trials that the value of skilled assistance is recognised. For in the rules which regulate the procedure in the chambers of the Chancery judges, it is expressly enacted that "The judge in chambers may in such way as he thinks fit, obtain the assistance of accountants, merchants, engineers, actuaries, and other scientific persons the better to enable any matter at once to be determined, and he may act upon the certificate of any such person." It is rather strange that architects and surveyors were not specified together with actuaries and engineers, but they must, we suppose, feel gratified that they are necessarily included in the wide class of "scientific persons." But another criticism which occurs to us is this, namely, that this rule should not be confined to a judge in chambers in the Chancery Division. It should be made applicable to any judge at any period in the progress of litigation.

If it were so, in many cases expensive litigation, especially in cases arising out of building disputes, obstruction of light, and so forth, might, from the legal point of view, be nipped in the bud. We are, therefore, unable to appreciate the reasons which can have induced the Committee of Judges to narrow the application of this rule as they apparently have done. We confess, too, that we think the Council of the Institute might, during the long deliberation of the Committee, have summoned up courage to lay their views before them as to the value of the assistance of skilled persons in helping to decide complicated and technical questions connected with building.

TECHNICAL TEACHING AT THE POLYTECHNIC.

A PRAISEWORTHY effort has been made to utilise a portion of the premises of what was formerly the Polytechnic Institution for the furtherance of technical education. The Polytechnic, it is known, has now been converted into a Young Men's Christian Institute for apprentices, artisans, &c.; but, apart from this, there are technical classes open to all, whether members or otherwise of the Institute. The only advantage enjoyed by members over the public is that of a considerable reduction in the fees paid for the lessons and the convenience of possessing what to all intents and purposes is a club under the same roof as their class-room. To all appearances, therefore, the question of technical education has been wisely separated from that of religious education; and on the maintenance of this prudent distinction will, we should imagine, depend the success and popularity of this undertaking. The technical classes owe their existence, in a great measure, to the benevolence of Mr. Quintin Hogg, who has supplied large sums of money for the purchase of expensive instruments, the enlargement of the premises, &c. Such utility was indispensable, for workmen could not be expected to pay high fees, and the classes had to be prepared, the services of able professors secured, before any income could be anticipated. The success was not, however, slow in coming; and, indeed, it exceeded, even during the first season, the best hopes entertained by the promoters of the enterprise. We are assured that, during the last winter season, no fewer than 5,000 class tickets were issued, and that it has been necessary to increase the premises so as to provide accommodation for 8,000 students.

The form of instruction is so varied, the classes are so numerous, that we cannot mention them all; but we may state that they include bricklaying, cabinet-making, carpentry and joinery, engineer pattern-making, house decoration, metal turning and lathe work, plumbing, tailor cutting, practical mensuration, electrical lighting, mechanical engineering, watch-making, silversmith's work, &c. By the side of these practical trade classes and technical classes, there are the science classes, including elementary and advanced building construction, hygiene, plane and solid geometry, steam and the steam-engine; and then the ordinary sciences, such as astronomy, botany, chemistry, &c. There is also a school of art, including decorative art and modelling, and schools for vocal and instrumental music and for general teaching, such as arithmetic, bookkeeping, foreign languages, grammar, &c. The fees for members vary according to the subject, from 2s. to 6s. per session of seven months, and for non-members from 4s. to 15s. per session. The age for members of the Institute is limited from sixteen to twenty-three, but workmen of any age can attend the classes.

One important rule has been laid down. A workman is not allowed to follow a course of technical teaching unless he is apprenticed or actually working in the trade in question. But for this precaution many abuses might arise. We should find small jobbing tradesmen advertising that they were ready to undertake a great variety of work, though they might possess no further knowledge of the subject than what can be acquired by attending a short course of lectures at the Polytechnic. At the same time, everything has been done to render these lectures thoroughly practical, but they are meant to increase and improve upon the education acquired in the workshop. Apprentices are constantly complaining that they are not taught with sufficient care. The old system of apprenticeship has in many cases completely

broken down. The master is rarely on the spot to superintend the teaching of the apprentice, while the foreman cares little or nothing about the subject; an apprentice has therefore in many instances insurmountable difficulties to contend against. Also, it is not every workshop that contains all the instruments, the apparatus, the tools necessary to enable him to learn and practise in every branch of his craft. The practical trade classes of the Polytechnic are meant to offer at least a partial remedy for these deficiencies. We have seen, for instance, a lathe kept for the use of the students which cost 300l., and certainly it is not in all workshops that such beautiful machinery is placed at the disposal of apprentices. In all the teaching, it is sought to combine practice with theory. A lecture is followed by demonstration, and the pupil may try his hand and work as well as listen. This system has commended itself to the workmen themselves; for the London Trades Council passed a resolution recommending it to all the London trades. A deputation from this federation of the London Trades Unionists had visited the Polytechnic, and it was in answer to their report that the Council approved of what had been done.

So far as the building trades are concerned, this is the programme laid down for the coming session. Lectures will be delivered on building construction every week by Mr. A. Harland, A.R.I.B.A. The syllabus comprises first the materials, bricks, limes, cements, &c.; and separate lectures on the properties and uses of timber, iron, steel, lead, zinc, &c.; then follow the theoretical principles of construction, the nature of stresses, leverage, distribution of loads, &c. Afterwards we have sanitary engineering, and finally the general details of builders' work, such as foundation works, soil, timbering, roofing, partitions, girders, internal fittings, &c.; all this illustrated by working drawings, figured sketches, and specifications. The fee for these classes is 2s. 6d. to members and 7s. 6d. to non-members for the session of seven months. On the same terms, a similar course of lectures on practical plane and solid geometry will be delivered by Mr. H. J. Spooner, Assoc. Soc. Eng.; and on practical mensuration by Mr. A. Harland. Mr. G. C. Pope, a foreman carpenter and joiner, teaches practical carpentry and joinery; while Mr. J. W. Clarke, foreman plumber and National Honours Medallist, and Mr. G. Taylor, first-class technical and students who will compete at the examination held by the City and Guilds of London Technical Institute. There are also separate classes on house decoration and brick-laying.

It will be seen, therefore, that the building trades enjoy a large share of the advantages offered by the Institute, and that the cost is sufficiently low not to be an obstacle to workmen anxious to perfect their technical capabilities.

THE ARCHITECTURAL ASSOCIATION'S EXCURSION.

THE fourteenth annual excursion of the Architectural Association was brought to a close on the 18th inst. Yeovil was the headquarters, and the country round it for a number of miles was well explored in carriage excursions, &c. Mr. Cole A. Adams, the president for the year, headed the party, and described many of the buildings. Mr. J. D. Sedding was the leader on the Montacute day. Between thirty and forty members took part. We shall give illustrations of and notes as to some of the buildings visited, in addition to the article already given on Sherborne. Mr. C. B. Pink acted as excursion secretary, as in several years last past.

Board Schools, Norwich.—The Board Schools recently erected in Nelson-street, Heigham, from the plans of Mr. J. H. Brown, architect, were formally opened on the 13th inst., by the Sheriff, in the presence of the Chairman and other members of the Board. The boys' school will accommodate 324, and the girls' school 243 scholars. They have been built by Mr. Wegg; the school furniture has been supplied by Mr. G. E. Hawes; and the gas-fittings by Mr. E. C. Thompson. Two other buildings,—a junior mixed and an infants' school,—for 389 and 373 scholars respectively, are in progress.

COLOUR IN THE STREETS.

At one time it was seriously doubted if we were a musical nation. We imported our music like our fashions from abroad. We had musicians of our own, it is true. Our native bards were not untutted. Their wild airs and their plaintive ditties represented the passions and the feelings of the people, but these were but the untutted utterances of a semi-educated people. Music was a science, half divine, and its harmonies were uttered but not understood by a people who entwined heart-stirring words with the melody of sweet sounds and were content with the result. We have met this charge as becomes a nation of shopkeepers by first providing the highest musical talent of the world, and next by establishing those colleges and academies, without which no high proficiency is attainable, for the cultivation of the latent musical abilities of the country. If we have so advanced in our appreciation of the harmony of sweet sounds, we may reasonably hope soon to see an equal appreciation of the harmony of colour, especially as applied to the exterior of our houses and public edifices. We have too long trusted to nature to produce tinted harmony out of doors, and when left to her natural devices there is but little to complain of. It is the handiwork of man which is discordant, and the result of his civilised habits which interferes with the mosses, lichens, and the weathered hues of age on our buildings. Some time since we pointed out how the rough-tongued habitation of the manufacturing districts and mining country showed some taste in ornamenting the doorsteps and sills of the windows in a smoke-begrimed street or alley.

That inert taste for colour and variety shows itself in the bright flashes of colour which ornament the divisions of the sashes in the window-frames. It is true that the scarlet band is only a bit of Turkey-red muslin, filled with saw-dust to keep out the coal grime and thick fumes of mill or furnace; but it shows that the persons who undertook to achieve a given end, have not been dead to the influence of colour. In London and in the so-called respectable streets and terraces of our large towns this endeavour to cheer the monotony of smoke-tinted bricks has been far more conspicuous by its absence than its presence. Occasionally we have some green Venetian blinds, with complementary red curtains in the windows, but generally their white lace curtains or buff blinds only served to show how funereally dull the grim brickwork of our streets could be made to appear. This was especially noted by the intelligent foreigner and the observant countryman. His grey mansions, whitewashed coats, or red-brick edifices were soon toned in harmony with the surrounding landscape, and the foreigner wondered at the absence of the gaily-painted verandahs and jalousies, which brightened up the dullness and monotony of the streets abroad. When paint and colour were brought into requisition they were used so unartistically as to bring into greater prominence the general gloomy tone of the surroundings. The ground-floor and areas were painted in light gray or stone colour, as it is termed, which was popular, because it was cheap, and gave little trouble; but to the artistic eye it gave an unsubstantial foundation to the mass of dark colour above which it neither relieved, framed, nor made less sombre. Any time during the last fifty years the question has been asked again and again, "Can nothing be done to preserve our public buildings, our statues, and our houses from the murky influence of the all-pervading smoke?" It is true that some time before the millennium we may dispense with the smoke, but, given the smoke, where is the remedy? We plant trees, and the verdure of trees we know has a mellowing influence even on dirt and bleak walls in the country. It enhances the dismal tone of London bricks in town, but cannot compensate for man's inattention to the beauty of his dwelling on the side facing the thoroughfare. There are indications here and there of a better taste and a higher taste for the beautiful. It would, indeed, be wonderful if it were not so. The humanising influence of pleasant surroundings is generally admitted. Harmony of colour is a compensating sense to many for a want of the musical sense of harmony. Artists have recognised this, and though they have not been able to get rid of the soiled touch of the vapour of the coal fiend, they have tried to neutralise its ugliness by the use of complementary tints and well-contrasted colours. A

well-known scenic artist, whose name need not be particularised, was amongst those who set the example of painting the substructure of his house in a rich tone, formed of one of the common oxides of iron. This harmonised with the sprays of greenery which will flourish sometimes even in a London square. The plaster strips were painted a similar colour, and supported a parapet and a pediment without being offensively prominent. Yet the effect was rich and the dull-lead tint of the sea-coal-smear bricks became comparatively unobtrusive, and relieved the bright glazed jars which held the flower-pots on the window-ledge until the eye was satisfied with a sense of appropriateness and harmony, if not of beauty. It is by no means the only manner of dealing with an all-pervading difficulty. The use of terra-cotta and bright red brick which is now so commonly used, may have an influence in the same direction. The bricks may assume that rich purple hue which they sometimes attain in the country without becoming dingy. If such is the result we shall have some reason to be thankful for the revival of the quasi-Dutch style, which has been termed the style of Queen Anne. We can hardly hope that this will be the result of the use of the new red sandstone dressings which are now common, for, however lasting and permanent a building may be, it will never remain a bright gem in our street adornments, however rich the details or however chaste and appropriate the design.

ELECTRICITY AND EARTHQUAKES.

SIR,—In your interesting article of the 11th inst. on the subject of earthquakes you state as follows:—"That there is something of the nature of the electric shock in the earthquake we think that most physicists who have any experience of the sensation will hold." Perhaps you will allow me to make a few remarks on the very important question of the connexion of earthquakes with the action of terrestrial electricity. Humboldt, in his "Cosmos" (vol. i., p. 193), quotes a remarkable passage from Pliny's writings (Plin., ii., 79) clearly proving that in the mind of that philosopher earthquakes and thunderstorms were both held to be due to exactly the same cause, viz., to the operation of some force imprisoned within the earth. On March 22, 1749, and on December 6, 1750, papers were read to the Royal Society by Dr. Stukeley in reference to the earthquakes that occurred at London on February 8, 1749, and at Daventry, in Northamptonshire, on September 30, 1750. In these papers the electrical origin of earthquakes was strongly advocated and Dr. Priestley, in his "History of Electricity" (p. 352) states that Dr. Stukeley was the first person who advanced the view that earthquakes were probably caused by electricity. In 1753, at Turin, the renowned philosopher Giambattista Beccaria published his "Dell'Elettricismo artificiale e naturale," and, in 1758, at Bologna, his "Lettere dell'Elettricismo." Without any knowledge of Dr. Stukeley's researches, Beccaria upheld the same idea, that earthquakes were caused by electricity; and after very extensive and prolonged researches, he came to the conclusion that earthquakes, thunderstorms, aurora, and whirlwinds were all due to the action of the earth's electricity. Of this great man's labours Dr. Priestley says:—"All that was done by the French and English electricians with respect to lightning and electricity fell far short of what was done by Signor Beccaria at Turin" ("Hist.," p. 315). Priestley himself (in the fourth edition of his "History," published in 1775) makes some remarkable "Queries and Hints" on the subject of terrestrial electricity. For instance:—"May not thunder, earthquakes, &c., be occasioned by the rushing of the electric fluid between them [i.e., the clouds and the earth], whenever the redundancy in either is excessive?" . . . "Is not the earth in a constant state of moderate electrification?" . . . "And is it not probable that earthquakes, hurricanes, &c., as well as lightning, are the consequence of a too-powerful electricity in the earth?" . . . "Supposing earthquakes to be caused by the discharge of a redundant electricity from the surface of the earth, might they not be prevented in countries subject to them?" ("Hist.," p. 459). In *Blackwood's Magazine* for July, 1869, and in the *Quarterly Review* for July, 1881, the possible electrical origin of earthquakes is again discussed, though

neither writer alludes to Pliny, Stukeley, Beccaria, or Priestley, or seems to consider the theory to be other than perfectly new. The latest writer on the question is, I think, he who now has the honour of addressing you. Last year I published a small work on "The Action of Lightning," concerning which I had the pleasure of reading a sympathetic review in your columns. On page 159 of that work, after endeavouring to show that earth currents, aurora, and thunderstorms were probably due to various accumulations of electricity on the earth's surface, I state as follows:—"Lastly, if the occasional irregular accumulations should occur in certain portions of the earth's crust (generally not very far distant from the sea) adjacent to, but insulated from each other, and below, though not far removed from the surface, and especially in regions where clouds and rainfall were habitually absent, as in Chili and Lower Peru,—there would appear to be possible causes for the occurrence of earth explosions, manifested by earthquakes." I may state, that like the writers in *Blackwood* and the *Quarterly*, I also when I wrote was ignorant of the theory being other than novel.

My principal object in now writing to you is to call the attention of your readers, and especially of architects and physicists, to the very interesting but little-studied science of terrestrial electricity. It seems to me almost certain that the time is fast approaching when we shall look back with wonder on the notions that, since electricity was known, have been generally prevalent throughout the world as to the nature and origin of thunderstorms and as to the means of defending constructions from the effects of lightning. I have now for several years studied in some detail the action of lightning, earthquakes, aurora, whirlwinds, St. Elmo's fires, and other terrestrial phenomena that might reasonably be associated with electrical causes; and I feel convinced that the evidence to be obtained in favour of the theory that thunderstorms and earthquakes originate from the earth's electricity is far stronger than any testimony that can be procured against such theory. And if Beccaria's views should thus some 100 years after his death gain acceptance, nothing less than a complete revolution in our measures of defence against lightning-strokes would have to be effected. "Lightning-conductors" would disappear; *electric-taps* would supplant them; and measures of defence would be adopted against earthquakes. The physicists of the day would at last make some efforts to prevent these dreadful plagues of the Adversary.

In conclusion, I would beg to mention that in the belief that the preventive measures I have conceived in regard to earthquakes (measures based on the principles already advocated by me for preventing thunderbolts), might tend to avert the recurrence of such a catastrophe as that which has recently happened at Ischia, I have offered my services to the Italian Minister of Public Works for the purpose of applying these measures.

A. PARNELL,
Colonel (late) Royal Engineers.

EXCAVATIONS IN ROME.

THE excavations being carried out under the auspices of the Collegio Romano have recently brought to light a large number of precious relics of Egyptian antiquity. The obelisk, whose discovery has already been spoken of, has been conveyed, amid a great crowd of interested spectators, to the Piazza del Collegio Romano. From top to bottom it is in a wonderful state of preservation, and is covered with hieroglyphics. It was, probably, brought to Rome under the Emperor Diocletian, along with the obelisk now standing on the Piazza of the Pantheon. They both contain the same hieroglyphics and the same name of Ramses the Great, and they both, probably, stood in front of the shrine of Isis, near where the last one was dug up. With regard to the destruction of the Iseum, the results of the excavations enable us to arrive at pretty certain conclusions. The attempt made by Nitomachus Flavianus to revive the worship of Isis in A.D. 395 produced a strong reaction, which found vent in the mutilation and throwing-down of the Egyptian idols and monuments. Hence it is that the statues are found lying precisely on the area covered by the floor of the temple. The obelisk, however, continued standing for a long period after this, and it was

only in the eighth century that, when the ruins of the edifice were already covered by a layer of rubbish 5 ft. thick, the obelisk came down. Its excellent state of preservation is due to the soft bed on which it fell and continued to lie. The ground, as is shown by clear indications, has several times been the scene of excavations. What was sought was marble for lime-burning or for building new houses. Hence it is that pieces of masonry, consisting of porphyry or granite, have generally been left untouched. The marble bases of the obelisks have been found broken to pieces as if ready for lime-burning or building. Among the relics found are a cynocephalus, of black granite, with beautifully-executed hieroglyphics at the foot; also an altar with reliefs on three sides, and, further, some pieces of relief that covered the walls of the temple, and other important fragments.

FOREIGN NOTES.

Liebig's Monument.—The monument to the celebrated chemist, Baron Justus von Liebig, at Munich, of which we spoke in our last, was unveiled with much pomp and ceremony on the 6th inst.

Congress of Master Chimney Sweepers.—In Prussia the business of chimney-sweeping is a practical monopoly, and the master chimney-sweepers are amongst the most comfortable and even flourishing of all classes of tradesmen. The Eleventh Congress of the Chimney Sweepers of Germany was held on the 13th and 14th inst. in Berlin, and was numerously attended by delegates from all parts of the empire.

Berlin Hygienic Exhibition.—Up to the beginning of August this exhibition had been visited by nearly half a million persons. The receipts up to that date were 350,000 marks.

Exhibition of Mexican Products.—It is intended to hold an exhibition of the products of Mexico in Berlin next year. The project is promoted by the Central Society for Commercial Geography. Three-fifths of the Mexican trade is in German hands.

Theatre in Halle.—The Municipal Authorities of Halle, in Prussia, have opened a public competition for designs for a new city theatre in that place, and offer 6,000 marks in prizes. The committee is further empowered to purchase at 750 marks each any desirable designs which are not awarded prizes.

Nice.—A winter and spring exhibition is to be held in Nice, opening on the 1st of December, 1883, and closing on the 1st of May, 1884. It will embrace a large collection of manufactures, works of art, and agricultural produce.

The Gewandhaus at Leipzig.—With regard to the Gewandhaus, or New Concert Hall, at Leipzig, it has been determined to name the two adjacent streets respectively "Beethoven-street" and "Mozart-street." In respect to the external ornamentation of the building, the chief frontage will be adorned with the statues of Beethoven and Mozart, while on the two sides there will be two pairs of statues representing, the one, Bach and Handel; and the other, Haydn and Schubert. It is also proposed in the grand foyer, that alone will equal the hall of the old Gewandhaus in size, to place two monuments, one to Mendelssohn, the other to Schumann.

Tell's Chapel.—The Berner Bund recalls the history of the erection and ornamentation of this national Swiss memorial. Tradition assigns to its construction the date of the fourteenth century. The edifice had fallen into a state of decay when, in 1876, it was decided to restore it. According to the arrangement then entered into, the Cantonal authorities of Uri rebuilt the chapel from its foundations, adhering faithfully to the Renaissance style of the original building, provision being likewise made for the frescoes then in contemplation. A competition for this completing ornamentation was organised in May, 1877, and from eighteen designs sent in, those of Herr Stüchelberg, of Bâle, were chosen. When they were about to be carried out, there arose a good deal of opposition from persons who considered that due regard had not been paid to the traditions which have come down to our times, as to the incidents of Tell's life. Though objecting to this interference, the artist has, in his execution of the work, made certain alterations in conformity with these expressions of popular feeling on the subject.

BOOKS AS A DECORATION.

WITHIN the last season or so there have taken place several most important sales of historical libraries, and, even to the initiated, some sums quite startling have been given for the rare volumes which have passed through the well-known rooms of Messrs. Sotheby & Wilkinson, in noisy Wellington-street. Only within the last few weeks we have seen at the Bedford sale a small fortune given for one manuscript alone, and that a late production of the illuminator's art, being illustrated by the cunning hand of Giulio Clovio, the contemporary of Vasari. And yet, in the face of this interest evinced by the world of bibliophiles, how true is that complaint which once more finds utterance (this time in the pages of a current monthly magazine) of the too general indifference in the present day shown to books. The activity of our press, the increase of circulating libraries, and their questionable influence upon literature, the small amount of leisure that is left by the numerous distractions of modern existence, are some among many reasons that may serve to explain something of this marked feature of our century. That we actually read more than our ancestors is certain, but what are the works which meet with most favour? Essentially those which once read are almost useless to possess, and still less worthy of ever receiving the respectable and well-merited interment of a binding.

However sad it is to have to say it, is it not true that "books are seldom looked upon as necessities in a house? Old china is preferred to them, and so are Chippendale chairs. They are kept out of sight, like the children's toys, instead of occupying the place of honour which they merit. In great mansions there is, of course, a library, for that is as much a part of the establishment as the family plate; but, in the homes of the middle class, books in any considerable number are rarely to be seen among the cherished possessions."

Now, to this result have not some other causes than general indifference contributed? In the first place, has not a great and important branch of the decorative arts, such as the craft of the bookbinder, been allowed to decline for want of encouragement? Who has not been struck with a chill sense of a vague something unsatisfactory in the general appearance of the book-cases he may see in most of his friend's houses,—book-cases of questionable design, filled with long lines of uncommunicative, uninviting, coldly-bound volumes, eminently possessing one element, it is true, of decorative effect, unity, but sadly wanting in that other important sister element which constitutes the life of all art,—diversity? Can one wonder that with those who give the matter a thought, some hesitation precedes action, and the few volumes at home are not, as intended, sent to the binder, and remain in their unhonoured retreat to slowly descend the scale of exterior respectability? *Habent sua fata*, wrote the Latin poet, centuries ago, of the treasured manuscripts of his time; how much truer is the lament nowadays!

It is our contention that with a very little consideration books may be made to take a very important share in the decorative effect of every room in which they may be placed. Which of our readers is there who does not know some friend the walls of whose own little room glow with the sober brilliancy of a few well-chosen "bright-backs"?

The value of stamped leather as a decorative agent, known in the past, has of late years become again recognised, and either in the form of the real old material or its French and Japanese imitations, has met with singular success; yet no one suggests the further development for decoration of another form of stamped leather, book-backs.

We could point to an instance in which a very eminent architect, recently deceased, a true artist, who had considered every detail of the costly home he had built for himself, actually concealed behind folding doors his collection of books, one of no small importance. Such a step, too, can with him have alone been taken after some consideration; and yet, who can feel it to have been justified? In the illustrated manuscripts of the very period which formed the chief source of study of the artist to whose "library" we refer, there will be found innumerable examples of the mode in which books were displayed in domestic life, and the successful manner in which they were made to become decorative features of great

importance. It is a point worthy of note in a great number of instances, and down to the early days of the Renaissance, that the books with which the illuminators and many of the painters will surround, say St. Jerome, so often represented in his study, will be seen to be displayed, not as we pack away our books in the present day, with the backs outwards, but with the boards turned towards the eye. Books were treasured rarities in those days, and too great honour could not be done to such faithful instructors, such silent friends, ever ready to converse and pause while some well-thought-out passage could be mastered. It was, we cannot doubt, this tradition that led in later days to such a wealth of decorative beauty being bestowed on their volumes by book-lovers such as Grolier. The well-considered tooling and colouring of the "mosaic" bindings of the sixteenth century, such as we see in our great collections, was never intended to be stowed away in our modern idea of a book-case, for which "half-bound" volumes answer all the purposes of display,—if not of ostentation,—without in any way suffering for practical purposes.

That a person of taste is able, in the present day, by the expenditure of a few pounds, to "get up" a most successful effect with a well-selected number of well-bound old "bright backs," is only a proof, we are afraid, of the decline of the modern bookbinder's art. Let it, however, be once more considered in its light as one of the important branches of decorative art, and we may speedily look for its revival. At the present moment an inquirer would have to go some way before he met, among his friends, with one who would regard the binding of his books with special care as anything more than an extravagance out of the question. But, properly considered, it will be found that books may be made to form a most effective form of household decoration,—a form of decoration, too, that will possess other merits than mere beauty.

But in the present day, when house decoration has become a lucrative branch of industry, when so many,—too many,—people give orders to some great firm to "do up" their houses, is it likely that books,—the choice of which so essentially marks, or should do so, their owner,—is it likely that books should take anything but a very small position in the mind of even the most skilled decorator, in whose hands, however, a well-selected set of volumes properly treated would be found to serve singularly in obtaining that "livable" effect which is almost invariably wanting in the professional design when carried out? But there remains always an element of difficulty in the plan. The mass of furniture which modern civilisation considers necessary to crowd into our living-rooms is purchasable at a moment's notice, and will be found convenient "for immediate use," according to the recent rendering of a more familiar though now somewhat harshly-sounding expression of our youth. But the books have to be purchased slowly, for there is an unmistakable look,—detected immediately by the observant eye,—in the collection of volumes bought *en bloc* to fill up the shelves.

Once purchased, however, there remains to be displayed no small amount of art in their arrangement according to colour and sizes, and which can be exercised as successfully upon the humblest book-case of three or four shelves as upon the most imposing private library ever conceived by the mind of *potpourri*. That gilt and tooled morocco, Russia and calf, are obligatory to obtain the desired effect is a point open to doubt, for there is no reason why cloth backs should not be made sufficiently decorative to take their place anywhere, a quality which modern books cannot be said at present to possess, particularly whenever there is the slightest pretension to decoration, either on boards or back.

The bookbinder's craft is a branch of the decorative arts, a branch which, we feel confident, might with due study be carried to a great degree of perfection, and, to return to our original statement, may be made, with a little consideration, a very much more important element in the decoration of our homes than is at present the case.

Amsterdam Exhibition.—Messrs. Doulton & Co. have been awarded two Diplomas of Honour in respect of their exhibits of fitted sanitary appliances and artistic pottery, these being the highest awards.

PRESENT AND PROSPECTIVE RAILWAY EXPENDITURE.

THE reports and proceedings at the several half-yearly meetings of the railway companies which have just been held indicate that the intended expenditure of many of the leading companies during the current half-year amounts to an unusually large sum, and that a considerable portion of this expenditure will be incurred in the construction of new works within the metropolis. The proposed capital outlay during the half-year of the London and North-Western Company is 1,014,000*l.*; the Midland, 1,000,000*l.*; Great Eastern, 950,000*l.*; Lancashire and Yorkshire, 950,000*l.*; and Great Northern, 500,000*l.*; whilst the South-Western, South-Eastern, London, Chatham, and Dover, and other companies having their termini in the metropolis are about to expend proportionately large sums.

According to the statement of the chairman of the Great Eastern Company, a sum bordering almost on the fabulous is about to be expended in the enlargement of the Liverpool Street Station, which, including the land, has already cost more than a million and a half. The chairman said:—"When we come to deal with Liverpool-street, which must be immediately enlarged, our capital expenditure will, of course, be very considerable for a certain period. I do not suppose that the enlargement of Liverpool-street, with the lines approaching it, will cost less than a million of money. It is to be enlarged because we are overburdened with traffic at Liverpool-street at the present time. Any one who will go and watch our suburban traffic between eight and eleven in the morning, and from four to seven in the evening, will be surprised to see the number of people that we are carrying. It is an increasing quantity, and it is only limited now by the amount of accommodation we can give. What we have already done as regards the work is this. We have just completed the Bishopsgate Street Station to the great benefit of our goods traffic, and now the enlargement of Liverpool-street must be proceeded with." He added that the works at Parkenson were very nearly completed, as also the Lowestoft harbour, and the extensive works there for the accommodation of the fishing trade. They were likewise engaged in laying down four additional lines from Stratford, in connexion with which they made the last contract a few days ago, and the contractor was bound to complete the works by the beginning of the year. These works would enable them to have a new station at Devonshire-street, which he felt certain would be one of the most profitable stations on the line. They had also reconstructed and greatly enlarged the Coborn-road Station, and connected it with Grove-road, and he believed that the traffic to those two stations alone would pay for the whole expense of making the four lines from Stratford.

The capital expenditure of the Great Northern Company during the half-year includes 5,000*l.* for the erection of new offices at King's-cross for the accommodation of the Parcels Post. The chairman observed that these offices were to be erected on the open space in front of the station, the Post Office authorities paying a rental of 875*l.* a year for the use of them. The erection of these offices would not interfere with the frontage, which would still remain. It was very valuable, and some day they hoped to turn it to very good account. They were also about to expend 6,000*l.* in the erection of stables at King's-cross.

At the meeting of the London and Brighton Company, the chairman stated that at the extension of railways for increased accommodation throughout the district they had finished or were constructing the Croydon and Oxted, the Oxton and East Grinstead, the Lewes and East Grinstead, Tunbridge Wells and Eastbourne, Chichester and Midhurst, the Portsmouth Harbour Extension, and the Ryde new pier and railway, together with what would be a work of great public interest and importance, the improvement of Newhaven Harbour; and these several works involved an expenditure of two millions and three-quarters. In addition to that they had expended in improvements and enlargements of existing stations, and doubling and quadrupling portions of their lines 1,246,000*l.*; and they had also further expended 1,295,000*l.* in new rolling stock.

It was stated at the meeting of the London and South-Western Company that the line between Waterloo, Vauxhall, and Clapham Junction

is about to be widened by the laying-down of a fifth line of rails. It was also announced that the widening of the line between Clapham Junction and Hampton Court Junction was almost completed and ready for opening, and that the Guildford and Surbiton line, and the widening of the line from Barnes to Windsor, were both being rapidly proceeded with.

The report presented at the meeting of the Great Western Company stated that satisfactory progress continued to be made in the construction of the Severn Tunnel. The total length of the tunnel now completed was 2,500 yards, and a further length of 1,400 yards had been arched, the whole distance under the "Shorts," the deepest portion of the river. The cuttings at each end of the tunnel were also in active progress.

The London, Tilbury, and Southend Company's report stated that the works on the extension from Southend to Shoeburyness were progressing satisfactorily, and that the line would be completed before the end of the year. The first section of the Barking and Pitsea extension, from Barking to Upminster, had also been commenced.

Mr. J. S. Forbes, chairman of the London, Chatham, and Dover Company, has been appointed chairman of the Regent's Canal, City, and Docks Railway Company, and at the first ordinary meeting, which has just been held, he stated that such a work, which would involve the construction of twelve miles of railway, and the building of numerous stations, could not be carried out at once, and the question arose as to what section was the best to do first. He then stated that as the Great Northern and the Midland both abutted on their proposed line, and as those railways were not over-well off, so far as concerned their access to London, it was thought best to begin between these two stations and Barbican. This section would be a most costly one, but he thought that they would accomplish it at something like 400,000*l.* a mile, or about half the amount that had been spent on other metropolitan railways.

A BUDGET FROM SYDNEY.*

COAL-HEAVERS had a fine time of it in the spring. They struck for an advance from 1*s.* 3*d.* to 1*s.* 6*d.* an hour, and got it without any nonsensical dilly-dallying. This emboldened the wharf labourers to have a fling from 1*s.* to 1*s.* 3*d.* an hour, but after being out four weeks they caved in and have formed a union, which they think will carry their point at a future time. That wharfingers out here should neglect the use of steam cranes is strange; donkey-engines that only take a few hundredweight at a time are the fashion. There is talk of introducing them on the Circular Quay, where the electric light has been introduced as well as in several public and private buildings.

A young gentleman named Morrison, son of the Principal of Geelong College, undertook the daring feat of walking through the continent of Australia from the Gulf of Carpentaria to Melbourne. Alone and unaided, he started a week before Christmas and achieved the journey in twelve weeks, having to go several times more than 100 miles without the sight of habitations, even of aborigines. This is worthy of recognition by the Government.

To hear the outcry as to the amount of land required for the maintenance of a family in this colony is rather ill-timed. Many are of opinion that 120 acres are required at least for each family, yet around Sydney can be found many groups of half a dozen Chinese cultivating six acres, and by uncasing industry laying by sufficient to take them home with a competency to their own country. There is a great outcry against them, but house-keepers and eating-house people would not know what it was to see vegetables were they to have to trust to European labour. A poll-tax is levied on their entering any of these colonies, but when they leave it is returned to them without any interest. It would be retaliation if the Chinese Government were to impose a like tax on all foreigners entering China.

The building trades are still very busy in and all around Sydney; inside it handsome offices and warehouses are taking the place of the older erections, rows of which are taken down, and the increased value of the land will not allow of small buildings being erected. To the

writer it is strange, seeing the prices paid for plasterers' work, that land and house owners, builders and speculators, do not see the possibility of inaugurating a movement for the substitution of machinery for plain plastering to walls and ceilings by offering a series of prizes for the best designs for realising such an object, as the prospect of a good bonus would induce clever mechanics to set their wits to work, and would, I believe, produce results beyond expectation.

When the new Treasurer made his Finance Budget statement, he was anxious for English financiers to see the state of New South Wales, and paid 1,300*l.* for the transmission of a cable message to London. In the Assembly the question was raised as to whether he was justified in sending such a long message, but the matter was hushed up. There are now four mail companies taking letters to Europe, and it is judged that subsidies will soon be done away with.

The past season has been different from the four previous ones; there was plenty of rain, and all fears of a water famine ended for the next season. Squatters have sent their stock into the bush, and will partially recoup their losses.

Owing to the destruction of the Exhibition building, the New South Wales Fine Arts Exhibition was, at Easter-tide, held in the vestibule of the town-hall, which was too small for the number of pictures sent, and many were rejected. In his opening speech the chairman, Mr. Coombes, referred to the arduous labours of the hanging committee in having to crowd side by side 400 pictures in four days, and said that many of those rejected were of first-rate ability; it was want of space that had caused their rejection. Upon perusing the illustrated catalogue, I was rather taken aback at finding that the speaker himself was exhibiting no fewer than fifty examples, the Vice-President twelve, another seventeen, and several others from five to ten pictures. Had the speaker been sincere he would have recommended the thinning-out of his own and others' pictures, and substituting some of the rejected ones of first-rate ability. I may be excused if I view with suspicion the sincerity of the hanging committee next season.

Under what type of socialism for the future to place our school children in Sydney is difficult. I live in the parish of St. Peter, Woolloomooloo. Near by is the public school, attended by a few hundred children. Every day, as they come out of school, batches of boys, as well as girls, take a delight in ringing bells and pulling knockers of houses that abut upon the street; and on Sundays, too, it is repeated, respectably-dressed grown-up girls indulging in it, which certainly does not speak well for the nature of the training they receive at the school, and still less on the part of the parents, who must hear their children talking of their mischievous frolics.

It will hardly be credited that for many years the Sydneyites have perpetuated the abuse of a private company being allowed to impose 1*d.* toll on foot-passengers over a mean-looking wooden structure to Pyrmont. In course of years the traffic has been increasing so that the dividends are more like an El Dorado. At the end of last year a handsome and free bridge was thrown open over the Paramatta, at Lane Cove. This poured more traffic over the unpainted Pyrmont one than ever. The Sydneyites should have insisted upon the erection of another bridge alongside the old one, and have allowed free traffic, and the old company to find their dividends elsewhere.

It is singular that the most beautiful harbour in the world should have been selected for a convict station. Convicts were employed in making roads, quarrying, and other useful work, at the expense of the English nation, and not of the colonists, who got the benefit of their labour; yet, after a while, they chose to have them removed to another country, instead of getting them into the interior of the colony, where their work could have benefited them.

The small-pox scare of two years ago has cost a pretty penny. Claims for compensation, expenditure for buildings, food, carriage attendance, &c., amounted to the sum of 84,000*l.*

Owing to the stand that the colony has made during the last few years, and trade being stagnant in most other countries, English manufacturers have glutted the markets, and warehousemen, being anxious to realise, have sent their goods to country dealers, who in turn have given credit to customers who could not pay when bills became due. The consequence

* See p. 92, ante.

is a reaction through overtrading. The bankruptcy laws afford unscrupulous persons great facilities to defraud. Many are set down as solvent, but when they are brought to court it is found that they have made over their property to the wife, or members of their family, on purpose to shirk their liabilities.

For the last three years a new lighthouse has been building, beside the old one, with all the recent improvements of science. It is to be fitted with the electric light, and when completed, it is said will be the most powerful one in the world. It was to have been completed last September, but has been delayed until the 1st of June.

Of late the immigrants that have been sent out from Plymouth have had more deaths than usual. One of the last ships to arrive was the *Nerbudda*, which had seventeen deaths, mostly of young children. In the Assembly the matter has been referred to, and the idea of chartering some large steamers, like those of the Orient line, is being considered.

The dearth of female servants and farm-labourers still continues. The labour market in Sydney is overcrowded, so that if an advertisement for a labourer appears, there will be frequently 100 applicants for it. Many are lured to this town by the report of others, and cause an amount of poverty, that the Government should put a stop to by causing copies of large maps of the colony to be exposed in various public places, and giving full information of the various counties, their resources and productions. Were immigrants able to obtain a plot of land at a low rate in the vicinity of their employment, there would be an inducement for them to settle, and in time build homes for themselves. This is a great defect in colonial politics.

Satisfactory results have been obtained by the use of the diamond-drill for water, which has been of incalculable benefit in the interior. It has been the means of ascertaining the deposit of various minerals at a nominal cost, compared with the old-fashioned and costly way of digging for it. No new goldfields have been discovered this season. A rush took place to Billy's Lookout, in the Zemora district, but it proved a failure; there was a living for a few only.

Messrs. Morris & Raiken were commissioned by the late Government to report on the causes of the failure of the Land Act of 1861. Their report has just been published; it is a very lengthy document, and has taken many months to compile. In 1861 the Government determined to break the monopoly of the squatters with large runs, and pour fresh occupants on the lands, which had never been surveyed. Selectors were allowed to settle by paying a nominal sum, and they received their titles and seldom inclosed their lands. Owing to this, in course of time, it was found that at various portions of a selector's plot, perhaps half a dozen other selectors had also selected upon the first owner's selection; like him, they had paid for their selection and received titles. This led to endless litigation, owing to the want of the services of a ranger.

Taken altogether, this letter may not be said to belong to dry building facts, but it tends to show the working of an important and expanding colony, that has had the advantage of the brains of European science and invention, has had no national struggles for existence, no famines, no convulsions of society, such as all other countries have met with; but, on the contrary, has had its mineral and pastoral resources opened up by means of railways and of floating cities, which can take them in seven weeks to the Antipodes, besides taking their products, and return with loads of manufactured materials, have caused them an unparalleled prosperity in a short space of time such as no other colonists in the history of the world have ever attained. May they make good use of their good fortune, is the sincere wish of the present writer.

J. B. WATTS.

The Brunswick Monument.—A telegram from Geneva says:—"The Brunswick monument, constructed at an expense of 60,000*l.*, and only just completed, is falling to pieces." A recent careful examination by experts revealed faults of construction so serious that it has been decided to remove the statue and to pull down and rebuild the pyramid on which it stands. A similar statement was circulated some long time ago. Is this a second failure, or what does it mean?

WIDENING OF FETTER LANE.

DRYDEN'S HOUSE.

ANOTHER of the historical residences in the City, associated with our old English poets, will shortly disappear. The Commissioners of Sewers, at their last meeting before the vacation, adopted a resolution for the widening of Fetter-lane, near the Fleet-street end, and the undertaking involves the removal of several houses nearly opposite to Rolf's buildings. Seven of these projecting houses will be required, and one of the group, No. 18, having been taken down for re-building, it was decided to take advantage of the opportunity and acquire this and the adjoining house, No. 17, and the solicitor was instructed to serve the necessary notices on the owner. According to the memorial plate which it bears, No. 17 was at one time the residence of Dryden. The inscription on the memorial-plate is as follows:—"Here lived John Dryden, the poet. Born, 1631; died, 1700;" and on the border of the plate are the eulogistic words:—"Glorious John." It is said that the present plate is not the original, but replaces a stone slab or inscription destroyed some years ago, when several alterations were made to the house.

ARCHITECTURAL CURIOSITIES.

THE CONVENTO DE CRISTO, THOMAR, PORTUGAL.

THOMAR is undoubtedly one of the most interesting towns which Portugal can show to the ecclesiologist, and the enormous monastery, a view of part of whose church we give in this week's *Builder*, is not the least remarkable part of it. Portugal possesses the Monastery of Batalha, considered the glory of the Lusitanian nation; the superb temple of Belem, the perfect type of Manuelque architecture; the sumptuous church of Santo Domingo, Lisbon; the basilica of Estrella; and other works, some of which we have already illustrated. As beautiful an example is the church of Thomar, the construction of which dates from the fifteenth century. It forms an immense square nave, divided by pointed arches, and is profusely enriched with artistic carvings, turrets, statuary, friezes, canopies, and small crests. Its basement constitutes, so to say, a superb cloister, the massive columns of which support the great mass of the church. The church of Thomar, a rich example of Lusitanian architecture, somewhat resembles in its exterior the famous Carthusian church of Miraflores.

In our volume for 1881 (vol. xli., p. 247) we gave some particulars and illustrations of the cloisters of the "Convento de Christo," which is one of the most elaborate buildings in Portugal. The cloisters were engraved are particularly elegant. This building has more cloisters attached to it than any other convent in Portugal.

VILLA: MOUNT PARK ESTATE.

HARROW.

WE give a perspective view of a villa now in course of erection on the highest part of the Mount Park Estate, Harrow. The nature of the site suggested placing the principal rooms at the back, where they command extensive views southwards for from fifteen to twenty miles. The walls are built of red brick, relieved by half-timber work, part of which is filled in with concrete and rendered, and part covered with hanging tiles, the roof being covered with Broseley tiles. The house contains, besides the usual offices and cellars, three large reception rooms and a billiard room. There is a spacious and well-lighted hall, with a broad staircase of pitch-pine, leading to the upper floors, which contain eight good bedrooms, besides bath and dressing rooms. The house will be fitted throughout with electric bells. The work is being carried out under the superintendence of the architects, Messrs. Higgs & Rudkin, of 68, Lincoln's Inn-Fields.

Entrance Lodge.—A few weeks ago (p. 116, ante) we illustrated the lodge which has just been erected at the entrance to this charming estate, which is situated on the south side of Harrow, and commands extensive views of the surrounding country. The lodge, costing 280*l.*, is constructed of red bricks up to first floor, the remainder being half-timber and hanging tiles. The roof is covered with brown Broseley tiles. The architects are Messrs. Higgs & Rudkin as

in the case of the villa, the account of which was accidentally substituted for the particulars of the lodge.

CONGREGATIONAL CHURCH, ROBERT STREET, GROSVENOR SQUARE.

THIS design has recently been selected in a limited competition, and is to be erected at the corner of Duke and Robert streets, Grosvenor-square, on ground given for the purpose by the Duke of Westminster. The church was required to be square on plan, and as the site is 60 ft. across, the main building is nearly that dimension each way. At the west end is a large central porch and lobby, and as the buildings will be surrounded on three sides by streets access is also gained at each corner, thus ensuring a speedy clearance of the building after service. Galleries are on each side and over the front lobbies, while one behind the pulpit and over the two vestries will contain choir and organ. Seating will be provided for upwards of 300 persons.

Under the church is a school-room, 14 ft. clear in height, with all necessary conveniences in the way of kitchen, scullery, stores, lavatories, and water-closets. At the rear and on the street level will be placed infants' rooms, and above, caretaker's apartments and Bible-class rooms. On the second floor is a lecture-hall seating about 250. With all these rooms Sunday School accommodation will be provided for 1,000 children. The materials will be red brick and Dumfries stone externally, cream-coloured bricks internally, with the woodwork in pitch-pine, and red tiles on roof. The estimated cost is about 8,000*l.* Mr. John Sulman, of 1, Farnival's-inn, is the architect.

ADDITIONS TO THE SOLDIERS' HOME AND INSTITUTE, ALDERSHOTT, FOUNDED BY THE LATE MRS. DANIELL.

ANNEXED is a sketch of the old front and the new, which has just been completed at the Soldiers' Home and Institute, Aldersholt. The external walls are built with stock bricks faced with local rag stone, with Bath stone dressings. The roof is covered with strawberry-coloured Broseley tiles.

The ground-floor of the new wing contains a large dining-room, 30 ft. by 17 ft., with serving hatch to the kitchen; restaurant, 17 ft. by 12 ft. 6 in., divided by panelled partitions; bar, 17 ft. by 18 ft., with corner entrance; and two small parlours, lavatories, and bath-room. The space formerly occupied by the old bar is thrown into the smoking-room, making one room 31 ft. by 18 ft.

The first floor contains boys' game-room, 18 ft. by 18 ft.; caretaker's room, four cubicles, bath-room, &c. The second floor contains fifteen cubicles.

The whole of the new wing is heated by hot water; and all the internal woodwork is of picked yellow deal, stained and varnished.

The contract was taken by Messrs. Martin, Wells, & Co., Aldersholt, under the superintendence of Mr. R. H. Hill, architect, Clement's-lane, London.

No. 491, NEW CROSS-ROAD.

THESE premises were erected for the English Land and Investment Company, and comprise offices and board-rooms for themselves and the Globe Building Society, one suite of private offices, and housekeeper's apartments, &c.

The elevation has a free Classic treatment, and is executed in brick and stone, the latter being only used where necessary.

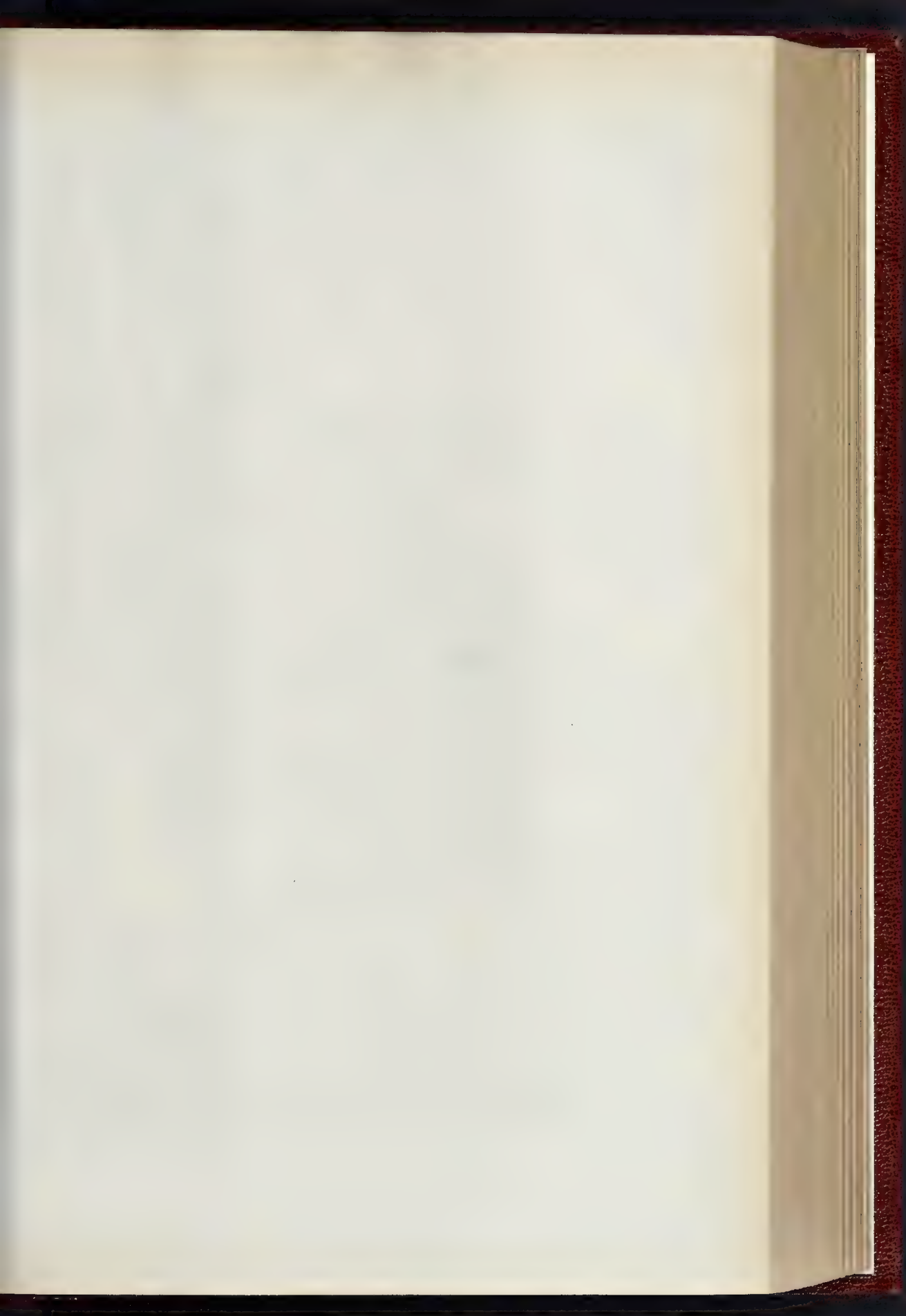
The bricks are Lawrence's best orange-red, with cornice and strings of Brown's moulded bricks; the finer portions, such as caps, being executed in cut work.

The whole of the ground floor and all lintels, finials, and the corona of main cornice, together with the pediment over centre window, first floor, and tympanum of central attic window, are worked in red Corsehill stone.

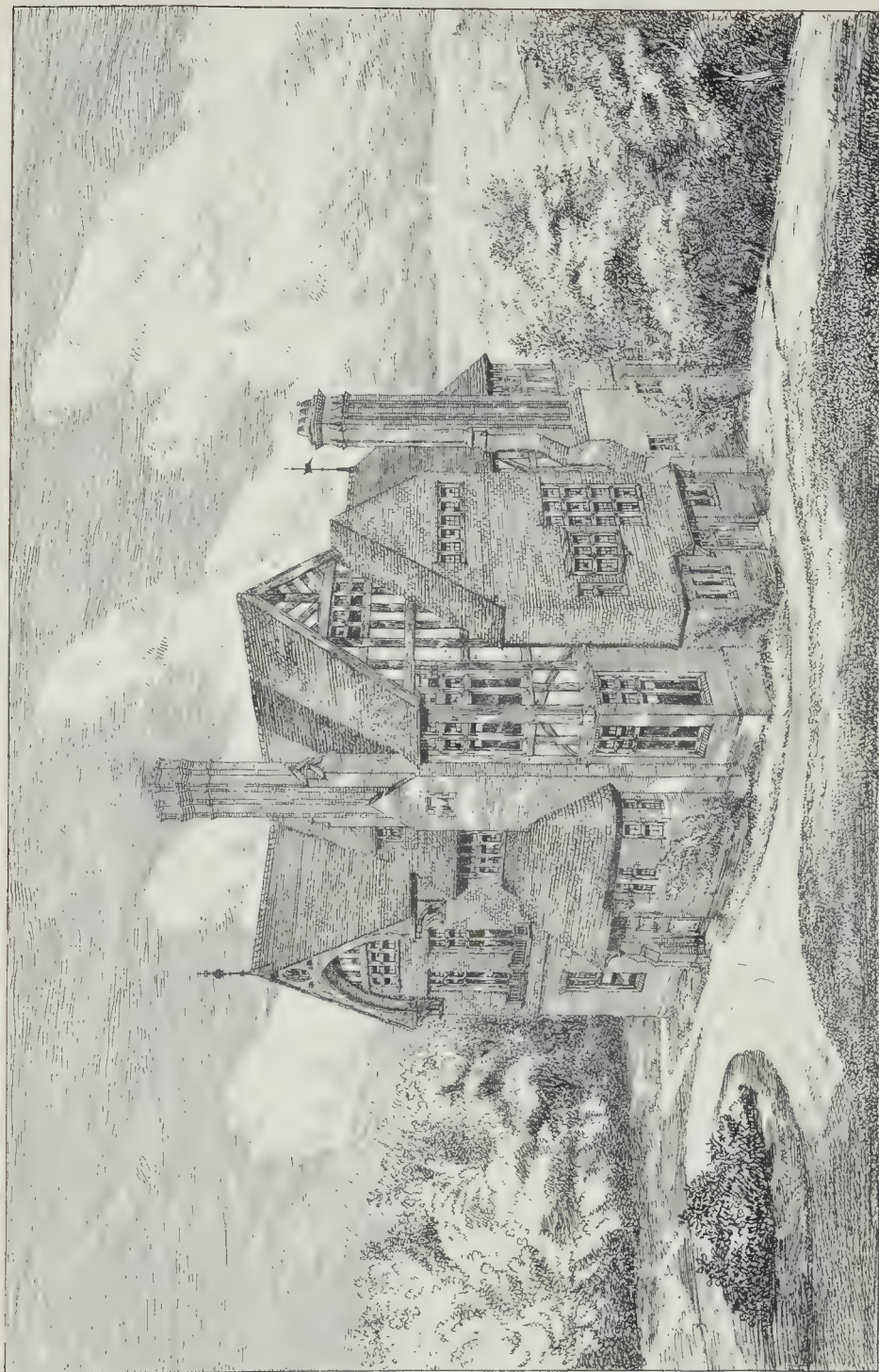
The whole of the internal fittings, including mantels, &c., are in wood, specially designed, those of the ground floor, including the sashes and doors of front, being in mahogany.

The front is glazed, partly with polished plate and partly with stained glass.

The whole was very well executed by Mr. S. J. Jerrard, of Lewisham, from the design of Mr. A. H. Kersey, architect, 21, Finsbury-pavement.



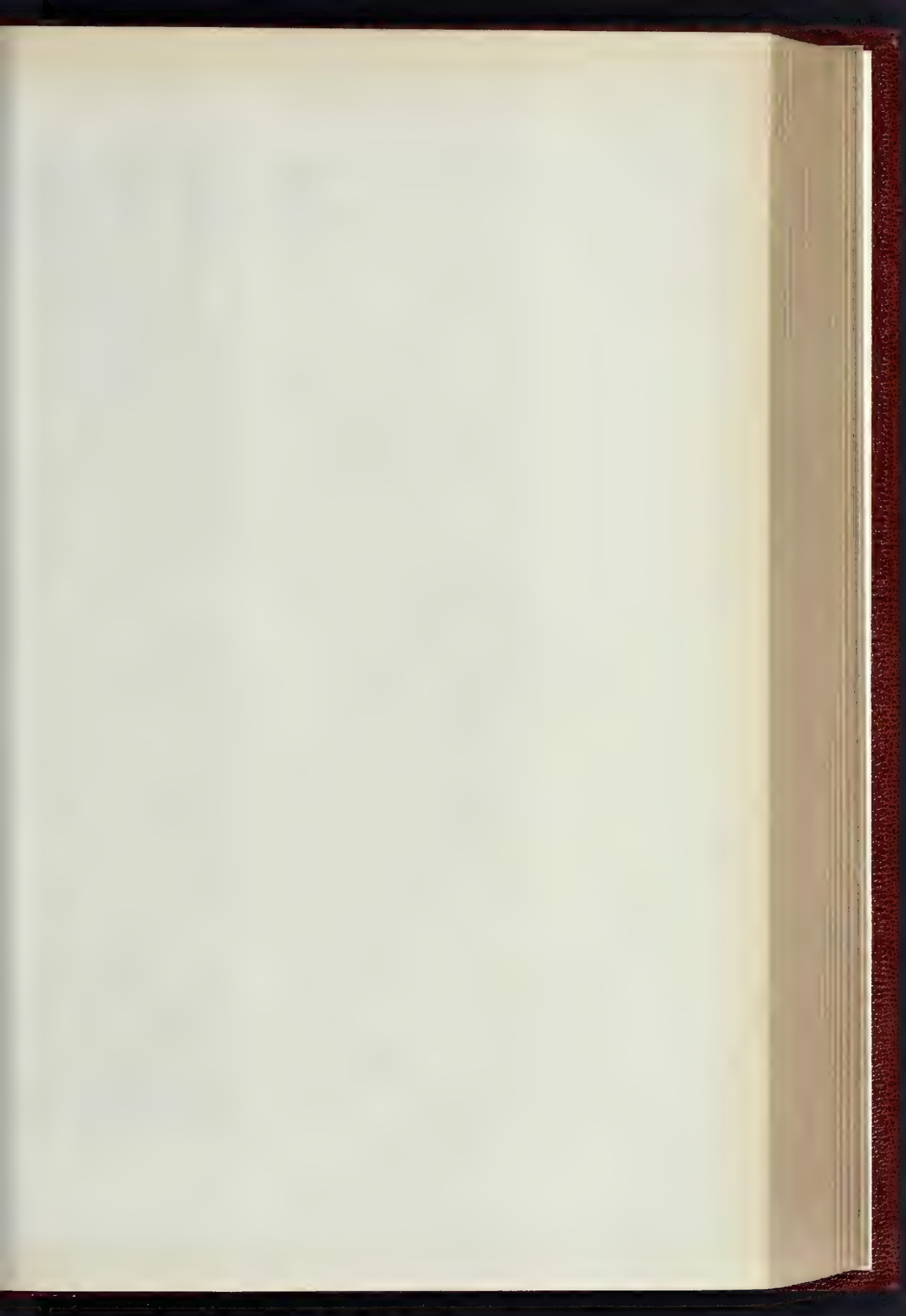
THE BUILDER, AUGUST 25, 1883.



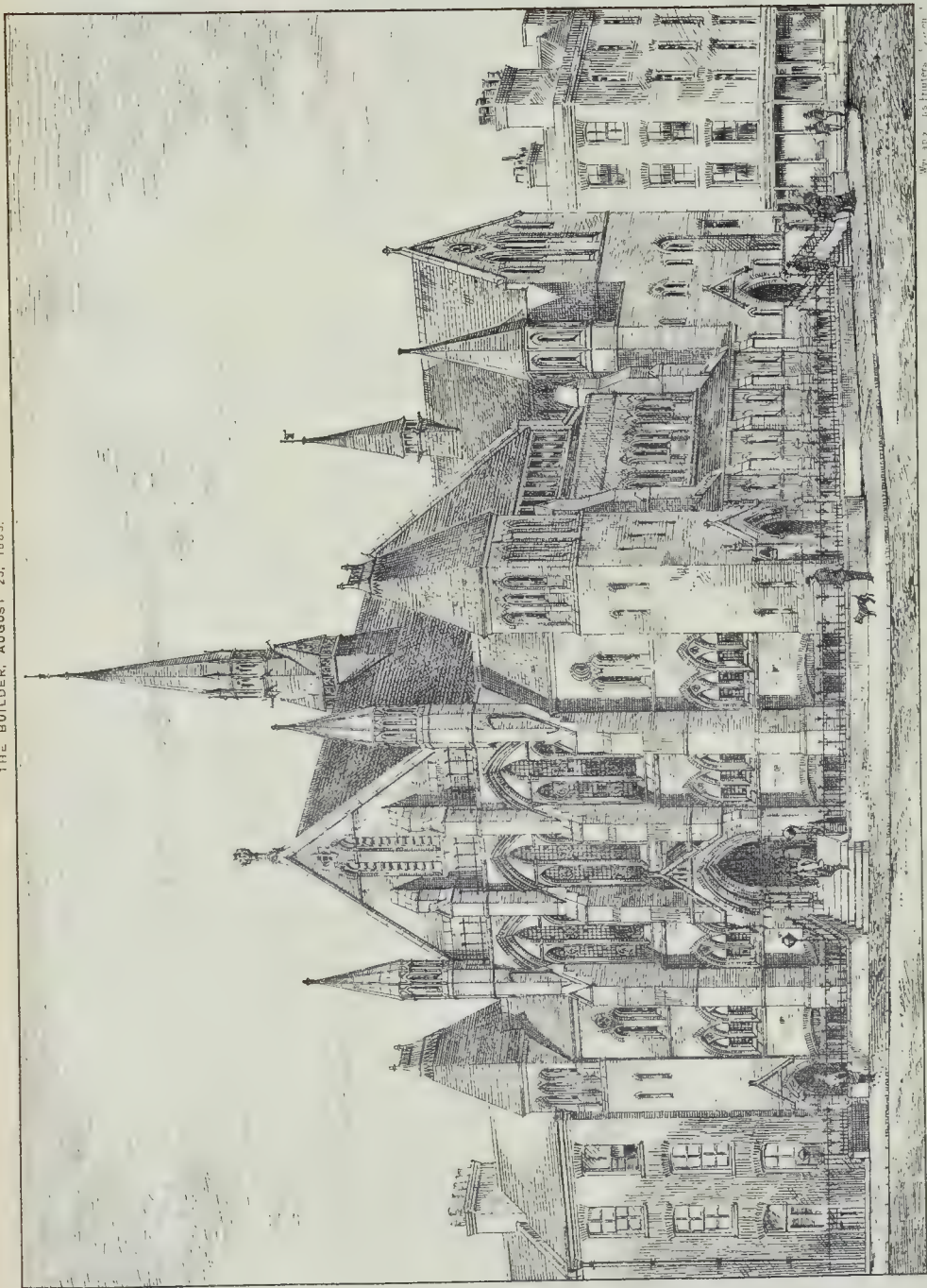
W. H. & P. S. Architects 716 4th Avenue

Higgs & Rudkin,
Architects,
68, Lincoln's Inn Fields.

Villa Mount Park Estate, Harrow.

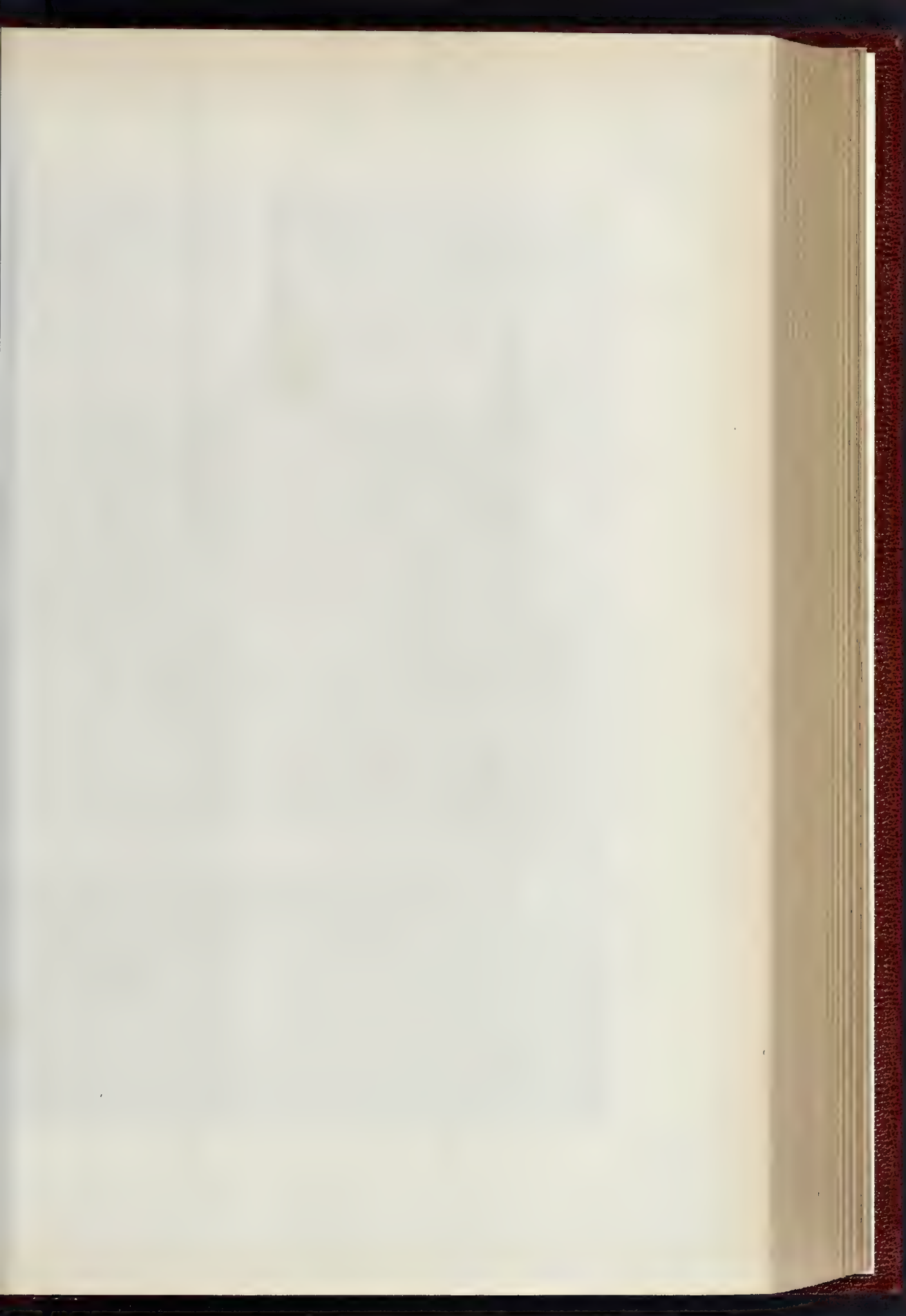


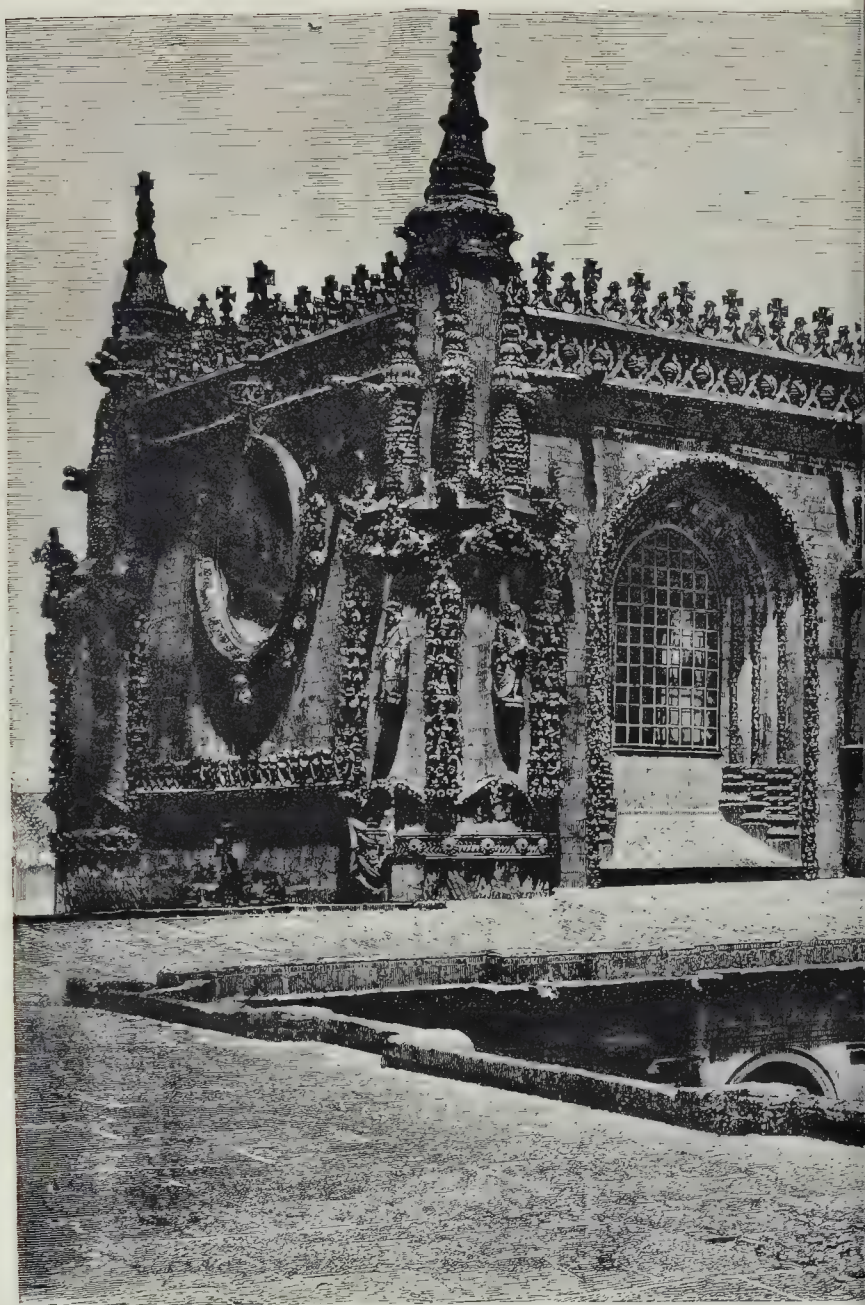
THE BUILDER, AUGUST 25, 1883.



NEW CONGREGATIONAL CHURCH, ROBERT STREET, GROSVENOR SQUARE.—MR. JOHN SULMAN, ARCHITECT.

W. & A. G. WALLACE, LONDON.







O DE CRISTO, THOMAR, PORTUGAL.

Soldiers' Home & Institute, Aldershot.
 R. H. HILL, Architect.
 3, CECILIA STREET, E.C.



WITTENBERG & SONS, LTD., LONDON. WITTENBERG & SONS, LTD., LONDON.



Offices, N^o 491, New Cross Road, S.E. * A.H. Kersey, Arch^t

C.F. Kel., Photo. Lubbo Castle St. Holborn.

Wyman & Sons Printers, 27, Queen St.

SCULPTURE AND COLOUR.

In your observations [p. 35, *ante*] concerning the experiments made by Herr Cauer in colouring sculpture you mentioned two instances in which colours may be applied. First, with a view of reproducing realism in flesh tints and costumes; secondly, with the view of producing a softened and more harmonious effect in avoiding the too great coldness of uncoloured stone or marble without any attempt at realism. There is a third, with the view of preserving sculpture from deterioration caused by the inclemency of the weather, as we have an instance in Dresden where this procedure has been applied on freestone sculptures. About twelve years ago four beautiful groups representing Day, Night, Morning, and Evening, sculptured by Professor Schilling, were erected on the steps of Brühl's Terrace. These very delicate groups in freestone had shown, after a few years' exposure to the influence of the temperature, considerable marks of depredation in the fine lineaments, as well as in the drapery. The inhabitants of Dresden, desirous of keeping intact one of the master-works of their favourite sculptor, sought for ways and proposed preventive measures for preserving these ornaments from total ruin. After many controversies the authorities adopted the unlucky idea of trying the gilding method, the result of which is that now, seen at a distance, the groups form four lumps of gold on pedestals.

It may satisfy those who like to see the colour of this metal, for nothing is to be noticed but a mere brightness, dazzling the eyes of the unfortunate who happens to look in their direction. Looked at nearer we find that the intensity of a shiny colour produces the effect of showing only half features, half legs, half arms, half cheeks, &c., because there is no transition between light and shade, and the prominent parts of the groups are either quite bright or quite dark. Besides this, the light, being reflected from flat surfaces, strikes in some depths of the drapery, as well as on parts of the limbs, which should always remain more or less in the shade, so that a more prominent part which is shown out into relief remains in the dark, while another part, farther back, is quite illuminated and distinctly seen. Nothing is more against the philosophy of art than these long nude limbs, stiff, flat, without expression as they appear for want of a regular shade, and very often looking as if they were broken and pieces missing in them for want of transition between light and shade; the eye is too dazzled to see the parts of a limb which are not in full light. If the drapery happens to have a certain dimension the effect is still more disadvantageous, because the main body of the statue with its elaborated work completely disappears. Looked at quite near, the impression is still worse; all the delicacy of the lineaments has vanished, and they have become coarse by the effect of the shiny coating; the contours of the mouth and the lips have lost their expression in default of proper shade; the cheek which stands in the light is round, the other in the shade appears hollow; a line seems to be drawn on the top of the nose, which one could suppose to be made of two kinds of material; the eyes are dull and glaring, without shade between the lid and the eyeball. The hair is far from being improved, and the same injurious effect is produced on it as on the drapery. Two statues have beards; one of them is thin and short, and the rays which strike it produce on the face rugosities alternating with dark spots; the other has a long and thick beard on which the light falls more intensively, because it is more projecting, and the features of the face remain unperceived between the hair and the beard.

The experiment made on these groups in applying gilding has proved to be a failure, because a work of art is executed with the purpose of being admired, and in this instance it is no more the case; the eye being unable to rest on this shiny metal, the details of the execution remain unnoticed. Another question is, whether they will be preserved from ruin by this procedure, even if the coat should be renewed at short intervals. Time only can answer this question, and, should it not be the case, it would be a great waste of money, the amount spent on the gilding being 12,000 marks!

Dresden.

F. NICOLIN.

THE NEGLECT OF MURAL PAINTING.

SIR,—The inexperience of English painters in mural painting may, in a general sense, be admitted; but is it reasonably to be expected that they should have experience when every opportunity that offers for practicing the art is denied to them? The imputation of inexperience could not possibly be thrown into the face of the profession were it not for the *crass* ignorance of the public upon the theory and practice of mural decoration; otherwise the public would know from Grecian and Italian precedents that in neither country was it customary to leave public buildings bald and unadorned because artists had not attained perfection in painting and sculpture. Nay, the culmination of art in the hands of Praxiteles and Phidias, and of Michelangelo and Raffaello, after centuries of tentative practice by their predecessors, was the result of a policy which is in this country persistently opposed, *viz.*, that of employing the best talent of the period. They did not in Greece and in Italy wait for some special intervention of Providence to vouchsafe them genius, artists born with fresco painting in their mouths; they had faith in the maxim that "Providence helps those who help themselves"; and though they had not a Darwin to instruct them in the doctrine of evolution, they at least believed in the *progressive development* of art, and thus we are able to contemplate in our great museums the successive steps of progression from the archaic to the perfect.

The Royal Commission on the Fine Arts, presided over by H.R.H. the late Prince Consort, saw very clearly that continuous practice was necessary to make perfect a school of mural painters, and the competitions which were instituted, and the works of the competitors which were exhibited in Westminster Hall, were avowedly first steps in carrying out that practical and common-sense view; but this policy was not, as it ought to have been, persistent, and now, in this year of grace 1883, we are as far from possessing a school of mural painters as ever.

The painters of easel pictures, the public should again be told, cannot be transformed off-hand into mural decorators by merely commanding them to paint upon a wall instead of upon canvas, and to use either fresco, water-glass, or encaustic instead of oil. Mural painting requires a different kind of apprenticeship, both in respect to design and technique; and this different kind of training is only to be promoted by a continuous demand upon artists for the exercise of decorative talent. There would of course be, as there has always been, many imperfect attempts in the path of development. But artists of repute do not now hesitate to propose the effacement of the works of Thornhill in the dome of St. Paul's, and the artists of the future will, in all probability, not hesitate to propose the effacement of some of the works intended to adorn the Houses of Parliament, and the substitution of better; unless, indeed, that reverence should increase which prompted the Greeks and the Italians to preserve, even when art had attained its highest development, the attempts of their early painters and sculptors.

Decoration in the great art epochs was not an afterthought. The grandest examples of mural decoration were considered in the general design of the edifices they adorn, and the Munich architects, who had studied the subject of mural painting with the usual Teutonic thoroughness, always arranged that the painters who were to decorate the public buildings should receive their commissions before even the structures themselves were commenced, in order that the cartoons of the designs might be prepared and ready to paint from as soon as the walls were in a fit state to be worked upon. It was well understood, too, at Munich that an extensive series of mural paintings, though it should be under the direction of one master mind, required the assistance of pupils or scholars to carry it out in any reasonable time. This institution of scholars was, therefore, adopted for precisely the same reason that it was by the great Italian painters. The English public never experiences the emotion excited by the revealing of a finished and completely decorated monumental edifice, as the Greeks and Italians did. The pettifoggery English notion of mural decoration consists in occasionally consigning a painter to finish with his own unaided hands picture after picture,

through the year, in the solitude of a public building, leaving the outside world to wonder when the work will be completed, and at last to lose all interest in the matter.

Must the Legislature and the community at large again be reminded that it was only through the encouragement of monumental decoration on the most extensive scale that the greatest triumphs of art were achieved? Why will they, then, so obtusely and persistently oppose the practice of mural painting in England?

W. CAVE THOMAS.

NOTES FROM BRIGHTON.

At the meeting of the Brighton Town Council on the 16th inst., the Works Committee submitted a special report, with tenders, for improving the Preston-road, and erecting an iron fence on the west side of Preston Park (recently acquired by the Corporation) and on the south and east sides of Preston-place, and performing certain other works in connexion therewith. The tenders received were as follow:—

W. J. Botterill, 110, Cannon-street, London	25,890 0 0
J. P. Chappell, Lupus-street, Pimlico	5,780 0 0
J. Barnes, North-street, Brighton	5,670 0 0
G. Cheesman & Co., Kensington-street, Brighton	5,400 0 0
J. G. B. Marshall, College-road, Brighton	5,300 0 0
C. G. Reed & Son, North-street, Brighton	5,250 0 0
J. Harrison, Springfield-road, Brighton	5,120 10 0
J. Longley, Crawley, Sussex	5,098 0 0

The committee recommended that the tender of Mr. James Longley, to perform the work for the sum of 5,098*l.*, be accepted, and that the sureties proposed by him for the due execution of the contract be approved of.

Mr. Councillor Sandall moved the adoption of the report, which was seconded by Mr. Councillor Manwaring. Mr. Councillor Daniel said when the tenders ran so close as they did in this instance he should like to see preference given to one of their own townsmen. The difference was very trifling, and for the sake of 100*l.* or so he should like to see the contract given to local men. Mr. Councillor Manwaring said this would not be a reasonable suggestion to adopt after they had advertised for tenders. Mr. Councillor Sandall said when they advertised and got the lowest tender from a respectable and competent person outside the borough, who was now employed in carrying out work to the extent of 5,000*l.* or 6,000*l.* within the borough, it would be unfair to recommend another man simply because he was a local tradesman. The report was then adopted.

With regard to the sea defences in front of the town, the Works Committee presented a report adopting recommendations of the surveyor (Mr. P. O. Lockwood) that the concrete groyne at the Old Steyne should be extended about 120 ft. in length, so as to accumulate more beach in front of the Junction-road, and that the concrete groyne opposite East-street should also be extended about 120 ft., and heightened in the middle, so as to accumulate beach in front of the King's-road. He estimated the cost of the work at about 7,000*l.*

Mr. Councillor Sandall, in moving the adoption of this report and its recommendations, said the surveyor prepared a valuable report on this subject a short time since, and it had great weight with the committee. The majority of the Council would see the desirability of increasing the length of the groynes in question. The erection of these groynes, about fifteen or twenty years since, resulted in the accumulation of a large amount of beach in front of the town. The western improvements were carried out, and the sea was driven back 100 ft. or 200 ft., but now Hove was about to erect a sea-wall and other defences, and the result would be most likely a scour to the east of these. The committee, therefore, thought that by carrying out the proposed works they would be accumulating beach at the eastern end of the borough, and would be retaining the beach at the western end. They thought it very desirable to carry out the extensions, and if the report were adopted he believed a great improvement would result.

Mr. Alderman Bridgen seconded the motion for the adoption of the report.

Mr. Alderman H. Martin said it would be in the recollection of the Council that a large groyne previously existed opposite to Lion Mansions. Some years ago it was resolved to

repair it, but the resolution was rescinded, and the remaining portion of the groyne was cut down.

Mr. Councillor Booth said the groyne Mr. Alderman H. Martin was alluding to was absolutely buried by several feet of beach which had collected. However, he considered the present outlay absolutely necessary for the protection of the improvements which they contemplated making, for they would retain the beach and thereby make the work secure. They would all be sorry to see public money spent and a great storm come and wash all the work into the sea. This would add greatly to the security of their work, but at the same time he thought they did not take sufficient care of the beach as it did accumulate. That day a gentleman living near the Aquarium pointed out to him that he noticed on the previous day as many as ten carts at one time taking away beach from one spot. Letters had lately appeared in the *Times*, speaking of the false economy of the Brighton Town Council in permitting beach to be taken away to mend the roads. They knew that was not correct, for the beach removed was not altogether for that, but he did not think there was sufficient care taken that all beach removed was absolutely for contractors carrying out work in the town. If they had a contract in the town the beach which they took away should be for the special purpose of the contract, and not for anything outside of it.

Mr. Alderman Abbey said it was very unfortunate, but wooden groynes would wear out, and would only last about fourteen years. The foundation would wear out, and the cutting down in the case referred to was quite necessary; for it was no good to repair the top when the bottom was gone. It was in consequence of this wear that they had gone in for concrete groynes, and these were practically everlasting.

After some further discussion, Mr. Councillor Sendall, in reply, said the groynes to the west of Brighton had had a perceptible effect on the frontage, but with regard to the accumulation of beach for some years past, he would read a paragraph from a report submitted by the Surveyor. It was as follows:—

"An interesting question in connexion with groyning is the quantity of shingle and sand accumulating from time to time, and I append a statement showing the quantities of shingle which have been removed from the foreshore in front of Brighton by builders and others, and for the service of the Corporation since 1875, when the Town Council first began to issue tickets of permission for its removal. During that time 236,720 cubic yards have been carted away from off the beach, equal to a strip of land $2\frac{1}{2}$ miles long, 57 yards wide, and 1 yard deep. In 1881 and 1882 a greater quantity was taken away than in the previous years, amounting in each of those years to 43,000 cubic yards, or $2\frac{1}{2}$ miles long by 52 ft. wide by 1 yard deep per annum."

Proceeding, he said there was no serious danger at this moment, except what might probably arise through the action of the House Commissioners, but it was very wise to anticipate probable occurrences and provide for them.

The motion for the adoption of the report was then carried, and at a subsequent stage of the proceedings special instructions were given to the Surveyor with regard to the removal of sand and shingle from the beach.

The Sanitary Committee presented a report which embodied the following passages from the report of the Medical Officer of Health, Dr. Taaffe:—

"Brighton is most fortunate in having a pure and plentiful supply of water, and the Sanitary Authority is well aware of the advantage of being in keeping with the times in the adoption of sanitary measures, and is anxious to do whatever is necessary for the health of the inhabitants, and although perfection is not attainable, still a great deal has been done, to my knowledge, during the last nine years, to make Brighton the healthiest of towns, and proof against epidemics of cholera, typhoid fever, diphtheria, &c.; but the Sanitary Authority cannot do everything, and a great deal must depend upon individual owners of property and householders; the latter must depend more upon themselves than they have hitherto done. For instance, if they suspect anything wrong with the drainage of their houses, or other sanitary defects, the proper course for them to pursue is at once to send to their surveyor or builder and have a thorough examination made in order to ascertain if there be any defects existing, and not to depend entirely, as is too frequently the case, on the sanitary officers to find out such defects. The duty of every householder and owner of property is to find out and remedy sanitary defects; the duty of sani-

tary inspectors is to find out if the householders and owners of property have performed that duty which properly belongs them."

Mr. Councillor Nell having suggested that the report should be printed and circulated amongst the householders of the town, inasmuch as it contained many suggestions of importance having special reference to plumbers and laundresses,

Mr. Councillor Bostel said that if the report were to be printed and circulated the recommendation it contained respecting the substitution of D traps for bell traps should be revised, as D traps were very little better than the old bell trap. There was now a much better one in stoneware, and the additional cost between the use of iron and stoneware was scarcely worthy of consideration. He hoped the Committee would substitute the trap he alluded to for the D trap recommended in the report.

Mr. Councillor Hawkes, in reply, said he could not undertake to fall in with the suggestion of Mr. Councillor Bostel, as the recommendation of Dr. Taaffe was confirmed by the opinion of their surveyor.

The motion for adopting the Committee's proceedings was then put and carried.

SIR ROBERT RAWLINSON.

Sir.—The brief notice in your last issue of the life and labours of the above-named gentleman, and his acceptance of the offered dignity of knighthood, will be agreeable news to very many members of the profession, and it will be especially so to those who have had the pleasure of long intercourse with him on professional matters, as I have.

Lancashire men especially have good cause to remember the name of Robert Rawlinson in connexion with the terrible Cotton Famine of 1862-1863. A reprint of some of the particulars would be interesting, but the reminiscences are so painful that they are, perhaps, best let alone. Sixteen thousand unemployed operatives clamouring for bread, a weekly loss of wages of about 9,000*l.*, and the organisation and maintenance of a scheme of relief involving an expenditure of 3,000*l.* per week, laid out in bread, meal, milk, and other necessities to keep body and soul together, is a something not easily forgotten when it applies to a single town only (Blackburn) out of this great Lancashire.

It was in the suggesting, organising, and visiting the public works undertaken to find temporary employment for the able-bodied operatives that Mr. Rawlinson's services were so valuable, and many a poor honest fellow, whose hands had hitherto handled nothing heavier than a few cotton-pieces or a tin of "cops," was cheered at his novel work with pick, spade, and barrow, by the kindly word of the ever genial and veteran engineer, whom I have seen examining the hands of the operatives, formerly as white and thin-skinned as a lady's, now beginning to be roughed and hoofed with the out-door work.

This happy outlet of hard outdoor employment for the operatives kept their minds from discontent and tumult, strengthened their bodies, enabled them to earn, though but little, yet honest wages, and to maintain in some degree their independence without the feeling of being pauperised; and the enduring results of the labours of some 600 of such honest earnest men may at any time be seen in our town in the improvements made in the public park, and the miles of main sewers and new streets and roads excavated and formed by them.

It was my duty and pleasure at this time as Engineer to the Corporation, to co-operate in this work with Mr. Rawlinson, the Borough Surveyor, and the members of the Corporation, and, therefore, I can speak with assurance as to the facts and incidents.

As the mountain torrent when uncontrolled may spend its strength in destroying whatever bounds it may, whilst, if confined within bounds, conserved and directed, it may be made to do useful work for man; so was the unemployed labour of Lancashire in 1862-3 controlled and diverted to good uses instead of being spent in turbulence and disorder, and the very gradually returning prosperity of the following year found master and man in one accord and bond of amity. Thanks to everybody who lent a helping hand; amongst these Lancashire will say, "Thank you, Sir Robert."

JOSEPH BRIDGLEY, M.Inst.C.E.

THE PROPOSED NEW WAR OFFICE AND ADMIRALTY, AND THE WIDENING OF PARLIAMENT-STREET.

In the House of Lords on Monday, Lord Stratheden and Campbell asked Her Majesty's Government whether it was intended in the present year to enter upon operations under the Public Offices Site Bill. He thought his question was justified by the extraordinary expenditure proposed to be incurred under the Bill.

Lord Thurlow said, in reply, that the First Commissioner of Works proposed very shortly to invite a competition of architects for the new buildings for the War Office and Admiralty, which were to be erected on the Spring-gardens site, but he was to add that no buildings would be erected or commenced until the next financial year, when a vote for the purpose would be presented to Parliament, and a full opportunity would be given for discussing the vote on its merits. With regard to the Parliament-street site, there was a distinct determination in the Office of Works to widen Parliament-street in the manner proposed. When that site was cleared,—and it would probably be some time before that happened,—the site would be exclusively devoted to the erection of such buildings as banks, clubs, insurance offices, and other buildings, with fitting architectural elevations, which would have to be approved by the Office of Works as suitable to the surroundings of that neighbourhood. When that was done, there would be ample warning given for the discussion of the subject. With respect to an observation made the other evening with reference to a model which was prepared when Mr. Layard was First Commissioner, no trace of that model had been discovered, and there was no knowledge at the Office of Works of what had become of it.

The Earl of Wemyss said that the model cost 500*l.*, and was worth 1,500*l.*

The Earl of Redesdale said that in a short time proposals from architects would be received for the erection of a new War Office and Admiralty on the site already sanctioned, and money would be required for that purpose next session. He confessed he was sorry to hear the conclusion at which the Government had arrived with regard to the widening of Parliament-street. He did not want clubs, banks, and hotels there. Such plans would be extremely injurious in a variety of ways. Now that public offices were in immediate contiguity to Parliament-street, he had hoped that other public offices would be erected, so as to be in the immediate neighbourhood of the Houses of Parliament. The proposal of the Government was an extremely injurious and unfortunate one.

BRISTOL AND CLIFTON JUNIOR ARCHITECTS' SOCIETY.

The members of the Bristol and Clifton Junior Architects' Society visited Temple Church, an object of great architectural interest in Bristol, on Saturday, by permission of the Rev. W. Hazelidine, rector. The members assembled in the Weavers' Chapel to hear a paper on the church by Mr. William J. Hill, the hon. secretary of the Society. Mr. Hill, in his paper, touched upon the supposed foundation of the church by the Knights Templar in the twelfth century, and considered the church in all probability to have been the work of the members of that body. He gave a minute history of the Knights Templar Society, and passing on to record the foundation of the church, Mr. Hill stated that the ground upon which the church stood was originally a swamp, and this caused the sinking of the foundation. The style in which the lower portion of the tower was built became general about the year 1390, and from records in existence there was ample proof that the tower was not commenced till about 1390, the upper portion being added about 1400. After referring to the attempts made in olden time to strengthen the tower, Mr. Hill gave several extracts from writings describing the appearance of the leaning of the tower at different stages and periods, also a history and description of the Weavers' Chapel, and the monumental brasses contained in it, and a description also of the other portions of the church, especially the beautiful candelabrum. At the conclusion of Mr. Hill's interesting paper, a vote of thanks to him was proposed by Mr. F. E. L. Harris, seconded by Mr. G. E. Ford, and carried unanimously, as was also a vote of thanks to the Rector of the Temple.

THE DOVER CONGRESS OF THE ROYAL ARCHEOLOGICAL INSTITUTE.

The members of the British Archaeological Association commenced their annual congress at Dover on Monday last, when there was a large attendance of members and their friends, the attractive nature of the programme of the week's proceedings having brought together a much larger assembly, it is stated, than has been known for many years. The proceedings were inaugurated by a banquet given by the Mayor (Mr. R. Dickeson), at the Lord Warden Hotel. Lord Granville, the President, who had been expected to be present, sent at the last moment a telegram explaining the cause of his detention in town, and, in consequence, the Presidential address had to be omitted, although in all probability it is only postponed. At the luncheon, the Mayor was supported by Sir Walter James, Sir Walter G. Stirling, bart., Canon Scott Robertson, Canon Russell, and other gentlemen.

At a little after four p.m. a special train started from the Lord Warden Hotel, and conveyed the party to the Priory Station, whence they walked to the grounds of the Priory of St. Martin's, now the College of Dover, where Dr. Astley conducted them through the restored building (a portion being the work of the late Mr. Street, R.A.), giving a running history of the foundation of the Priory, and a description of the original uses of the several buildings. The refectory was only a few years ago used as a storehouse or barn, but is now the schoolroom. The chapel was next visited, and an animated discussion arose as to what had been its original use, in which Dr. Astley, Messrs. Thomas Blashill, Loftus Brock, F.S.A., and the Rev. Canon Scott-Robertson took part, the latter quoting an opinion of the late Dr. Plumtree, of Oxford, "that it had been built for a brewhouse or bakehouse", but this did not find favour with the views of the architects or the other archaeologists present, it being generally assumed that so fine a building must have been erected for higher purposes, and that it was probably the Guests' Hall of the ancient establishment.

The party then proceeded to the new Town-hall, the work of the late Mr. W. Burgess, A.R.A., which was opened with great ceremony by the Duke of Connaught a few weeks since, and of which we gave a view at the time. They were received officially by the Mayor and Corporation in their robes, the former presenting to the Association an illuminated address of welcome to the ancient Cinque Port town, beautifully enriched with drawings, &c., of the seals of the borough, which was read by the Town Clerk.

Sir Walter Stirling, as president of the Kent Archaeological Society, then read an address of welcome to the Association, warmly congratulating that body on the good work they had done in their forty years' existence from their first meeting at Canterbury in 1844; and taking credit to themselves, as a much younger society, in having followed since 1857 (when the Kent Archaeological Society was established), in the footsteps of the Association, from which great body they were proud to feel they had originally sprung.

Mr. Thomas Morgan, F.S.A., as a vice-president and senior officer of the Association, made appropriate replies to the Mayor of Dover and Sir Walter Stirling, and in the name of the noble president and council, gratefully accepted the addresses that had been presented, and especially remarked on that from the Mayor and Corporation of Dover as a brilliant specimen of illuminated writing.

Mr. Edward Knocker, F.S.A., honorary librarian to the Corporation of Dover, then read an interesting, though somewhat lengthy, paper on "The Records of the Borough and the History of the Maison Dieu," and about seven o'clock the official reception of the Association came to an end.

In the council-chamber of the Town-hall, at half-past eight the same evening, the Mayor presiding, the following papers were read and discussed:—"On the History and Progress of the British Archaeological Association since its Foundation at Canterbury in 1844," by Mr. Thomas Morgan, F.S.A., hon. treasurer; "On St. Thomas, the Patron Saint of Dover," by the Rev. Canon Scott-Robertson, M.A., F.S.A.; "On the Samphire Plant, as made memorable by Shakespeare at Dover," by H. Syer-Cuming, F.S.A. Scott, the latter read by the hon. sec., Mr. Loftus

Brock, F.S.A., in the absence, from ill-health, of the writer. The evening's proceedings were brought to a close by a description of the seals of the borough by Mr. W. De Grey Birch, F.S.A., and a dissertation on the regalia, silver ear, and ancient horn of the old town, by Mr. George Lambert, F.S.A., Sir James Picton, F.S.A., and the chairman.

The proceedings on Tuesday commenced early at Richborough Castle, where a large party arrived by special train from Dover, and listened with much attention to Mr. George Dowker, who gave a full and descriptive account of the ancient fortress. He referred to the explorations of Boys in the last century, and those of Fawcett, Roach Smith, and Mr. Dowker, senior, in the present, and then led the party to the famous platform over the cross in the centre of the castle walls, on which much has been written without any decided opinion having been come to as to the use of such a massive structure. At the close of Mr. Dowker's lecture the party, after investigating the underground passages surrounding the above celebrated pieces of masonry, which were dug out by Mr. Boys, Mr. Rolfe, and other antiquaries in their unavailing efforts to come to the foundations of the platform, proceeded to Sandwich, where, under the guidance of Mr. R. J. Emmerston, the church of St. Bartholomew, hospice, and chapel were described. At the churches of St. Clement and St. Mary the Rev. A. M. Chichester gave a short description; and at St. Peter's, now undergoing repair, the rector did the same. At the old Town-hall, with the Mayor in the chair, Mr. Thomas Dorwen gave an account of the pictures lately presented by the Ashburnham family, chiefly relating to the presentation of an address to Charles II. and his Queen when visiting Sandwich in 1672. The day's proceedings were brought to a close by the reception by the Countess Granville of the ladies and gentlemen of the congress party at Walmer Castle. The papers read at the evening meeting at the council-chamber at Dover were on the ethnology and nomenclature of Kent, by Sir James A. Picton, F.S.A., and the destroyed churches of Dover, by the Rev. Canon Scott-Robertson, M.A., F.S.A., Mr. Edward Knocker, F.S.A., being in the chair.

SOMERSETSHIRE ARCHEOLOGICAL SOCIETY.

THE thirty-fifth annual meeting of this society was commenced on Tuesday last at Wiveliscombe, and as the association had never previously explored the district in the vicinity of that town the meeting was regarded with more than usual interest, and was largely attended. Wiveliscombe is situated in the midst of picturesque scenery, and its name is supposed to be derived from the Saxon words *Wille or Vili*, many, and *combe*, a dell or ravine. A few of the houses bear the stamp of considerable antiquity, and in excavating for the foundations of the church, which is modern, some Roman and Saxon coins were found. The inhabitants of the town gave a very cordial reception to the society, a large and influential local committee having made admirable arrangements for the convenience of their visitors. In a room adjoining the Town-hall was an interesting local museum of objects of archaeological interest and of specimens of natural history, which were arranged by the assistant-secretary and curator of the society, Mr. W. Bidgood.

Mr. Elton thanked the society for the honour they had done him in giving him the office of president during the past year. It had afforded him much pleasure, and he hoped he had been able to do something to promote the objects of the society. He now had the pleasure of introducing their respected friend and neighbour, Mr. Surtees, as president of the year.

Mr. Surtees having taken the chair, Mr. E. Green, one of the hon. secretaries, read the report of the council, which stated the number of members continued much the same as last year; the new members received since 1882, though numerous, had only served to replace those lost by death or otherwise. The financial report showed a balance of 85l. 10s. 5d. on the general account in favour of the society, against 19l. 11s. in the previous year; of this 45l. 1s. 6d. had since been laid out in the purchase of books and bookcases from the library of the Taunton Institution. The debts due from the Castle Purchase Fund had been reduced from 561l. 3s. 4d. to 491l. 10s. during the year. The council re-

ported the presentation to the museum of many specimens of natural history from the British Museum, also a present from the same institution of about eighty volumes of catalogues, indices, and other valuable publications. From the Government of India the council had received some very valuable historical, archaeological, and topographical reports, enriched with prints and photographs. They also had great pleasure in reporting the receipt of one volume of the fac-simile of Anglo-Saxon charters from the Lords of the Treasury. The council had much pleasure in reporting the munificent proposal made by Colonel William Pinney to rebuild, at his own cost, the stair turret leading to the muniment room, now in a very dilapidated condition, and, in connexion with this plan for rebuilding the turret, a resolution had been passed authorising the architect to examine the roof of the muniment room, and report his opinion of the repairs required, and the probable cost of such repairs. The council much regretted the loss by death of Lord Talbot de Malahide, who was for so many years a prominent antiquary, and who, when resident in the county, took great interest in the proceedings of the society.

On the motion of Bishop Clifford, seconded by Mr. C. I. Elton, the report was adopted.

Mr. B. W. Greenfield proposed the re-election of the officers of the society, with the addition of the names of Mr. Hancock as local secretary for Wiveliscombe, and the Rev. J. J. Coleman for Dulverton. Mr. A. J. Monday seconded the motion, which was adopted.

Bishop Clifford directed attention to the great advantage which might be derived from the publication of an archaeological map of the county of Somerset, in which the camps, barrows, and other objects of interest should be marked, observing that such a map had been prepared by the Gloucestershire Archaeological Society, and was much appreciated.

Professor Dawkins said there was a map published by the Congress of Pre-historic Archaeologists from which most valuable details might be obtained. He was not aware of any other map comparable to it in point of perfection or for the accurate information which it conveyed by a series of symbols.

After a brief discussion the matter was referred to the council.

The President (Mr. Surtees) then delivered an interesting address, chiefly devoted to the topography and history of the locality. A vote of thanks having been accorded to Mr. Surtees, Mr. Malet (one of the hon. secretaries) stated the debt incurred in the purchase of the castle at Taunton had now been very nearly expunged, partly from the income derived from the property itself and partly aided by the handsome bequest of 100l. left by the late Sir Walter Trevelyan, and as the remainder was being gradually paid off it was not likely the members would again be called upon for that object.

The members of the association then proceeded to visit the objects of interest in the town, Mr. E. Green, one of the hon. secretaries, acting as cicerone. The party were first conducted to the parish church, rebuilt in 1829. Close at hand a larger structure in which the remains of a larger structure in which the bishop held his court when Wiveliscombe was an episcopal manor, was next visited, after which a "box walk" at the house of Mr. Norris, surgeon, said to be several centuries old, and an old ceiling in a remarkably good state of preservation in the house of Mrs. Edwards, but formerly occupied by the late Bishop Vaughan, were inspected.

The members of the association were entertained at luncheon by the local committee, and afterwards proceeded upon an excursion to Mr. Collard's house and picture-gallery, to Clayhanger, Nutcombe Barton, Raddington, and Chipstable.

In the evening a meeting was held in the Town-hall, when papers were read by Mr. B. Edmund Ferrey, F.S.A., on the "Somerset Type of Church compared with that of some other counties"; by Mr. Charles I. Elton, F.S.A., on "The Roman House at White-stanton"; by Mr. Monday, on a couple of ancient wills, &c.

Ferry Iron Works, Wharf-road, Cubitt-town.—Mr. Hugh Stanton has been admitted a partner in this business, the style of the firm remaining as before,—Chas. Williams & Co.

THE NEW MUSEUM AT BERLIN.

The *Berlin Börsen Courrier* remarks that the dimensions of the museum in course of erection at Berlin, for receiving the Pergamic and other antique sculptures, may be estimated from the descriptions published of the large Altar of Zeus, which, in its reconstructed form, will be the most prominent object of interest in the building. At the first step of the lower portion the altar is about 110 ft. in width, and about 120 ft. in length. On the platform,—approached by twenty-four steps,—it measures about 93 ft. by 100 ft. The total height from the level of the ground to the upper portion of the Sima is about 30 ft., of which about one-third is represented by a space enclosed with pillars upon the platform to which allusion has been made.

In the design of the museum it has been contemplated to render the altar capable of being well seen from all sides. For this purpose a passage 33 ft. in width will surround it. Should, however, from reasons of economy of space, or from architectural grounds, the re-erection of the entire altar be found impracticable, the plan will be resorted to of showing only the south front with the staircase; other ornamental portions of the work being exhibited separately.

The other parts of the museum are designed upon a scale to correspond with that of the portion just described. Two other principal rooms are spoken of. One will be about 2,700 square feet in extent, and about 33 ft. in height. The second will be 3 ft. higher, but will be of the same extent as the other. It is remarked that the proposed re-erection of the altar is a suggestion meriting approval, as it is only thus that its ornamental features can be fully appreciated by being seen in their original combination with the work itself.

ALL SAINTS' CHURCH, LONG MARSTON, NEAR TRING.

This church, just consecrated, is a new one, but is partly composed of relics of the ancient church of the parish and of other churches. The ancient church stood in a low and damp situation close to the moat of a long-vanished house, and all its graves and foundations were rotted with water, which rose almost to the floor-line. The walls had all given way outwards, the chancel-arch was dislocated, and all was ruinous. It was decided, therefore, to rebuild the church on a new site on higher ground near the Vicarage, on ground transferred by Baron de Rothschild. At the time when the re-building was under consideration, the mother church of Tring was under restoration. By the advice of the architects (of both churches), the Vicar, the Rev. W. C. Masters, purchased the pillars and bases of the Tring Church arcade, which, executed in Clunch stone, were inadequate for their purpose at Tring, and were being replaced by Portland stone. This arcade is of rich detail and of lofty proportion, and has by its height fixed the new proportions of Long Marston Church. It consists on plan of a nave and chancel of equal width and height, with a low north aisle to both. In this north aisle are placed the beautiful old two-light Decorated windows of the old church, and also some curious lancets of thirteenth-century work, a Saxon window-head, and the doorway, and a richly moulded and carved recess of the thirteenth century, found in the old walls when pulled down; of the end windows, portions only of the tracery were found; these have been re-designed, working in the old stones, thus reproducing as far as possible, the old design. The ancient piscinae have been inserted in the new church. The lofty east and south windows are of new design in richly-treated Geometrical, and flowing Decorated. The roof is of a high-pitch, and in place of a chancel-arch there is a rood-screen, under which an arch is formed by cusped oak-work, purchased by Mr. Masters from a pulled-down church or house formerly standing at Western Turville; the spandrels are filled in with oak tracery, copied from ancient work from the same place; the oak arch rests on stone corbels carved with the heads of Moses and Elias. The nave roof is open, that of the chancel is boarded with carved ribs and bosses at the intersection of the mouldings. The aisle roof has some very beautiful ancient wind braces and brackets from Western Tur-

ville; they are arched and cusped, somewhat similar, but on a smaller scale, to the other curves before mentioned.

The seats, both old and new, are from the old church, and are of very simple and massive make, of oak. The pavement and the permanent fittings of the chancel are at present postponed, but the levels and steps have been carefully formed.

The organ has been refixed in one of the northern arches. Adjoining an ancient screen from the former church the new chancel arcade will be filled with new screens, which will form part of the organ-case.

A western tower has been designed, and will be erected when funds permit. It will be in the local style, and built in square chequered work of flint and stone. The church itself is built of flint, carefully faced with snapped black flints, the walls having a hollow in them. The new stone is all of Ancaster, as the ancient Clunch stone cannot be trusted for external use; the internal dressings and masonry are, however, of Clunch stone. The builder is Mr. Feencher, of Tring; and the clerk of works is Mr. Smith, the architects being Mr. R. Herbert Carpenter and Mr. B. Ingelow, of London.

ST. SAVIOUR'S SCHOOL-CHAPEL, ARDINGLY, SUSSEX.

This chapel has just been dedicated, and will after the school holidays be at once used. For many years, since the school was removed from its old quarters at Shoreham, the lower of the two dining-halls has been used as a chapel, but the numbers have increased to between 500 and 600 boys. The founder, Canon Woodard, has divided the whole college into two schools, under separate head-masters, in two quadrangles, divided by the dining-halls and the new chapel, which are, of course, accessible on each side. The chapel intersects the long dormitory wings, and extends eastwards, and therefore adapts itself to the old Minister plan, with a central tower at the intersection of the four lines of roof. The total length is 152 ft.; the width, 35 ft. (inside); the height to the wall-plate, 40 ft.; and to the ridge, 72 ft.

The western portion is divided into five bays, each with a large traceried four-light window. Between each of these are massive buttresses, those on the south being built as flying buttresses (as at Westminster Hall), to allow of a cloister passing under across the quadrangle. The chief entrance is at the west end, and there is a central passage 8 ft. wide, on each side of which, as on the old college plan, the seats face each other in five rows. The stalls are returned at the west end for the Provost and Fellows, and at each gateway in the length is a master's seat. The tower is carried on very lofty arches, of stone, carried on grouped piers of brick and stone. The choir is placed under the tower, which forms a central lantern, with lancet windows on each face. The organ is placed in a shallow north transept, opening by two lofty arches into the chapel. The sanctuary extends eastwards, and is of two bays similar to but more richly treated than the western part. The altar is raised, by easy gradients, twelve steps above the body of the chapel. Over it is a great seven-light window, with rich Decorated tracery.

The roof is of a pointed barrel form, with rich mouldings and panels. The whole is faced both inside and outside with red local bricks, and the stonework is a rich yellow-toned sandstone from the College quarries.

Under the eastern portion, owing to a sharp fall in the ground, is formed a crypt or under-chapel, which will be used in the school holidays. It is vaulted in brick and stone, and divided into three unequal aisles. The bay over the altar rises considerably higher than the others, working into the raised platform of the altar above it.

The windows are filled with simple tinted glass, and the lantern windows with Powell's quarries.

There has been no contractor employed, but all has been done by the College workmen, under the supervision of the custos, Mr. W. B. Woodard, and from the designs and under the direction of the College architects, Mr. R. Herbert Carpenter and Mr. B. Ingelow, of London.

It should be added that this successful school is for the lower middle classes, on strict Church of England principles, and on the old Public

School lines, and that the fees are moderate in amount. It belongs to the parent society of St. Nicholas College, Lancing. A similar school is in progress for the Midland counties at Ellesmere.

ARCHITECTURAL HISTORY OF ROME.

SIR,—Allow me to thank you for your friendly notice of Mr. Shadwell's abridgment of my work on the "Archæology of Rome," and for the suggestions at the end of it in the form of criticism. These shall be carefully attended to if I live to see a third edition; at the age of seventy-seven this is very doubtful, but in all probability my son or my grandson will be glad to attend to your suggestions. I believe I am responsible for the name of "Archæological History," but I wish to call attention to the fact that the existing remains of buildings of the time of the Etruscan kings that have been dug up to an enormous extent in Rome during the excavations of the last ten years, which I was the first to set going, cannot be explained in any other manner than by the truth of the old legendary history, and that the Niebuhr theory is entirely a delusion, notwithstanding it was adopted by Dr. Arnold, the most popular schoolmaster of his time, and has been, consequently, blindly followed by nearly all schoolmasters as true history, notwithstanding it had been proved to be absolutely false. This has been publicly acknowledged by the Italian Government, who made me a Cavalier on the express ground that I had conferred a permanent benefit on Rome by demonstrating the truth of the early history which had been considered as fabulous for the last half-century; I have also had a most kind private message from the King of Italy to the same effect. When her Majesty made me a Companion of the Bath, Mr. Gladstone, as Prime Minister, said it was an acknowledgment of my services at Windsor and in Rome. I think the *Builder* might do good service by exposing the folly of the English schoolmasters in sticking to the Niebuhr and Arnold theory after its falsehood has been publicly demonstrated. They will soon be laughed at by their own school-boys. The fact that forty Oxford men went to Rome for the last Easter vacation, where they could not fail to have their eyes opened, shows that the truth cannot be much longer concealed. No doubt it is very difficult for a schoolmaster to acknowledge that he was taught what was not true in his boyhood, and has continued to teach it all his life; but the truth will come out at last, and the longer it is delayed the worse it will be for the schoolmasters.

JOHN HENRY PARKER, C.B.

NEW BUILDINGS IN PATERNOSTER-SQUARE.

A ROMAN PAVEMENT DISCOVERY.

THE buildings in Paternoster-square which were destroyed by the fire that took place in the early part of the year have, to a large extent, been reconstructed. Amongst them are the premises of Messrs. Kegan Paul, Trench, & Co., the eminent publishers, at the corner of Paternoster-square and Rose-street. These new buildings are being erected by the Phoenix Insurance Company, from the designs of their own architect, Messrs. Paul & Co. having been insured in that company. The Rose-street elevation of the building is 54 ft. in length, and that facing Paternoster-square 28 ft. From the pavement level the building is 50 ft. in height, and consists of four floors and a basement. The two elevations are faced with white Suffolk brick, the arches to the first-floor windows, being in Pether's ornamental red moulded brick. The second-floor windows have segmentary Gothic arches in red gauge brick, the third-floor having semicircular arches in the same material. The elevations are further ornamented with Pether's moulded brick strings. The building is surmounted by a white Suffolk brick cornice, 2 ft. in depth. From the basement to the top of the building the several floors are supported on iron columns and fillet girders. The general business of the firm will be conducted on the ground floor, their offices being on the upper floors. The basement is of considerable depth, and it may be stated, as an interesting archaeological incident, that in excavating for the foundations of the party walls in the Paternoster-square frontage, a

quantity of Roman pavement was discovered at a depth of 17 ft. below the ground line.

Messrs. Cubitt & Co. are the contractors for the buildings, and Mr. W. Wheeler is foreman of the works.

THE GILSTRAP FREE LIBRARY, NEWARK-UPON-TRENT.

THESE buildings, which have been designed by and erected under the superintendence of Mr. Wm. Henman, architect, of 38, Bennetts-hill, Birmingham, for Mr. William Gilstrap, of Farnham Park, Bury St. Edmund's, were formally opened on Thursday, the 26th ultimo, and by him presented to his native town, the Mayor and Corporation attending in state, accompanied by a large number of the inhabitants.

Mrs. Gilstrap performed the ceremony, and presented to the Mayor for preservation among the muniments of the town a very handsome key in silver, parcel-gilt, specially designed for the occasion by the architect. The head of the key bears on one side the arms of Newark, and on the reverse those of Gilstrap. The stem is octagonal, surrounded by a scroll on which is engraved,—"Free Library, Newark-upon-Trent" built and endowed by William Gilstrap, esq. Opened 26th July, 1883."

After the building had been declared open for the free use of the public, and the deeds handed over to the chief magistrate, an address and the thanks of the working men of the town were presented to Mr. Gilstrap; then the company marched in procession to the Town-hall, where luncheon was provided by the Mayor, and the donor received the thanks of all classes for his munificent gift.

The buildings consist of borrowers' hall, a general, a reference, and a ladies' reading room, the library, and a librarian's private office, and are very generally admired for their completeness of arrangement and artistic treatment. The total cost to Mr. Gilstrap will amount to about 8,000l.

NEW PAROCHIAL SCHOOLS AT NORWOOD.

THE foundation-stone of new schools for the poorer children of the parish of Lambeth was laid on the 7th inst. by Mr. P. W. Funnell, Chairman of the Board of Guardians. For some years past the present schools at Norwood have not been sufficient to accommodate the poorer children of Lambeth, and a resolution was passed several years ago to add to that accommodation by the provision of additional schools. The guardians already possessed a large piece of ground, and plans were invited in competition,—the first premium being awarded by advice of Mr. Henry Currey, the referee, to those submitted by Messrs. Coe & Robinson.

The building, which is planned on the pavilion system, is divided into four ward blocks, with day-rooms and lavatories on the ground-floor, and dormitories on the first and second floors. These ward blocks are again divided into two by a party-wall, thus dividing the children into eight distinct groups. This is found to be much better than the old-fashioned way of putting all the children together under one roof, as, in case of an epidemic or fire, each group of children is quite separated from the other. Between these four dormitory blocks, in the centre, is the administrative block, with master's house, workrooms, &c., and a very spacious general dining-hall, 90 ft. by 42 ft., which has the plunge and other baths under it; and at the back of the dining-hall are the kitchen and servants' offices; while at the extreme back, in a distinct building, and divided from the servants' offices by a courtyard, is the laundry building. Between the ward blocks (one on either side for boys and girls) are the schoolrooms; while in close proximity are spacious reading-rooms, workshops, &c. The chapel is a detached building to hold about 600 children, and will form a very interesting feature of the school buildings. It is designed in the thirteenth-century Gothic style. The approach to the whole of these buildings will be by large entrance-gates, with a lodge on one side. The general style of the building is Italian, the facings being grey stocks, with Portland stone and red brick dressings. The buildings are to accommodate nearly 600 children. The cost of the building will be about 47,000l. Messrs. Lucas & Son, of Kensington, are the builders.

PROPOSED TOWN HALL FOR LAMBETH.

THE special committee appointed some time ago to consider as to the expediency of building a new Town-hall and offices in lieu of the existing Vestry-hall at Kennington Green, have reported that they have fully considered the matter, and caused inquiries to be made of other vestries and local boards in the Metropolis as to the times when the other halls were erected, the accommodation given by the various halls, and their cost. In the case of the Shoreditch, Holborn, and Kensington Town-halls, a very considerable revenue is obtained from letting the halls. Since the information was received, the new Westminster Town-hall and offices had been erected at the back of Victoria-street, Westminster. This hall was capable of holding 800 people, and in addition to various offices for the officials connected with the parish, the building contained a council chamber and a large committee-room and other conveniences. Irrespective of the ground, the total cost would be under 30,000l. The committee had visited the Shoreditch, Holborn, Kensington, and Westminster Town-halls and buildings, and in the opinion of the committee it was desirable in the general interests of the parish that a Town-hall with suitable offices should be erected. The committee also recommended that it should be referred back to the committee to consider and report to the vestry on the best means of effecting the object desired. In the course of the discussion which followed the reading of the report, the probable cost of the proposed building was put at from 35,000l. to 50,000l. An amendment to the motion for the adoption of the report,—“That the matter be deferred until the intentions of the Government were known with regard to the future control of the Metropolis,” was lost by fifty-five votes to seven,—and the report was adopted.

THE LAMBETH VESTRY AND HOUSE DRAINAGE.

BEFORE adjourning for their holidays, the Lambeth Vestry, on the motion of Mr. F. H. Fowler, adopted the following report of its Sewers and Sanitary Committee:—

“It is now generally recognised that trapping each inlet to the drain does not provide sufficient security against the passage of foul air from the sewers into the houses, and the only effectual means of protection is by placing a trap on the drain near its connexion with the sewer, and before the drain reaches the house. Doing this necessitates the introduction of some principle of ventilation into the drain, as the foul air cannot be driven into the sewer because of the trap, and if allowed to remain in the drain would soon become highly offensive and dangerous. The simple way to counteract this evil is to provide an inlet for the air from as low a level as convenient, and a means of escape as high as the housetop; the difference of atmospheric pressure will generally maintain an upward current and prevent the air in the drain becoming foul or being forced into or absorbed by the water in the syphon traps upon the several branches leading into the drain from closets, baths, sinks, or other connexions. This provision has been voluntarily adopted in many cases of late, where effective sanitary considerations are taken into account; but where the option is left to the builder, whose interest in the premises will cease as soon as he can effect a sale of them, and is therefore desirous of economising expenditure, regardless of consequences, nothing short of compulsory obligation will secure the small but very necessary outlay. It was resolved to recommend the Vestry to embody this requirement in their regulations as to house drainage, as is done by many vestries and local boards of health.”

It is satisfactory to see the Vestry of so large and important a parish moving in the right direction with regard to this matter. Some such regulations as those hinted at in the report are manifestly necessary in a large number of the houses built within the past five or six years in Brixton and other outlying portions of the parish of Lambeth.

The Norfolk and Norwich Hospital, Norwich, the foundation-stone of which was laid by H.R.H. the Prince of Wales in June, 1879, was on Monday last publicly opened by their Royal Highnesses the Duke and Duchess of Cornwall. The hospital has been erected at a cost of about 57,000l., from the designs of Messrs. Wyatt & Boardman, architects.

MARKET HARBOROUGH DRAINAGE.

THE main sewerage scheme for the united districts of Market Harborough and Great Bowden, in Leicestershire, and Little Bowden, in Northampton, is now completed, at a cost of upwards of 16,000l. The work consists of over nine miles of pipe sewers, varying in diameter from 9 in. up to 24 in., together with elaborate flushing arrangements, and other works in connexion with the sewers, including several river and brook crossings.

The sewage is conveyed by gravitation to land adjoining the river Welland, about two miles below Market Harborough. This land, twelve acres in extent, has been prepared for irrigation and intermittent filtration, and is now in full working order, growing crops, and delivering an effluent quite clear.

The work of forming and connecting the private drains has been going forward during the past six months, and is now making rapid progress towards completion. This work is in almost all cases being carried out by the Local Board for the private owners, under the direction of the surveyor to the board.

The old sewers are being utilised for storm-water, thus forming a duplicate system, to the great relief of the sewage-disposal area, and a contract has been recently let by the Local Board for works to supplement these old sewers, in order to more efficiently deal with the storm-waters falling on portions of the district.

The contractor for the whole of the contracts is Mr. G. Stevenson, of Eekington, and he has carried out the work under the direction of Mr. E. G. Mawbey, the surveyor to the Local Board; Mr. J. B. Everard, of Leicester, acting as consulting engineer.

FROM SCOTLAND.

Fraserburgh Harbour of Refuge.—The sub-committee appointed by the Convict Labour Committee to take evidence as to the most suitable site for a harbour of refuge on the north-east coast of Scotland sat at Fraserburgh a few days since. Sir Frederick Evans, hydrographer to the Admiralty, presided. Sir Alex. Anderson, chairman of the Harbour Board, said that the Committee had proceeded with their works on the recommendation of the Commission of 1859, and specially of Captain Washington. Until recently, they had looked to the extension of the breakwater as sufficient for the purpose which the Government had in view, but for a harbour of refuge now to be constructed on a large scale, the whole bay of Fraserburgh was specially suited, protected as it was by Cairnbulg Briggs on the south and south-east, and it might be sheltered by a breakwater extending from the existing one to whatever point might be resolved upon. Sir Frederick Evans intimated that they had received a petition from the Harbour Commissioners and the inhabitants of Fraserburgh last year. They understood that there were two proposals,—one of large dimensions, amounting to 70,000l., and a smaller one of 50,000l. Sir Alexander Anderson said they understood the large undertaking was to be a national harbour, and they had put in their claims that such a national harbour could be constructed at a smaller expenditure at Fraserburgh than almost at any other place. Mr. Buchan, resident engineer, in reply to Colonel Smith, gave engineering evidence chiefly as to the mode of construction proposed, the cost and period over which the works would extend, and spoke as to the facilities afforded for the location of the convicts near the quarries at Kinnaird Head, and other matters referring to the plans and nature of the works proposed.

Grangemouth New Townhall.—Mr. Macpherson, Chief Magistrate of Grangemouth, has received a letter from the Earl of Zetland's Commissioners intimating that Lord Zetland is willing to contribute 500l. towards the erection of the proposed new Townhall.

Kilmarnock: The M'Kie Burns Library.—The valuable Burns Library of Mr. James M'Kie, consisting of about 800 volumes, together with a number of Burns relics, scrap-books, &c., has been formally handed over to the Corporation of Kilmarnock by the subscribers to the fund for the purchase of the collection, with a view to its permanent preservation in the Museum of the Kilmarnock Burns Monument. The movement, which originated with the Kilmarnock Burns Club, has been liberally supported by the public, and the committee have been enabled not only to

pay the price agreed upon with Mr. M'Kie (350L.), but also to fit up a bookcase in the Museum for the reception of the library. On the occasion of the presentation, Mr. Colin Rae Brown, London, also presented to the Museum a life-sized bust portrait of Burns, which is said to have been painted by Nasmyth from his original oil sketch for the proprietor of a well-known tavern resort by literary men in George-square, Glasgow; and Ex-Bailie Baird, on behalf of Mr. Alexander S. Mackay, artist, Edinburgh, presented to the Museum a portrait of the late Mr. Arch. Mackay, historian of Kilmarnock, painted by the donor.

BUILDING PATENT RECORD.*

APPLICATIONS FOR LETTERS PATENT.

- 3,804. W. J. Williamson, Deptford. Fire-places for consuming smoke, &c. Aug. 3, 1883.
 3,843. W. Clark, London. Fireplaces and fire-backs. (Com. by J. H. Burnam, Fayetteville, U.S.A.) Aug. 7, 1883.
 3,852. G. Droghorn, Inverness. Construction of Venetian blinds. Aug. 8, 1883.
 3,870. C. J. Dobbs, Middlesbrough. Manufacture of paving blocks from furnace-slag, &c. Aug. 9, 1883.
 3,887. J. Finney, Bocking. Attaching door-knobs to their spindles, &c. Aug. 10, 1883.
 3,916. W. Kemp, Miller's Dale. Kilns for burning lime, bricks, &c. Aug. 13, 1883.
 3,941. H. J. Hadden, London. Artificial stone. (Com. by J. Hemmerling, Dusseldorf, Germany.) Aug. 14, 1883.
 3,947. H. Sutton, London. Brushing apparatus, for cleansing walls, ceilings, &c. Aug. 14, 1883.
 3,951. T. S. Truss, London. Traps for sanitary purposes, &c. Aug. 15, 1883.
 3,964. P. Jensen, London. Kitchen stove-plates. (Com. by F. Kohl, Vienna.) Aug. 15, 1883.

NOTICE TO PROCEED

has been given by the following applicants on the dates named:—

August 7, 1883.

- 1,658. J. Wright, London. Manufacture of cement, &c. April 3, 1883.

August 10, 1883.

- 1,705. T. C. Olney, Manchester. Hot-water apparatus for heating buildings, &c. April 5, 1883.

- 1,762. R. H. Reeves and S. Reeve, London. Construction of flues, chimneys, and grates. April 7, 1883.

- 2,079. H. H. Lake, London. Disinfecting water-closets, sewers, &c. (Com. by C. F. Pike, Philadelphia, and E. Z. Collings, Camden, U.S.A.) April 24, 1883.

- 3,154. J. M. Shaw, Glasgow. Cooking ranges. June 26, 1883.

- 3,225. E. Raitt, London. Water waste-preventers. June 29, 1883.

August 14, 1883.

- 1,782. H. A. Walker, London. Window-blind rollers, &c. April 9, 1883.

August 17, 1883.

- 1,843. R. Oakley, London. Deflecting and injecting exhaust roof-ventilator and chimney-cowl. April 12, 1883.

- 1,845. R. Oakley, London. Ventilating-stove. April 12, 1883.

- 1,846. R. Oakley, London. Appliances for ventilating buildings. April 12, 1883.

- 1,906. J. A. Hanna and T. F. Shillington, Belfast. Stoves. April 14, 1883.

- 2,078. D. S. Keith, Toronto, Canada. Water-closets, &c. April 24, 1883.

- 3,013. W. Ayres, London. Stench-traps for drains, &c. June 18, 1883.

- 3,488. J. Fairbairn, Edinburgh. Water-closets, urinals, lavatories, &c. July 16, 1883.

ABBREVIATIONS OF SPECIFICATIONS,

Published during the week ending August 11, 1883.

- 5,876. T. H. Thompson, Manchester. Ventilating Buildings. Dec. 9, 1882. Price 6d.

Ridge-tiles are employed, which have openings on each side, and the wind, blowing through these, induces an upward current in passages formed in the walls leading from the different rooms and passing up the roof to these ridge tiles.

- 5,884. W. H. Beck, London. Combustion moderator or regulator for stoves, &c. (Com.

* Compiled by Hart & Co., Patent Agents, 186, Fleet-street.

by C. J. Petit-Badre, Paris.) Dec. 9, 1882. Price 2d.

The fireplace is circular in shape, and two sliding doors are fitted, which can slide round the fireplace and regulate the combustion. (Pro. Pro.)

- 5,924. J. H. Johnson, London. Decoration of walls, &c. (Com. by C. Juncker, Paris.) Dec. 12, 1882. Price 2d.

Flowers, plants or leaves, &c. are immersed in a solution of gutta-percha and then placed between two sheets of the same, which are worked into all the depressions of the substances between them. The sheets of gutta-percha are then applied to the wall by means of heat and moisture, and can be bronzed, gilded, or varnished, &c., as required. (Pro. Pro.)

- 5,982. T. Smith and J. Drewitt, London. Brackets for curtain rods. Dec. 14, 1882. Price 6d.

On a plate is fixed a hook or clip by which the rod is held.

Published during the week ending August 18, 1883.

- 5,851. F. A. Binney, Bowdon. Ventilating shaft or chimney. Dec. 8, 1882. Price 2d.

The chimney or shaft is constructed with six or eight ribs, in each of which are parallel openings near the top, with shields fitted outside to catch the wind, and force it into the shaft. (Pro. Pro.)

- 5,879. J. E. Walsh, Halifax. Joints, bearers, and coverings for roofing, pillars, &c. (Com. by M. G. Mitter and L. A. Hoffman, Berlin.) Dec. 9, 1882. Price 6d.

These consist of metal plates so formed and bent as to make the joints water-tight, and form troughs for carrying away the water, and allow a channel for air circulation below.

- 5,890. A. Shelmerdine, Manchester. Doors to exclude draught, dust, and weather. Dec. 9, 1882. Price 2d.

A strip of wood is inserted in a groove in the bottom of the door, and kept therein by springs. A stud on the end of the strip enters an inclined slot in the jamb of the door-frame, by which the strip is forced down on the floor when the door is closed. (Pro. Pro.)

- 5,892. J. White, Edinburgh. Construction of chimney and ventilating cowls. Dec. 9, 1882. Price 2d.

These are stationary cowls, which have free narrow outlets, narrowest at their outer lips, and widening inwardly. (Pro. Pro.)

- 5,900. C. Brothers, London. Combined ventilating and fire-extinguishing apparatus. Dec. 13, 1882. Price 2d.

From a water main outside the building, a series of pipes fitted with numerous jets or perforations, are led to all the rooms, by which they can be flooded in case of fire. When the water is turned off the pipes act as ventilators. (Pro. Pro.)

- 5,992. H. Hoyles, Sheffield. Stove grates. Dec. 15, 1882. Price 6d.

These are independent stove-grates, which stand in a recess, and are fitted with a movable smoke flue, and a radiating plate over and round the fire, with an ash-pan below.

- 5,996. C. W. Gannett, Southsea. Flushing apparatus for water-closets. Dec. 15, 1882. Price 2d.

The cistern has a syphon, in the short leg of which is a valve bucket connected to a lever. On the pull being given to the lever, the bucket forces the water into the bend of the syphon, and starts the syphonic action which empties the cistern. (Pro. Pro.)

- 6,009. J. M. Hart, London. Locks and latches. Dec. 16, 1882. Price 2d.

The latch bolt is so fitted that it can be withdrawn by pressure on the handle. (Pro. Pro.)

- 6,039. F. Walton, Twickenham. Manufacture of mosaic floor-cloths, and other like mosaic fabrics. Dec. 18, 1882. Price 10d.

Linoleum is made of various colours, and then cut into the shapes required. These different coloured pieces are then secured by pressure, &c., on a backing.

- 6,049. R. H. Leask, Dublin. Water-closets. Dec. 19, 1882. Price 6d.

The basins of these closets are tilting or rocking ones, and are actuated by the same handle as admits the water supply, and governs the discharge.

- 6,069. J. Williams, London. Safety-valves for kitchen boilers. Dec. 20, 1882. Price 6d.

These consist of a valve attached to a stem or rod, which passes through the casing, and on the top of which is a weight.

A Cast-iron File.—One of the more interesting inventions shown at the recent Railway Exposition at Chicago was a cast-iron file, the merit of which lies in its extreme durability as compared with the ordinary steel file. Metallurgists assert that, in hardening cast iron, brittleness and want of tenacity increase with the increase of hardness. In the file in question there is from 3 to 4 per cent. of carbon, and the tenacity, as compared with steel, bears a ratio of 6 to 1. It is claimed for cast iron that it is a true carbide of iron, whereas steel is an oxidized carbide. One breath of air, while the metal is being reduced to a true carbide, reduces it to an oxidized carbide.—Iron.

THE IMPROVEMENT OF VIENNA.

SIR.—I have seen a letter entitled "The State of Vienna" in your issue of the 4th inst. [p. 164], signed by Mr. John Smeaton, in which he speaks of "the great boon the city would acquire by the bridging over of the Wienfluss." . . . "If the municipality would only take up the matter in earnest." This Wienfluss I would describe as an unsightly, immense, open ditch, running through the best part of the city, and occupying more than double the space required for carrying off the greatest periodical rushes of water which accumulate sometimes suddenly from the mountains higher up the river during great storms and from the melting snows. I would ask you, as one who is personally deeply interested in the carrying into effect of the Wienfluss Cover Scheme, and forming a boulevard over the top of its cover, to kindly add to the information on this matter already conveyed through your valuable journal in the article referred to, that "the City authorities of Vienna" have only a few months ago actually decided to carry into effect these cover works themselves, so that this improvement to the city will, at last, become a reality and not merely the earnest desire of those in authority, as it undoubtedly has been also the general desire of the residential population of that handsome capital, who have not failed to acknowledge for many years past this one great flaw; namely, the open, unsightly, and filthy river called the "Wienfluss; and that the best remedy would be to cover it in."

I enclose my card.

AN ADMIRER OF VIENNA.

PREVENTIBLE ACCIDENTS.

SIR.—The Times of last week contains reports of three preventable accidents, by which sixteen men have lost their lives, and three others were severely injured. In the one at the Wheel Agar Mine, near Redruth, the wire rope used for raising the cage in the shaft suddenly broke, and the cage, containing twelve men, went to the bottom, and all the men were killed. In another, a lift at a warehouse in Chiswell-street, London, a similar thing occurred; the rope suddenly broke, and two men were killed by the cage falling to the bottom. In the third case at Dunfermline, two men were killed and three others severely injured by the cage in which they were ascending being overdrawn, and dashing them against the roof of the engine-house.

Now these things ought never to have occurred. Many contrivances have been invented, which are perfectly successful, for preventing the evil effects of over-winding, and for sustaining the cage when the rope or chain breaks, so that there is no excuse whatever for cages being used without them, and I trust the Home Secretary will have his attention called to the matter, and will use his authority for compelling the adoption, in all shafts and lifts where ropes and chains are used, of one of the several contrivances designed to prevent accidents from these causes.

E. GRIMES.

"COAL YARD."

SIR.—In an article last week [p. 212] you mention the tolerably well authenticated fact that Nell Gwynn was a native of Coal-yard,—although, as in the case of Homer, many other places are willing to claim the honour, and you ask why the name should have been altered. The reason is, I think, easily explained. The remarkably narrow way called Goldsmith-alley, of which you gave an engraving many years ago, has by a much-needed improvement (now that a mortuary and casual ward have been erected, and an additional entrance made to the parish stone-yard) blossomed into a fairly wide street. Coal-yard,—I drop the unnecessary prefix,—had not a very euphonious sound, as the parochial authorities, I presume, availed themselves of the opportunity of giving the name of Goldsmith-street to the whole thoroughfare extending from Macklin-street to Drury-lane.

In the "Universal British Directory" for 1796, I find two other Coal-yards, in Willow-street and Goswell-road; now, the name seems to be "lost to view," not to say "to memory dear." It would be interesting to learn the reason why these places were so called.

F. A. CHART.

AN IMPROVED AUTOMATIC GAS REGULATOR.

MESSRS. J. & E. TUCKETT, of Paul-street, Exeter, have just patented an improved gas-regulator. The new regulator is a simple and ingenious piece of mechanism, which can be used without causing inconvenience to existing gas arrangements. It is fixed near the meter, and consequently exercises complete control over the entire supply on any given premises. It is automatic in action, the result being a clear, steady light, of which, if out of 100 burning together, ninety-nine are simultaneously extinguished, it is asserted that there will be no perceptible variation in the rise or pressure of the single flame remaining. A saving of from 25 and in some cases of even as much as 50 per cent. on gas bills is claimed as the direct consequence of the use of the new regulator, which being free from complicated machinery, glycerine, or other chemical preparations, is said to require no further attention when once fixed.

GILCHRIST ENGINEERING SCHOLARSHIP.

THE Gilchrist Engineering Entrance Scholarship at University College, London, will be open to competition at the end of September. The conditions of examination are this year somewhat altered in a direction which places the scholarship better within the reach of those for whose benefit it was founded. The detailed regulations can be obtained on application to the Secretary of University College. The following is a summary of them:—Candidates must be under nine and a half years of age, and must send in notice to compete by the 23rd of September. The subjects of examination are:—1. Elementary mathematics; and 2. Any two or more of the following five subjects, —mechanics, mechanical drawing, essay on one of three given subjects connected with mechanics or engineering, French or German; the use of tools, either carpenter's tools, or the lathe (wood or metal), or the file. The scholarship is of the value of 35*l.* per annum, and is tenable for two years.

There is also at University College a Senior Engineering Scholarship, awarded at the close of the session, of the value of 80*l.*

DANGER FROM LIGHTNING, &c.

SIR,—An article in last week's *Builder* says: "If the building be safe, the people taking refuge in it will be safe also. As to the process of making buildings safe" [that is, from lightning] "we are not among those who hold that there is any doubt whatever. The rules for protecting buildings are known."

Do me the favour of sending me, or tell me where I can obtain, the said rules.

C. R. LINDSEY.

Glen Lea, Dulwich Common.

SIR,—Let me thank you for the first article in your last issue. It recalled vividly my old friend, the late Dr. Maughan, a man who was forgotten long before he died, though there may yet be a few who will recall his name in connexion with the Adelaide Gallery, the fine light, Carrara water, or some other of the patents which he produced. He possessed indeed, the inventive, or rather adaptive faculty, combined with such inaptness for practical life that he rarely reaped the fruits of his brains. He was acquainted with Faraday, and was lecturing on electricity about the time Faraday was engaged in his experiments with the telegraph. Some twelve years since, we were walking up the Clapham road when we heard the mutterings of distant thunder. The Doctor paused, wheeled round in front of me, and, with a tap of his stick on the pavement, posed this question, "Now, what would you do, sir, in case of a severe storm?" "Get home if I could, and watch it from the attic," was my reply. The stick came down with a sharper tap as the old man testily blurted out, "The stupidest answer I ever heard! The only course for a rational and instructed being to pursue would be to prostrate himself upon the ground, and well out in the rain. Why, if this storm proved dangerous, I would not hesitate to lie down in the kennel here! It once happened to me," continued my learned friend, "to be overtaken by a terrible storm in the country. At first, I took refuge under a cart-shed, but as the discharges of electricity came nearer I reflected on my folly, and, quitting my shelter, rolled myself in some long

clover grass, till I was soaked through, and there remained till the danger was passed. And I was justified, for on the edge of that clover field stood a fine old oak which the lightning had stripped of the larger portion of its bark." You will notice from this theory that to be safe from lightning it is not only necessary to seek a minimum elevation, but to be thoroughly wet. Alas for the society that will only permit a lunatic to comply with the behests of science!

A. B.

LAND-TAX.

SIR,—I am pleased to see that one, at least, of the readers of the *Builder* is sufficiently interested in the above, to desire further information. That the incidence of any portion of the national taxation should be in a state of fog and uncertainty is, I think, condemnatory of it, and shows that a change is required.

In reply to your correspondent (p. 130, *ante*), I may state that the table of rates given in my former communication was made by the late Mr. McQueen, for many years secretary to the Financial Reform Association, and a man who devoted his life to the investigation and elucidation of fiscal questions. The amounts in the pound paid by the various counties as given in the table, have been ascertained, I believe, by dividing the annual value of the property of each county, as given in schedule A of the Property and Income Tax, by the amount of Land-Pax contributed by that county, and the very small figures placed against some of the counties seem to show the action of two causes, viz., the large area of redemption, and the very large increase in value. If your correspondent desires to learn yet more on the subject, I cannot do better than refer him to the almanack issued yearly by the Financial Reform Association, and published by Longmans, in which effective mention is made of this subject.

I take this opportunity to correct some printer's errors in the table, forming part of my former communication (see *Builder*, June 2, 1883, p. 758). They should read:—

Lincoln	s. d.
.....	0 2½
Middlesex	1 6½
Monmouth	0 2½
Wilts	0 5½
Scotland	0 0½
E. GRIMES.	

OLD PLASTERING.

SIR,—The use of *vettle*, or reeds, such as Mr. H. T. Percival describes (p. 234, *ante*) as used in plastering the old Manor-house at Brigstock, Northamptonshire, seems of very ancient origin.

The old Church of St. James at Avebury, in Wilts, which has just been restored (in part, awhile ago, from the designs of Mr. E. J. Withers, of Adam-street, Adelphi; and more recently under Mr. C. E. Ponting, architect, of Marlborough), exhibited similar work in its lately discovered ancient clearestory windows. These are Saxon, each opening being a circular one, hewn out of stone. I happened to visit the church the other day in company with Mr. Ponting, and he pointed out some holes all around the stonework: by these the basket-work was attached; and on the framework of wicker thus formed the plastering was pricked up. Some of the original old twigs and plastering were intact at the time of finding.

HARRY HEMS.

TRADE CIRCULARS.

As a provincial architect, I am astonished at the number of trade circulars that reach me daily. Nearly every post brings a batch,—large sheets, small sheets, books, show-cards, pamphlets, and samples; and if I were to preserve all I receive for future reference (and I should like to) I should require an extra office and clerk for arranging them, to say nothing of the wall-space to hang the cards upon. The result is that the waste-paper basket receives by far the larger portion. This, to me, appears to be a great waste of cash, and must come out of the profits. I am quite alive to the importance of being in possession of a knowledge of the various manufactures, and carefully scan all circulars I receive, and keep large piles for reference, the accumulation of nigh upon forty years; but it has often occurred to me that if something like order were adopted by the senders, in the sizes of their documents, they would be much more likely to be saved, and much easier

for reference. Suppose, for instance, that all documents were issued foolscap size, a file of these would not be unsightly, and would fit the ordinary foolscap receptacles, and references would be facilitated by turning over leaves all the same size, instead of which my shelf of trade circulars, although kept as well as can be, is a complete muddle, and to find what you require is like searching for a needle in a bundle of hay. As an instance, this morning's post brought me two documents, one a book 6 in. by 3½ in., and another a sheet 3 ft. 3 in. by 2 ft. 2 in. The question is what am I to do with them,—for they are both worth saving? H. M.

COMPENSATION CASES.

BROWN V. LONDON AND SOUTH-WESTERN RAILWAY COMPANY.

This case was heard before Mr. Under-Sheriff Abbott and a special jury at the Sessions House, Newington-causeway.

It appeared that Mr. Brown held the lease, for some thirteen years unexpired, of the beerhouse known as the [Railway] Bell, in Upper Kennington-lane, adjoining the Vauxhall Railway Station, at a rental of 60*l.* a year, and the company contended that the claimant was only making a net profit of some 50*l.* a year, instead of 300*l.* per annum, as put forth by his accountant.

Mr. Edmund F. P. Fuller (Fuller & Fuller) valued the claimant's lease at 500*l.*, the inventory at 178*l.*, and stated it as his opinion, which was based on large and varied experience in public-house and beerhouse cases, that the claimant should receive from three to five years' annual profits on his trade as compensation for disturbance; and Mr. Kelday likewise valued the interest at 2,000*l.*, including everything.

On behalf of the company, Mr. Harry Jones (Hunt, Stephenson, & Jones), and Mr. V. Buckland said there was no improved value in the lease, though it was granted so long back as 1865, at 60*l.* per annum; and Messrs. Warlters, Lovejoy, & Miles, and Messrs. Swann & Orgill stated that from 500*l.* to 650*l.* was the outside value of the lease and goodwill, including fixtures.

The jury returned a verdict for 1,850*l.* It is said that the company's sealed offer amounted to only 500*l.*

WATER FITTINGS.

At the Greenwich Police-court the other day, Thomas May, of 12, Holmshaw-road, Lower Sydenham, appeared to answer twelve summonses at the instance of the Lambeth Water Company. The first six were for contravening the fifth regulation made under the Metropolitan Water Act, 1871, by not having separate communication pipes to six houses, Nos. 13, 17, 21, 25, 29, and 33, Miall-road, Lower Sydenham. The remaining six summonses were for having a connexion with the pipes and fittings of the adjoining houses, Nos. 11, 15, 19, 23, 27, and 31, the same houses being supplied with water by the company.

Mr. Bealey appeared in support of the summonses, and said that the defendant was a builder in Miall-road, Sydenham. In July, 1882, he made the usual application to the company for a water supply to No. 11. Water was laid on to that house and subsequently to Nos. 15, 19, 23, 27, and 31. Having had the water laid on to those houses, the defendant committed an act which he (Mr. Bealey) must characterise as one of the meanest frauds that had ever come under his notice. The houses had odd numbers on the one side of the road and even on the other. The defendant, having had the water laid on at alternate houses, bored a hole between the houses, and supplied every other house with water from that adjoining it. The water-rate was only 1*l.* a year.

Mr. Johnson, collector, said that he had received no rates from Nos. 13, 17, 21, 25, 29, and 33. The defendant said the rates had not been demanded.

George Henry Lee, clerk in the water company's office, produced the applications made by Mr. May for supplies of water to the alternate houses. The defendant said he had paid all rates demanded of him, and if he had done wrong in the present instance he had done so in ignorance. The pipes communicating between the houses were there when the water was laid on.

James Pollard, a labourer in the employ of the company, said that this was not the case, and his evidence was corroborated by Mr. McNeil, district foreman.

John Quinn, tenant of No. 29, deposed that during his occupation there had been a supply of water to the house.

Mr. Balfour, the magistrate, said it was a serious offence. The full penalty was 5*l.* in each case, and he imposed a fine of 2*l.* in each case, amounting, with costs, to 13*l.* 4*s.* in all.

DANGEROUS STRUCTURES, UNDER METROPOLITAN BUILDING ACT.

Mr. PULLEN appeared to a summons taken out at Lambeth (before Mr. Biron), on behalf of the Metropolitan Board of Works, by Mr. Charles A. Roberts, for having neglected to take down the front wall of the house 2, Clarence-place, Amelia-street, Walworth, to the level of the pavement, or having otherwise secured the same. Mr. William Arnold, solicitor, Southwark, appeared for the defendant.

Mr. Banister Fletcher, one of the district surveyors of Newington, said that he made a survey on the 1st of June, and pronounced the premises dangerous so far as the front wall was concerned. The front wall required taking down or securing. He produced the plan, which showed a bulging, and that work could be made good in four days. In cross-examination, the witness said he had been eight years a district surveyor, and had a large private practice. He had done work for Mr. Pullen in 1881-2, and was paid 300*l*. The defendant had considered his bill excessive, as it was 568*l*. The disagreement between them had not caused the notices to be served.

Mr. Arnold denied entirely that there was the slightest necessity to bring his client before the Court, or to put him to the expense of doing the work mentioned in the summons.

Mr. Edward T'Anson, architect and surveyor to various bodies, stated that he had inspected the building, and considered it safe for ten years at least. The front wall, at all events, was quite safe in his opinion for that period, and he did not consider it required even a tie.

Cross-examined: He knew the party wall and front were not properly bonded. He noticed repairs had been done, and saw no crack in the plaster inside, but a slight crack outside. He could not swear the brickwork was not decayed, but he did not notice anything to show that it was.

Mr. Henry Phillips, architect and surveyor, of several years' standing, said he had known the premises a long time, and superintended the repairs of the next house years ago. The house No. 3 was in the same state as it was twelve years ago, and he considered a tie would be useless.

Mr. J. Stone also gave evidence, and in his opinion the wall was perfectly sound, and it was followed by Mr. Robert Green, foreman to Cubitt & Co., who said he had inspected the house, and considered it well able to stand for years, and that the wall was a good and substantial one.

James Taylor, bricklayer, and Charles Gunner, builder, gave evidence likewise in support of the defence.

Mr. Biron proceeded to give the house in question, and afterwards gave his decision against the Board of Works, and considered it was a case that should not have been brought before the Court. The wall, in his opinion, was quite safe; in fact, the house seemed as safe as the Court they were in. After the inspection he had made, and the evidence brought forward for the defence, he must dismiss the summons, with costs against the complainants.

Miscellaneous.

Steam Engines for Electric Lighting at the Fisheries Exhibition.—Mr. Paxman, of the firm of Davey, Paxman, & Co., who have supplied all the engine power for the electric lighting of the Fisheries Exhibition, gave a dinner on Wednesday night to the scientific men connected with the lighting. Mr. Birkbeck, M.P., presided, and complimented Mr. Paxman on his public spiritedness in supplying the engine power for the largest display of electric lighting as yet made. The plant consists of seven engines,—one of 400-horse-power, being of novel type, and this had been purchased by the Government for the South Kensington Museum. It is fitted with automatic expansion gear, which admits to the cylinder at each stroke the exact quantity of steam required for the work then being done, the cut-off valve being controlled entirely by the governor. The running is perfectly steady and all that could be desired. A second engine of importance is one of compound type and excellent design, working with 120 lb. of steam supplied by two boilers of locomotive type, up to 250-horse-power. The remaining engines are of the ordinary type, but of unusually good workmanship, and developing about 100-horse-power each indicated power. After the dinner the party visited the engine-room and the principal parts of the electric lighting machinery.

Maldon.—The Rural Sanitary Authority are about to carry out works of main sewerage at Burnham, and to extend the drainage of Southminster, from plans prepared by Mr. Alfred B. Brady, A.M.I.C.E., who is also preparing schemes for the drainage of the villages of Tillingham and Steeple, which is very urgently needed.

St. Paul's Mission Hall, Penton Place, Walworth.—The foundation-stone of this building was laid on Tuesday last by the Bishop of Rochester. It will accommodate 600 adults. The contractors are Messrs. H. Burman & Sons, of Walworth; and the architects are Messrs. Romaine-Walker & Tanner, of Buckingham-street, Adelphi.

A Ship Railway in the Sandwich Islands.—In view of suggestions recently made to cut the Gordian knot of the Suez Canal difficulty by constructing a ship railway from the Mediterranean to the Red Sea, on the principle proposed by Captain Eads for crossing the Isthmus of Panama, it is interesting to note that the Hawaiian Government has just had constructed at Honolulu a ship railway, as it has hitherto been found necessary to send all vessels requiring repair to San Francisco, the port of Honolulu being unsuitable for operations of that kind. The marine railway will answer the purpose of a dry dock, and it may be described as a sort of cradle or cage in which the ship is enclosed, its keel and sides being supported from end to end. The cradle is so constructed that the weight of the vessel is equally distributed, and that the pressure on the ground is not heavier than that of an ordinary locomotive. The vessel being thus encased is lifted out of the water by an engine on to an inclined plane, upon which a line of rails has been laid down, and the engine is strong enough to raise to the required height a vessel of 1,700 tons burden. Vessels of higher tonnage can be raised high enough to admit of their hulls being cleaned or repaired, and of their screws being removed. The railway proposed by Captain Eads for Panama would, of course, be a much larger undertaking, involving such serious difficulties as to render it very doubtful whether it is within the range of practical engineering, as we pointed out in our review of the project more than two years ago (see *Builder*, vol. xi., p. 504).

Removal of an Eyesore.—We are glad to note that the long-disused building formerly known as Clerkenwell workhouse, situated in what was formerly called Coppice-row (now the upper end of Farringdon-road), is likely to be speedily removed. The building has been on crutches ever since the construction of the Metropolitan Railway tunnel between King's-cross and Farringdon-street, twenty years ago and more, and its continued existence since it has ceased to serve its original or any other purpose save that of cumbering a site that might be profitably devoted to the erection of artisans' dwellings has long been regarded by passers-by as a reproach to the authorities concerned. We now learn that a portion of the building having just been pulled down by order of the Metropolitan Board of Works, the remainder of the building (as might have been expected) threatens to fall down. Under these circumstances, the Guardians of the Holborn Union have ordered a hoarding to be put up for the protection of the public.

A Liberal View.—At a recent meeting of the Glasgow Town Council, Councillor Dnlop took exception to the Water Commissioners being recommended by a committee to permit Mr. Gale, their engineer, who was paid a salary of 1,000*l*., to advise the Water Commissioners of Hamilton in reference to a new reservoir which they proposed to construct. The Lord Provost, in reply, remarked that if they frankly permitted Mr. Gale to give assistance to neighbouring burghs, he was not only doing good work to them, but he was also benefiting the Corporation. Although this reply by the Lord Provost seems to have been received with satisfaction by the majority of the Town Council, the worthy Councillor who raised the question was not satisfied, and intimated his intention of bringing the subject forward in another way.

Dearth of Water.—Northampton is suffering from a dearth of water, the supply being in the hands of a company; while at Richmond, in Surrey, reports come of the utter breakdown of the arrangements made by the Local Authority for supplying water. The Vestry, in a reply during this last week to a letter from the Local Government Board, states through their clerk that the water supply of the town is twenty gallons per head per day. Great stress also is laid upon the purity and clearness of the water. But, as a matter of fact, we are told that both these statements are untrue. So far from the house-owners receiving the quantity stated, the supply has never reached that amount, while at the present time many houses have been without water for days together, and the sanitary condition of the town is thus seriously jeopardised.

Stained Glass.—A large painted-glass window, subject, the "Crucifixion," is to be placed as a memorial in the parish church of Hyde, Herts. It is executed by Messrs. Pitman & Son.

Drainage Certificates.—In the House of Commons on Monday, Mr. Anderson asked whether there was any rule under which any householder, or any one purposing to buy or hire a house, could apply to the local sanitary authority and, for a reasonable fee, to obtain an inspection and certificate as to the sufficiency of the drainage and other sanitary arrangements, and, if there was no such rule, whether the Government would consider the expediency of establishing such an arrangement with all sanitary authorities.—Mr. G. Russell, in reply, said,—There is no rule under which a person can obtain from the sanitary authority of the district, on payment of a fee, a certificate as to the sufficiency of the drainage and other sanitary arrangements of a house, and the Board think that, as a general rule, it would not be desirable that sanitary authorities should undertake the responsibility of granting such certificates. The sanitary authorities and their officers should be on the watch to discover sanitary defects, and there would be some reason to fear that if such certificates as suggested were granted by the authority they might subsequently be hampered in their action by the fact of the certificates having been given. A certificate might be given without the knowledge of facts which might subsequently come to light, and in the case of old houses it is not always easy to ascertain accurately the facts. These certificates might also be used, although there might be a different condition of things after the examination was made. If, however, a local authority were to propose that the medical officer of health and inspector of nuisances should jointly give such certificates as proposed, on payment of a reasonable fee, the Board would not object to such an arrangement, by way of experiment, provided the duties of the officers were not thereby interfered with.

Church Decoration, Camberwell.—The Parish Church of St. Giles, Camberwell (one of the earliest of the late Sir Gilbert Scott's churches) has just had its chancel decorated, at the cost of the vicar, the Rev. F. F. Kelly. The work has been designed by and executed under the superintendence of Messrs. Shrigley & Hunt, of Lancaster and London. The floor of the sacristy has been relaid with glazed tiles in panels from the works of Messrs. Craven, Danzell & Co., Ironbridge, Shropshire, while a new brass altar-rail has been made and fixed by Messrs. Singer, of Frome. The floor of the chancel has been repaved with red tiles with a border of green. The open timbered roof of the chancel has been painted in lighter tints than the walls. Mr. Almgist is the artist who has painted the figures, and the remaining parts of the decoration have been carried out by Mr. Temple and other assistants. We are glad to hear that some ancient brasses which were removed from the old church have lately been restored to the choir of the present church.

Tenders for Paving and Curbing in Camberwell.—At the last meeting of the Camberwell Vestry, Mr. Middlemass, on behalf of the General Purposes Committee, reported upon the receipt of tenders from Messrs. J. S. Gabriel, E. & H. Bevers, W. Harris, Turner & Sons, Wheeler & Hindle, Mowlem & Co., F. W. Etheridge, and Wilkes & Co., for paving and curbing a number of new streets in accordance with specification. The committee recommended the acceptance of Messrs. Mowlem & Co.'s tender. Mr. Middlemass explained that although Messrs. Mowlem's was not the lowest tender, the committee's experience of other contractors had induced them to make this recommendation. After a prolonged discussion concerning the various tenders, Mr. Reynolds (Surveyor) said that the total value of the work to be performed would be between 5,600*l*. and 6,000*l*. The difference between Messrs. Mowlem's and the lowest tender was about 280*l*., or 5 per cent. on the total outlay. The recommendation as submitted was eventually agreed to.

Peterborough Cathedral.—The foundations of the south-eastern pier, which supported the now demolished Lantern Tower of Peterborough Cathedral, were unearthed on Monday morning, and were found in a crumbling state many inches below the original level.

Queen Anne's Statue.—The City Lands Committee, of which Mr. G. Manners is the chairman, have under consideration a tender for the restoration of this statue, which so long has been an eyesore to the thousands of persons visiting the cathedral.—*Citizen*.

Mosses or Lichens as a Building Material.—According to the *Mining Journal*, in invention the object of which is to render available as a raw material for the manufacture of paper-pulp, millboard, furniture, doors, window-sashes, and so forth, the mosses or lichens so plentiful in nature, and especially white lichens, has been patented by Tallhofs Pappersbruks Aktiebolag, of Jönköping. To render the material suitable for building purposes, such as doors and for furniture, mouldings (ornamental or otherwise), and for imitation sculpture, and the like, the moss is first rinsed in a large vessel, the bottom of which consists of coarse cloth, and in which water is poured over it till the moss is quite cleaned. The moss is removed herefrom to another adjoining vessel, and about 3 per cent. of a glue is added, consisting of resin and soda, and water is mixed with it till it assumes a suitable consistency for being worked by rollers till the moss in a fibrous condition becomes applicable as pulp for paper. The material is then put on two sorting cylinders provided with coarser or finer cloth, according to the product which it is desired to produce. The mass is now mixed with about 20 per cent. of pipe-clay and innocuous colouring materials, he latter according to the colour it is desired to produce, the whole being intimately mixed in a mixing-vessel, after which the mass is conveyed to the usual millboard-making machine, where it is treated as usual in millboard manufacturing, only with the difference that the cylinders or rollers must be so adjusted in size that the length and breadth required is produced. Then as many pieces of millboard thus formed are placed upon each other as required or the thickness desired, and before they are dried, are placed in a strong hydraulic press, wherein they are so compressed that they, after drying, become at least as hard as wood. By drying the compressed piece of millboard in suitable cast-iron dies, the mass can be given the form and appearance desired.

The Duties of House-owners.—At the Lampstead Police-court, on Wednesday, Enoch Jaggs was summoned by order of the Vestry of Lampstead, as owner of five houses in Goldsmith's-place, Kilburn, for allowing them to be a nuisance which was a nuisance and injurious to health. Mr. George Allan Smith, sanitary inspector, gave evidence as to finding No. 2—the kitchen, parlour, first-floor back room, staircase, passages, wash-house, and water-closet—a foul and dirty condition and out of repair. He also read the certificate of Dr. Gwynn, medical officer of health, stating that Nos. 2, 3, 5, and 6 were in such a dirty and dilapidated condition as to be a nuisance and injurious to health. They required cleansing, lime-whiting, and repairing generally throughout. Defendant said he was only the rent collector, and the property had just changed hands. The necessary work had been commenced that day. The Bench made an order for all the houses to be at in a proper state of repair within one month.

Parochial Hall, St. Stephen's, Walworth Common.—A parochial hall and class-rooms in connexion with St. Stephen's Church, Villars-street, Walworth, were opened a few days ago. The buildings, which were commenced last April, comprise a large room capable of holding about 400 persons, and class-rooms for infants and the adult Bible class, together with kitchen and other accommodation. The building is situated on the south side of the church, approached by an arched entrance from Villars-street. The work has been done by Mr. Tattley.

The Northern Pacific Railroad.—Earl Granville having placed at the disposal of the Institution of Civil Engineers one of the six sets of invitations forwarded to the Foreign Office by the Northern Pacific Railroad Company, U.S.A., Mr. George Barclay Bruce, vice-president, has been deputed to attend the formal opening of the line as the representative of the institution. Having been Robert Stephenson's second pupil, and afterwards a trusted assistant of that eminent engineer, this nomination seems to be a very appropriate one.

Blue Lias Lime.—In answer to "Airedale" [p. 131, ante] I beg to say if he had used the best blue lias hydraulic lime for his walls he could have found his walls tight, and he would have had no occasion for plastering them with cement. But he must use blue lias hydraulic lime, not the worthless stuff sold as such by so many dealers, to the great injury of those who sell the honest stuff.—H.

Demolition of Ingram Court, Fenchurch-street.—As might have been expected, the demolition of St. Dionis Backchurch, in Fenchurch-street, is to be followed by the disappearance of Ingram-court, that old court or square named after Sir Arthur Ingram, the benefactor who did so much to restore the church and its surroundings after the Great Fire. According to the *Paper-maker's Monthly Journal*, Ingram-court is to make way for those City improvements which, like "Time's relentless hand" spared neither Troy nor the "Maypole" in the Strand, and the consequence is that one of the oldest businesses in the City,—that of Messrs. Marchant, Singer, & Co., printers and stationers,—is about to be removed to new premises in St. Mary-axe. The larger part of the right-hand side of Ingram-court was occupied by Messrs. Marchant, Singer, & Co., who were among the latest of the old City "houses" to give up the old practice of residing at their place of business. We understand that the younger member of the present firm was born in the large, roomy, old-fashioned tenement, No. 1, Ingram-court, and there are still a good many people in civic circles who remember when the senior partner dwelt there in good old fashion. Now the house and its surroundings will disappear, and the business of the firm will be continued in an equally old precinct, but in new premises. One memento of the early days of the firm,—a wooden printing-press coeval with the early days of printing,—has been presented to and accepted by the authorities of the South Kensington Museum, who have removed it from Ingram-court to add it to their collection. This relic is a fac-simile of the one represented in Maclean's famous picture of "Caxton showing the first specimen of his printing to King Edward the Fourth."

Adlington.—Operations have been commenced for the erection of a new church at Adlington, near Chorley, in lieu of the existing structure, erected in 1839, which it is proposed to retain as a mission church. The foundations of the new building are already dug out, and the ceremony of the public stone-laying will shortly take place. The Vicar of Adlington has presented the site, and the church, which will contain 700 sittings, will be erected from the designs of Mr. Barry, architect, at a cost of 6,885*l*.

Tiverton Sewage.—Some time since the Corporation of Tiverton invited competition drawings for the disposal of the sewage, and in response thereto seven gentlemen have submitted schemes. These have already been considered by the Council, and at a recent meeting it was decided to call in professional assistance for the purpose of awarding the premium for the best scheme. This has been done, and Mr. E. Pritchard, C.E., of Westminster and Birmingham, has been instructed to report thereon.

Lecture Hall, New Southgate.—On Saturday last the foundation-stone of a lecture-hall in connexion with Christ Church New Congregational Church was laid on the Holly Park Estate, New Southgate, by Mr. Samuel Morley, M.P. The hall will seat 300 persons, and adjoining are club, reading, smoking, and retiring rooms, &c. Messrs. Waugh & Chapman, 70, Chancery-lane, are the architects, and Messrs. Brown & Sweetland, of New Southgate, are the builders.

The Corporation of King's Lynn has elected Mr. E. G. Mawbey, late Engineer and Surveyor to the Market Harborough and Great and Little Bowden Local Board, their Borough Surveyor. There were 152 applications for the appointment.

TENDERS.

For boundary-walls, roads, and drains at St. George's, Hanover-square, Cemetery, Hanwell. Mr. A. J. Bolton, architect:—	
Hanson Bros., Southall (accepted)...	£2,891 0 0
For the erection of a detached residence on the St. Aubyn's Estate, Tiverton, for Mr. W. W. Martin. Mr. John Watson, architect, Torquay:—	
Petherick Bros., Plymouth.....	£1,474 0 0
Vaunston & Mumford, Torquay.....	1,339 0 0
Payle & Grater, Tiverton.....	1,190 0 0
For a 30-quarter malt-house at Wellington, for Mr. John G. Wackrill. Messrs. Davison, Inskip, & Mackenzie, architects, 63, Leadenhall-street, E.C. Quantities by Messrs. Curtis & Sons:—	
H. Roper.....	£1,305 9 6
H. T. Darlington.....	1,270 0 0
Oliver Jones.....	1,255 10 9
R. Millington.....	1,250 0 0
Patonson & Son.....	1,198 17 0
Treasure & Sons.....	1,133 0 0
T. & G. J. Groves.....	1,130 0 0
E. Yates.....	1,100 0 0

For the erection of Brixton Tabernacle, Stockwell-road. Messrs. Wheeler & Hollands, 119, Chancery, architects. Quantities by Messrs. Evans & Descon:—	
Barnes.....	£5,580 0 0
Hill Bros.....	5,090 0 0
Bell & Lee.....	4,455 0 0
Higgs.....	4,340 0 0
J. Taylor.....	3,987 0 0
J. O. Richardson.....	3,519 0 0
Smith & Sons.....	3,539 0 0
Holloway.....	3,832 0 0
Cooper & Macey.....	3,795 0 0

For new roads at Finchley, on the Kimbolton Estate:—	
C. Taylor.....	£1,650 0 0
H. Standin.....	1,380 0 0
J. Pizzev.....	1,180 0 0
J. Bell.....	1,085 0 0
Pound.....	907 0 0
J. Taylor (accepted).....	868 18 7

For concrete sewer, for the Finchley Local Board:—	
P. Pound.....	£295 0 0
Pizzev.....	345 0 0
Polard.....	317 0 0
Bell (accepted).....	280 0 0
Strachan.....	210 0 0

For new roads on the Hendon Station Estate:—	
Strachan.....	£3,735 0 0
Walker.....	3,188 0 0
Adams.....	3,176 0 0
Pizzev.....	3,100 0 0

<i>Amended Tenders.</i>	
J. Pizzev.....	£2,489 0 0
Adams.....	2,289 0 0
For the erection of villa residence, stables, coach-house, walling, &c., at Mansfield. Mr. Arthur Marshall, architect, Nottingham:—	
Vickers, Nottingham.....	£2,738 0 0
Crawshaw, Skegness.....	2,450 0 0
Hewitt, Leicester.....	2,360 0 0
Frisby, Mansfield.....	2,265 0 0
Greenwood, Mansfield.....	2,228 0 0
Dudson & Parrish, Nottingham.....	2,183 0 0
Eastwood, Warsop.....	2,178 0 0

<i>Amended Tenders.</i>	
Greenwood.....	£2,304 0 0
Eastwood.....	2,504 0 0
Dudson & Parrish (accepted).....	2,291 0 0

For the erection of a new Methodist Free Church, Mansfield Woodhouse, Notts. Mr. A. Marshall, architect:—	
Alsop, Mansfield.....	£2820 0 0
Redwood, Sutton.....	763 0 0
Stevenson, Woodhouse.....	723 0 0

For alterations at Clerk of Peace's office, Northampton. Mr. Edmund Law, county surveyor, architect:—	
D. Ireson, Northampton (accepted).....	

For paving the carriage-way of the Waterloo-road, for the Vestry of St. George-the-Martyr, Southwark:—	
Wheeler & Hindle.....	£1,976 5 0
G. Rutty.....	1,899 0 0
Turner & Sons.....	1,856 0 0
Mowlem & Co. (accepted).....	1,710 0 0

For the erection of baker and confectioner's shop premises, for Mr. Gundlach, in Glenaele-road, Streatham. Messrs. Wheeler & Hollands, architects:—	
Hill Bros. (accepted).....	£1,300 0 0

For alterations and additions to No. 23, St. John's Wood-road, for Dr. Hakkau. Mr. Thomas Durran, architect, 44, Upper Baker-street:—	
Stevenson.....	£276 0 0
Howard.....	659 0 0
Bodmeads.....	537 0 0
Wright (accepted).....	497 0 0

<i>Plumbing Works.</i>	
Hume.....	£21 0 0
Mourciffe.....	73 0 0

For additions to No. 11, Park-crescent-mews, Portland-place, for Mr. G. F. Coster. Mr. T. Durran, architect:—	
Watts.....	£438 2 6

For rebuilding the last section of the Royal York Turkish and Electric Baths, York-terrace, Regent's Park, for Dr. Jagielski. Mr. T. Durran, architect:—	
Collier & Co.....	£2,983 0 0
Stevenson.....	2,790 0 0
Blyth.....	2,725 0 0
Birch.....	2,650 0 0
Lea & Son.....	2,424 0 0
Howard (accepted).....	2,050 0 0

<i>Engineering Works.</i>	
Jenkes & Co.....	£344 0 0
Whitehead & Co.....	519 0 0
Wildman (accepted).....	487 15 0

<i>Fibrous Plaster Ceiling.</i>	
Battiscombe & Harris.....	135 0 0
<i>Gas Engineer.</i>	
Hockey.....	65 10 0

For sundry works to be executed at No. 45, Rutland Gate, for Madame de Fulbo. Mr. T. S. Archer, architect:—	
J. Carter (accepted).....	250 0 0

For sewerage, levelling, paving, metalling, channelling, kerbing, and making good certain streets, for the Ilkerton Local Board. Mr. Charles W. Hunt, surveyor to the Board:—	
	King-street. (east)
Beardsley & Pounder, Ilkerton.....	£225 5
J. Hawley, Ilkerton (accepted).....	120 240 0

For additional vestry, corridor, &c., to St. Mark's Church, Walworth, for the Rev. R. R. Reaker. Mr. C. N. McIntyre North, architect, 15, Borough:—	
Joselyne.....	£355 0 0
Richardson Bros.....	338 0 0
Marsland.....	313 0 0
Babbs.....	297 0 0

For four shops, Rye-lane, Peckham, for Mr. Monks.
Mr. Harrison, Lyndhurst-road, architect:—

Carter	4787	0	0
Oliver	775	0	0
Stallord	799	0	0
Johnson & Cooper	717	0	0
Avis	717	0	0
Nislett	681	0	0
Castle	694	0	0
Eldridge & Gee	689	0	0
Swain	688	0	0
Tarrant	622	0	0
Eyle	618	0	0
D. D. & A. Brown	597	0	0
H. L. Holloway	593	0	0
Buchan	581	0	0
Parker	573	0	0
Aldridge & Jenvey (accepted)	537	0	0

For stables, greenhouses, and decorations at Mala.
Starts Hill, Orpington. Mr. St. Pierre Harris, architect:—

Wood	519	0	0
Taylor & Son (accepted)	288	10	0

For extensions at The Hawthorns, Bromley, Kent, for Mr. R. Jaques. Mr. St. Pierre Harris, architect:—
Crowley (accepted)..... £119 0 0

For repairs and alterations to stables and cottage at Tubbenhens, Orpington. Mr. St. Pierre Harris, architect:—
Wm. Wright (accepted)..... 135 0 0

For sanitary works at Starts Hill, Farnborough, Kent for Mr. J. L. Lovibond. Mr. St. Pierre Harris, surveyor:—
Killick, Bromley (accepted).

For additions and alterations to 10, Market-square, Bromley, Kent, for Messrs. Baxter, Payne, & Lepper. Mr. St. Pierre Harris, architect:—

Building	£235	0	0
Arnold	164	0	0
Payne	161	0	0
Crosley	144	0	0
Taylor & Son (accepted)	120	0	0

For the construction of roads and sewers on the Manor Park Estate, Streatham (contract No. 2). Messrs. Wheeler & Hollands, surveyors:—
Harris, Camberwell (accepted)..... £2,340 0 0

For the erection of three small shops, Manor Park, Streatham Common. Messrs. Wheeler & Hollands, architects:—
Whiteman (accepted)..... £635 0 0

For repairs to No. 1, the Minories, Aldgate, for Mr. Deputy East. Mr. R. Stark Wilkinson, architect:—
P. J. Doherty (accepted)..... £213 0 0

For studio, Bedford-gardens, for Mrs. Silver. Mr. R. Stark Wilkinson, architect:—
H. T. Dye (accepted)..... £550 0 0

For partially repairing and re-seating the Parish Church, Wing, Rutland. Mr. G. Vials, London, architect:—

	Pitch Pine	Deal
J. Woolston, Stamford	£510	9 0
W. Wade, St. Neot's	498	0 0
Hendall Bros., Lymington	483	0 0
T. Woolston, Stamford	474	0 0
Roberts Bros., Stamford	417	0 0

* Accepted.

For channelling the Harrington-road, Gordon-road, and Longold road, Ealing, for Mr. Edward Wood. Mr. R. Willey, 60, Duquesne-hill, surveyor:—

Piracy	£435	0	0
Ford & Everett	120	0	0
Killingback	470	0	0
Nowell & Robson	359	0	0

For alterations and additions at No. 11, King-street, Baker-street, for Mr. J. T. Williams. Mr. Thos. Durrans, architect:—

A. G. Belling	£181	0	0
W. Mason	525	0	0
Edgar	525	0	0
Howard	521	0	0
Buteher	488	10	0

For alterations and additions to Stoke House, Ramsgate. Mr. Alfred R. Pate, architect, 14, Bloomsbury-square:—

Duckett	£630	0	0
Forsyth	581	0	0
Martin	434	0	0

For erection of house at Sudbury, near Harrow, for Mr. W. Richardson. Mr. Charles Jones, architect, 131, Finsbury-street:—

S. Barren & Williams, London	£580	0	0
Coulthard, London	569	0	0
Bibham, Alporton (accepted)	481	0	0

For works at St. George's Church, Tufnell Park. Mr. George Truefit, architect:—

Stuart	£283	0	0
Warne	720	0	0
Grover	228	0	0
Hall & Wickes (accepted)	213	0	0

For works at Church-room, Tufnell Park. Mr. George Truefit, architect:—

Stuart	£237	0	0
Warne	233	0	0
Grover	228	0	0
Hall & Wickes (accepted)	213	0	0

For building Primitive Methodist Chapel at Plaistow. Mr. Dartnall, architect:—

Howard, Canning Town	£710	0	0
East, Plaistow	679	0	0
Morris, Hale & Hart, Barking-road	625	0	0
Mansfield, Stratford	467	0	0
Keen, Plaistow (accepted)	440	0	0
Horlock, Barking-road	440	0	0

For alterations, &c., for Mr. Edwin Parr, 101, Westminster Bridge-road.
G. Mower, Hackney (accepted).

For new shop at St. Alban's, for Mr. J. Fisk. Messrs. Glover & Salter, architects, 1, and 2, Finsbury:—
Messrs. J. & W. Savage, St. Alban's (accepted).

For alterations to Court House, St. Alban's, for Mr. A. Smith, county surveyor, architect:—

D. Ireson, Northampton	£500	0	0
C. Miskin, St. Alban's (accepted)	470	0	0

For three new villa residences at St. Alban's, for Mr. E. T. Wills. Messrs. Glover & Salter, architects:—
D. Ireson, Northampton (accepted).

TO CORRESPONDENTS.

E. O. M.—J. C. E. P.—A. B. W. K.—J. P. E.—W. C. J.—J. T. T.—F. H. R. S. W.—Dr. B. C. W. A. Co.—E. J. T.—H. J.—D. A. C.—C. W. H. L. S.—A. G. B. L. W.—J. L. K. W.—M. H. C.—J. P. W.—W. C. W.—W. C. W.—J. R. C. W. M.—G. C. K.—E. R. W. I. not agree without correspondence as to site, but are satisfied that the statue should be preserved.

Correspondents should address the Editor, and not the Publisher except in cases of urgency.

All statements of facts, lists of tenders, &c. must be accompanied by the name and address of the sender, not necessarily for publication.

We are compelled to decline pointing out books and giving addresses.

Note.—The responsibility of signed articles, and papers read at public meetings, rests, of course, with the author.

CHARGES FOR ADVERTISEMENTS.

SITUATIONS VACANT, PARTNERSHIPS, APPOINTMENTS, TRADE, AND GENERAL ADVERTISEMENTS.
Six lines, about fifty words in length £ 6d.
Each additional line (about ten words) 2d.
Terms for Series of Trade Advertisements, also for Special Advertising, on front page of *The Builder*, by *The Builder*, 46, Catherine-street, W.C. may be obtained on application to Mr. P. J. Doherty.

SITUATIONS WANTED.
FOUR Lines (about thirty words) or under 2s. 6d.
Each additional line (about ten words) 2d.
PREPAYMENT IS ABSOLUTELY NECESSARY.

Advertisements must be sent to the Office at least one day before THREE o'clock p.m. on THURSDAY.

The Publisher cannot be responsible for DRAWINGS, TESTS, MONIALS, &c. left at the Office in reply to advertisements, and strongly recommends that of the latter COPIES ONLY should be sent.

TERMS OF SUBSCRIPTION.
"THE BUILDER" is published weekly from the Office to residents in and out of the United Kingdom, at the rate of 12s. per annum, in advance. Remittances may be made to DOUGLAS FOUDRINGER, Publisher, 46, Catherine-street, W.C.

NOTICE TO ADVERTISERS.

Persons advertising in the *Builder* may have REPLIES ADDRESSED TO THE OFFICE, 46, Catherine-street, Covent-garden, W.C., FREE OF CHARGE.

Letters will be forwarded if addressed envelopes are sent, together with sufficient stamps to cover the postage.

Best Bath Stone.
WESTWOOD GROUND,
Box Ground, Combe Down,
Corsham Down,
And Farleigh Down.
RANDELL, SAUNDERS, & CO., Limited,
Corsham, Wilts. [Advtr.]

Bath Stone.
Facilities for selection and quality unequalled, having upwards of 350,000 Feet Cube
In Stock of all known descriptions.
PICTOR & SONS, Box, Wilts. [Advtr.]

Doubling Freestone and Ham Hill Stone of best quality, in blocks, or prepared ready for fixing. An inspection of the Doubling Quarries is respectfully solicited; and Architects and others are CAUTIONED against inferior stones. Prices, delivered to any part of the United Kingdom, given on application to CHARLES TRASK, Norton-sub-Hamdon, Ilminster, Somerset.—Agent, Mr. E. WILLIAMS, 73, Charlotte-street, Portland-place, W. [Advtr.]

Doubling Freestone, Of best quality, supplied from their own Quarries and Kilns by STARK & HARRIS, Stoke, Ilminster.
HAM HILL STONE, Agent, Mr. E. M. MONTAGNE, 8, Augustus-road, Hammersmith, London, W. [Advtr.]
BLUE LIAS LIME
(Ground or Lump), [Advtr.]

Asphalte.
Seyssel, Patent Metallic Lava, and White Asphaltes.
M. STODART & CO.
Office:
No. 90, Cannon-street, E.C. [Advtr.]

Asphalte.—The Seyssel and Metallic Lava Asphalte Company (Mr. H. Glenn), Office, 38, Poultry, E.C.—The best and cheapest materials for damp courses, railway arches, warehouse floors, flat roofs, stables, cow-sheds and milk-rooms, granaries, tin-rooms, and terraces. [Advtr.]

Immense quantities of
DRY WAINSCOT,
DRY MAHOGANY,
DRY WALNUT,
in all thicknesses.
B. J. HUDSON & SONS,
Whitfield-st., W., and Great Peter-st., S.W. London. [Advtr.]

MICHELMORE & REAP,
Manufacturers of
CHARLES COLLINGS' PATENT.
COLLINGS' PATENT HINGES,
LEVER, SCREW, & BARREL BOLTS.
Self-Acting "FALL DOWN" GATE STOPS,
and IMPROVED GATE FITTINGS of every Description.
36A, BOROUGH ROAD,
DISCOUNT TO BUILDERS. LONDON, S.E.

ZINC ROOFING.
F. BRABY & CO.,
LONDON, LIVERPOOL, GLASGOW.
VIEILLE MONTAGNE BRAND.
NO SOLDER.
NO EXTERNAL FASTENINGS.
PARTICULARS ON APPLICATION. CHIEF OFFICE: 360, EUSTON ROAD, LONDON.

The Builder.

Vol. XLV. No. 217.

SATURDAY, SEPTEMBER 1, 1893.

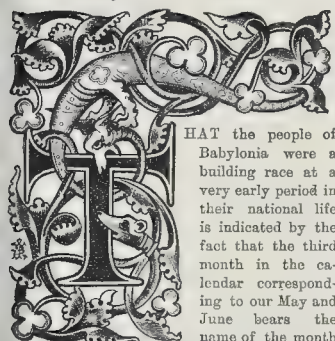
ILLUSTRATIONS.

Union Assurance Society Office in the Wilhelmstrasse, Berlin (Double-Page Engraving).—Messrs. Parry & Reed, Adelphi, London, and Herr Lange, Berlin, Architects.	286
Church of St. Matthew, Kemp Town, Brighton.—Mr. John Norton, Architect.	288
Humphreys' Hall Mansions, and Humphreys' Hall, Hyde Park (Double-page Engraving).—Messrs. Romaine-Walker & Tanner, Architects.	290, 291
Brander Library, Huntly, Scotland.—Messrs. J. & J. R. Rhind, Architects.	293

CONTENTS.

Babylonian Architecture (with Plan).....	272	Discovery of a Roman House in Somersetshire.....	283	"The Coal Yard".....	301
Pennsylvania Warnings of a Water Famine, and How to avert it.....	274	The Balcony of Bakers' Hall: Corridor Decorations.....	283	Colour to the Exterior of Houses.....	301
Progress at Bournemouth and Southbourne.....	275	The Approaches to the Royal Courts of Justice.....	283	New Buildings in Petersburg.....	302
Stratford-on-Avon Re-visited.....	276	New Warehouse Buildings on the Bridewell Estate.....	283	Mt. Sidi to be 2,700 years Old.....	302
College of Architecture.....	276	A New Hospital for Plymouth.....	283	Old Building.....	302
The London Vestries, the Government, and the Metropolitan Water Supply.....	277	Additions to Messrs. R. & S. Rhind's Offices.....	283	Danger from Lightning.....	302
Professional Portraits: A Provincial Competitor.....	277	Fountain of Old Church.....	283	Sub-Contracted.....	302
Architecture and Decorative Art in France.....	278	Brander Library, Huntly.....	284	Dampness.....	302
The Castle of Fribourg.....	278	Union Assurance Branch Office, Berlin.....	284	New Office Buildings for the Lancashire and Yorkshire Railway Company, Manchester.....	302
Humphreys' Hall Exhibition.....	279	Humphreys' Hall Mansions, and Humphreys' Hall, Hyde Park.....	284	Building Patent Record.....	303
The Municipal Buildings of London.....	279	Church of St. Matthew, Kemp Town, Brighton.....	284	Foreign Competitions.....	303
The Study and the Work-room, from a Hygienic Point of View.....	280	Progress of the Vineyard Waterworks for Liverpool.....	287	Compensation Cases: Conolly v. Metropolitan and Metropolitan District Railways.....	303
Polakowsky's Cottages, as they now are.....	281	Wife Archaeological Society.....	287	Provisional News.....	303
The Construction of Proper Walls with Self-Building Mortar.....	281	Cysters and Cists (with Sketch).....	288	Bucks: The Dragon by Chiswick Press, Whittingham.....	304
Japanese Metal Work.....	281	Large Sale of Building Sites at Clifton in Somerset.....	288	The Bathes of Balne's Ayde in the Reign of Charles II. (Lewis).....	304
St. Martin's Priory, Dover.....	282	The Dover Congress of the British Archaeological Association.....	289	Variorum.....	304
The New Bridge at Farnley.....	282	Governmental Work in the West.....	291	Miscellaneous.....	304
Strengthening the Foundations of Waterloo Bridge Pier.....	282	A Neglected Art Epoch.....	291		

Babylonian Architecture.

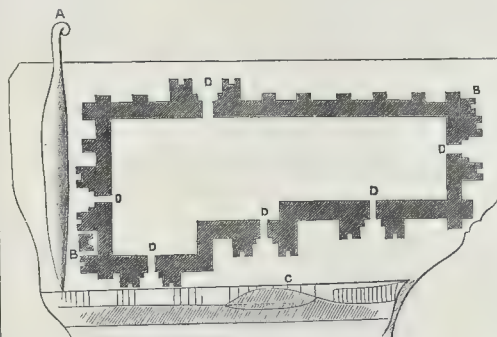


THAT the people of Babylonia were a building race at a very early period in their national life is indicated by the fact that the third month in the calendar corresponding to our May and June bears the name of the month of the "Making of

Bricks." This month Murga was called by the Semitic Babylonians and Arameans, who borrowed the calendar from their Turanian predecessors, the month Sivan, or the "Month of Clay," because at that time the spring rains had ceased, and the clay, so important a material to the Babylonians, was obtainable in large quantities. This tradition preserved in the national calendar carries us back to a very remote period in Babylonian civilisation, yet on the very threshold of the monumental age we find each king claiming for himself the title of "the Builder King." In the ancient lists of Babylonian officials which are preserved to us in the libraries we find that the "inspector of the bricks" was an important person, ranking next to the "tax-gatherer" and along with the "chief builder" and "the surveyor." Just as it was the duty of each Pharaoh on his accession to lay the foundation of his pyramid or tomb, so it was incumbent upon each of the kings of Chaldea to repair the temples of his capital, and to build a shrine or house for his protector god. The inscriptions recently discovered by Mr. Rassam at Aboo Hubba show that as early as thirty-eight centuries before the Christian era, Sargon of Akade or Akkad fulfilled his royal duties by laying the foundation-stones of the temple of Anat, the great mother, his protectress. The profession of architect in the land of primitive builders was a high one, and, as the statues and inscriptions discovered by M. de Sarzec at Tel Lo show, was adopted, or at least assumed, by the kings. Among the statues now in the Louvre, which were discovered by M. de Sarzec, of which we have already given an account in a former article on "Chaldean Art," is one of King Gudea in his office of chief architect. This remarkable figure, cut out of hard diorite, with all the ornaments of the richly-embroidered robe and the fringes cut with the greatest care and attention to detail, with inscriptions as clear and sharp as the day they

were graven, may be regarded as the earliest statue of an architect. Before the time when semi-mythical Menes (B.C. 3892) had laid the foundation-stones of the temple of Phtah, and more than twenty centuries before Setna, the chief architect of the "man queen" and lavish patron of the architect and builder Queen Hatsu, had been rewarded by his royal mistress with a statue, there had been placed in the temple of the Thunder God a votive figure of the royal architect, who holds on his knee the tablet on which he has drawn the plan of the sacred edifice, which now yields up its buried treasures to the explorer.

The small sketch which accompanies this article is an exact reproduction of what we may now certainly regard as the most ancient plan of an edifice which is preserved in the annals of architecture. The King-architect Gudea ("the Prophet") is represented as seated on his throne, clad in a long striped robe, and holding on his knees the tablet on which he has drawn



the plan of the temple. He was supposed to have only just completed his design, as the stylus or graver (A) is resting on the tablet by the side of the design. This remarkable drawing, which cannot be placed later than thirty-seven centuries before the Christian era, shows the very conservative nature of the architectural profession in Babylonia, for the plan is exactly similar to that of the buildings at Aboo Hubba, or Sippara, or at Babylon, erected by Nebuchadnezzar or Nabonidus.

The most remarkable feature in the architecture is the buttressing of the outer walls. At regular intervals (at Aboo Hubba every 10 ft.) the walls are broken by buttresses, while the doorways (D) are flanked by massive double buttresses or pilasters. The regular arrangement is broken in two places by constructions introduced (B) into the spaces between the buttresses. These are probably altars, or brick platforms for altars, as in excavating at Aboo Hubba and Tel Lo the explorers have found traces of such constructions placed near the doorways. The line of wall is broken

by six doorways, three of which are placed on what we may provisionally call the south side, which, from the ornate character of the work, is evidently the chief front of the building. It is hardly possible that these six doorways gave entrance into one room: we must, therefore, conclude that the architect has not drawn the interior plan of the various chambers.

The explorations of M. de Sarzec brought to light the remains of a large edifice, exhibiting the style of architecture shown on this plan. The walls were of great thickness, 10 ft. and 12 ft., with heavy projecting buttresses, decorated as at Warka and Mughier, with cones and coloured plaster. During a short visit of exploration to this site in 1878, Mr. Hornum Rassam recovered for the British Museum some interesting inscribed records, which preserve to us the name and titles of the early builder kings, and the descriptions of the edifices they constructed. Upon a small tablet of white calcareous stone we have the inscription:—"To Nin-girzu, the great chief, his lord Gudea, Viceroy of Sergulla, his offering has brought forth, and the temple of Mir-mir, his high-place he has made, and the site he has established." This inscription is repeated some hundreds of times on brick, cones, and small stone tablets. Some of these records have survived in remarkable preservation, and are as clear and sharp as the day they were cut or impressed on the surface of the

stone or clay. This survival of ancient inscriptions is no doubt due to the great care which was taken by the ancient Babylonians of all ancestral records. It was the duty of the kings to read the records of their ancient ancestors, to clean them, and to pour out a libation and offer sacrifices to them. We have a remarkable example of this conservation of records in the case of an inscription of Dungi, a very ancient king, the contemporary of Gudea, of Sergul. This king had written or engraved an inscription on a plate of silver and placed it in the temple of Nergal at Cutha, the site of which is now marked by the mounds of Tel Ibrahim. In course of time the inscription had grown old and tarnished, and so an official copy of it was made by order apparently of Nabonidus (B.C. 555) some 3,500 years after it was first made. In copying the text the scribe has endeavoured on the small clay tablet (3 in. by 2 in.) to reproduce the archaic characters of the legend on the original ingot. The legend reads, "Dungi the strong man, king of Ur, king of (the lands of) Sumir and

Akkad,—the temple of Siltam, the temple of the god Siltam-ta-ddu in the city of Guda (Kutha) be made." This legend is written in very archaic characters in the old Akkadian language of Babylonia, but the scribe adds in cursive handwriting the docket "Which is like the silver ancient tablet of the temple of Siltam-ta-udda in the city of Cutha." This temple of Siltam-ta-udda was the great temple of Nergal, the lion-headed god of death, "the devourer," the midnight sun of the under world, who went down into tomb-land. The city of Cutha was the great Necropolis of Chaldea, and this temple of Siltam, or "the dark world," was dedicated to the "death god." The careful preservation of these records and the copy of an inscription which had decayed away accounts for the rich store of most ancient inscriptions and monuments which are now being recovered from the cities of Southern Babylonia. It would appear, when we examine the elaborate mathematical calculations of the Babylonians, that the plan here given was drawn to scale, and that such scale was preserved in the divided rule (C), which lies on the edge of the tablet. The tablet of an ancient Babylonian land survey which we published some years ago showed that the science of land surveying and the calculation of areas had made some considerable progress in the land of Babylonia: and we may, therefore, suppose that the architect drew his buildings to scale. The specification of the temple of Belus, we know, furnishes the dimensions of each shrine and temple with the greatest care and accuracy; and in the sales of houses the size is always accurately given. An example of this is seen in a tablet forming part of the evidence in a law case dated in the second year of Nabonidus (B.C. 553), where we read, "Seven canes, five cubits, eight digits (frontage) of a house territory and plantation of palm trees which is within Borsippa"; and in every contract the dimensions of property are specified with the greatest care. Some Assyrian copies of ancient Babylonian tablets recently discovered have thrown light upon a subject always of interest to students of ancient architecture, namely, the Orientation of the buildings which these ancient builders constructed. It will be remembered that all the ancient edifices and mounds in Babylonia and Assyria, with one exception,* are found to be constructed with the angles towards the cardinal points. At the great quadrangles at Aboo Hubba, at Koyunjik, at Khorabad, the temples at Ballawat and Nimrud, are all constructed on this system. A small fragment of a tablet recently discovered shows that the Akkadians had shifted the cardinal points 45°, so that their north was our north-west; and their south our south-east, so that the corresponding points were:—

N = NW, S = SE, E = NE, W = SW.

This explains the Orientation of the ancient temples, and we now find that according to this system every temple in Assyria and Babylonia was duly Orientated with the *cella* (*parakku*), or holy of holies at the east end. It is to be hoped that the French expedition now en route to the plains of Chaldea will uncover the whole of the temple at Sergulla, and thus supply us with the means of comparing the existing plan with the original design of the architect king, which has been so wonderfully preserved to us.

PREMONITORY WARNINGS OF A WATER FAMINE, AND HOW TO AVERT IT.

For the first time for some ten years we have enjoyed, not an arid, but a moderately dry summer. It has been far from a rainless season. Violent downpours of rain have occurred in it; and we should anticipate that when the rain-gauge returns for June, July, and August are completed and tabulated they will by no means show an inappreciable depth of rainfall. And yet in two places,—of sufficient magnitude and importance to allow their complaints to be heard in the daily papers,—there are apprehensions of a water famine! What would be the case were all the actual deficiencies shown,—still more, what would be the case if we had a really dry summer,—it is somewhat alarming to contemplate.

In Richmond the scarcity of water is causing very great inconvenience. The roads are watered by supplies taken from the Thames. We may point out, in the interest of the

* The Babel mound at Babylon, the probable site of the hanging gardens, and, if so, a late construction.

public health, that few surer means can be adopted of spreading certain diseases than by sprinkling the roads with water which is avowedly unfit (without purification) for human consumption. A large wet area is thus exposed to the burning rays of the sun; and miasmata of all kinds are drawn up into the air, and exhibited, as the doctors term it, to the lungs of the inhabitants. The public baths at Richmond are also supplied with Thames water,—thus combining the disadvantages of a dip in the river itself with an absence of that counter excitement which the stimulus of the open air supplies to the river bathers; and people are seen crowding round the pumps with cans and pails, waiting their turn to get to the spout. How far these wells and pumps are free from pestiferous percolations through the soil is just one of those things which, when water runs short, people rarely take time to consider. What inconvenience, and worse than inconvenience, is felt in the homes of the poor, in the laundries, in the hotels, or in any other large establishments, it is difficult to estimate.

It is not our present object either to inquire how it comes to pass that Richmond is thus suffering, or what may be the best method for removing the affliction. We wish to call attention to a fact, of a very grave and serious nature, of which the personal experience is not likely ever to be forgotten. And we do this simply as an example of a large group of similar facts which year by year are more and more likely to occur, and which, in the event of a really dry season, are pretty sure to be as numerous as they are menacing. Nor is Richmond even now alone. Northampton is in a similar plight. The Northampton water-works are now inadequate to meet the demand upon them, and the owners are seeking for the problematical supply to be obtained from artesian borings. The Company, we are told, are now boring at Gayton, where some water has been obtained, but where the supply cannot be depended upon. The Company are also said to be in negotiation for obtaining water from another source. We hope that this does not mean that they are in treaty with the proprietors of the Grand Union Canal for their reserve water. That small canal, although the unfortunate restriction in the length of its works is such as to put a great bar in the way of canal navigation between the Trent and the Thames, is a necessary link in the inland waterways of England. As such, it has but to bide its time in order to revive from its present depression; and its proprietors will have cause for serious regret if they kill the golden goose for the sake of one or two eggs, and imperil the future value of their waterway by not only tapping, but selling the sources of supply.

In London we are so accustomed to the tale of under-supplies and over-charges, that we fancy many readers of the daily papers must skip with disgust all paragraphs that bear the heading, "Water Supply of the Metropolis." It is true that at the present moment the hardships most felt are not so much from under-supply as from over-charge. Both, however, are phases of the same evil. In an island at the south part of the Caspian Sea, where the Russian Government recently erected a naval establishment, water is so scarce that a recent writer says that it costs 3s. 6d. a barrel. This is a good instance of the relation between quantity and price. The Northampton Water Company attributes the under-supply to the immense quantity of water consumed by the householders for flushing purposes. It may often be the case that water is wasted, or improvidently used. But it is one thing to deal with water when it costs a halfpenny a ton, and quite another when the indispensable fluid costs 3s. 6d. per barrel. It is well for those who think that it is always easy to obtain adequate water supply to reflect on such a fact as we have just cited.

As to London, we are now told that the monopoly of the water companies depends, not on the original Acts of Parliament, but on a clause carelessly allowed to pass in an Act of 1875, forbidding the local authorities to supply water to the ratepayers so long as the companies should afford an adequate supply. We have too much respect for the letter of an Act of Parliament to take any second-hand comment, from whatever authority, as to the effect of its expressions. But if that statement be correct, and if "adequate" be the proper word, it seems to us that the only question is one of interpretation; and that if it

be doubtful whether the condition of reasonable charge be involved in the "adequacy" of the supply, a short declaratory Act of Parliament would be a very simple mode of doing justice in the case. If, for instance, a company should plead that they could supply an unlimited quantity of water, but that they must receive a fabulous price for so doing (which is only putting the construction in the strongest light), it is only probable that a tribunal would take a common-sense view of the matter; and if a judge found that he was prevented from doing so, it would afford ample justification for the appeal to Parliament to make good its own work.

If a further hint as to the necessity of looking ahead as to the physical sources of our water-supply were needed, it would be found in the journals of the same day that tell of the water famine at Richmond and at Northampton, and that raise the question as to the adequacy of the London supply. A disastrous subsidence of land has occurred at Boosbeck, where 150 houses present the appearance of having been subjected to a heavy artillery fire, or to the effects of an earthquake, or of subterranean explosion. The source of disturbance, however, arises in the workings of a mine, 300 ft. in depth underground. A large quantity of ironstone has been excavated, and the land is "creeping," to use the miners' term for slow displacement, towards the spot, to fill up the "goaf" or cavity left. The subsidence has been accelerated by the presence of a bed of quicksand, 78 ft. thick, which contains a large quantity of water. Here, again, we see a case in which the source of a permanent water-supply may very possibly be seriously affected. We have had ample personal experience of cases of the kind,—cases, that is to say, in which, for the sake of ensuring the solidity of foundations, it was found necessary to "bleed" a quicksand. The effect has been what was anticipated, as to safety; but, on the other hand, large urban districts had the level of their water-supply by means of wells and pumps materially lowered by the operation.

The point, however, that we have now chiefly in view is one to which we are anxious to direct the attention of scientific and practical men, before we find ourselves, some fine summer's day, in the presence of actual water famine. As to that, it is only a question of time when it will occur in certain districts, unless timely means be taken for anticipating the gain of consumption over collection. While we talk of the hardness of this spring, and the "previous pollution" of that,—of the inefficiency of this company, and the greediness of the other,—we are shutting our eyes to the fact that we may soon have but little opportunity for selection; and that the time is at hand when, not only must we combine all our existing resources, but we must do something as yet unattempted, if we wish to maintain an ample urban supply of water at all.

It is not that our climate is deficient in the gracious draught. Five per cent.,—we think it has been proved,—of the water that descends on our island in rain is enough for the supply of the wants of man and beast, with something to spare, in the way of the water which has been once used for animal solace, for vegetation. But year by year it is more apparent that we are not taking the steps necessary to collect and protect that five per cent. We trust as yet, in every case, to the storage of nature. Whether we catch the surface water from brooks or rivers, or seek beneath the soil for percolated water, or even tap and carry off the stores of mountain lakes, we only wait idly upon nature. When rain comes down bountifully, we let the bulk of the supply run off to the sea. Now the question that it will by and by become needful to solve is this, "How long will the natural cisterns, formed by the pervious strata, lying on impervious beds, from which we draw our entire water supply, except such as we take from rivers or lakes, be adequate to supply the thirst of our population?" The time is,—as an arithmetical fact,—limited. And there are signs that we may be approaching the limits.

It is now more than thirty years since attention was called by the Rev. J. C. Clutterbuck to the progressive permanent depression of the chalk water-level under London. In all the fierce debate that has risen from time to time on the subject of metropolitan water supply during the last few years, we do not find that any one has thought it worth while to recall the warnings of Mr. Clutterbuck, or to see how far the depression has gone on increasing since

he called attention to its progress. Many wells in and about London, it was stated before the Institution of Civil Engineers on the 22nd of January, 1850, "have ceased to overflow; others, in localities above the natural water-level, have only risen to within a certain distance of the surface. . . . The natural vent, or outfall, of the chalk water under London, is the mean tide-level in the River Thames below London Bridge. The normal, or natural, condition of the water-level has been entirely altered; there being a permanent depression, varying from 50 ft. to 60 ft. at the lowest point." From 50 ft. to 60 ft. less depth of water in our natural subterranean cistern! What does that bode as to the water supply of the future London?

On every square mile of London descends, in the course of a year, 1,644,000 metric tons of rain water, an amount which is equal to an allowance of 60 metric tons per annum, or rather over thirty gallons per day each, for 33,280 inhabitants. If we take the driest year during which rainfall has been measured in the Thames Valley, we find an estimated downpour of 7,545 milliards, or thousands of millions, of metric tons. To supply 60 metric tons per head to six millions of inhabitants requires 300 millions of metric tons, or only about one twenty-fifth part of this rainfall. But on the other hand, if we attempt to check the calculation by gauging the outflow of the Thames below London, we are struck by the reflection, how little of this ample store is utilisable, by man. Measuring the outflow to the sea we cannot account for more than 14 or 15 per cent. of the rainfall. How much escapes by evaporation, how much by subterranean flow, or other means, we cannot tell; at all events, the proportions of need and of evident accessible supply are too close to enable us to dismiss the consideration that we may hereafter have to revert to the plan, universal some half-century ago, of collecting rain as it falls for human use. That cheap and efficient source of water economy has been destroyed by the pollution of rain-water as it falls or as it is collected, by the exhalations of a dense urban population. But the lesson which that fact should teach is that public health and national economy may hereafter make an imperative demand on the chemist for a cheap, certain, and available means of making rain-water not only palatable, but at once sweet, clear, and sparkling. That such a transformation is beyond the power of man we will not believe; nor do we think that a greater boon could be conferred on a densely populated country than the discovery of such a magical charm for sweetening rain-water.

PROGRESS AT BOURNEMOUTH AND SOUTHBORNE.

To many of our readers the latter of the two places mentioned above is still an unknown name. Southborne is the name recently given to the district between the Stour and the sea, opposite Christ Church, and about four miles east of Bournemouth: the first point in developing a new locality being to give it a distinguishing name. Till within a recent period this was a strip of sea-coast land of the usual barren description: a stretch of common terracing towards the sea in sandhills, with cliffs overhanging the beach, as at Bournemouth. A good many years ago the first, and for a long time the only, house on the site was built, as an autumn retreat, for a gentleman well known in the literary and social world of London; the architect was the late F. P. Cockerell, and the house was one of the first experiments made in the use of concrete for a dwelling-house; it was intended to be decorated in *sfregato*, and we remember a drawing of it in the Academy representing those decorative features, which, in fact, the aspiring architect (as often happens) had not actually the opportunity of carrying out. The solitude of Southborne has now departed, and the sea-side common has become a tract laid out into eligible building sites. The first operator was a leading physician in the neighbourhood, but the ownership or management of the estate has now passed, in the natural course of events in such cases, into the hands of a company.

The state of Southborne at present is that the principal portion of the roads which will eventually be required are laid out and "metalled"; a considerable number of houses

are dotted about, at present at some distance from each other, and the nave of a church is built in rather good Gothic style, in which service is now held, the completion of the building by chancel and tower being deferred until matters are more advanced. The most important step which has been recently taken is the erection of a bridge over the river, giving more direct communication from Christ Church Railway Station. The circuitous route by which alone it could be reached was one of the recommendations of the site when it was the abode of only one or two residents desiring quiet and seclusion; with the idea of making it a residential neighbourhood arose the necessity for a straight route. More attention ought to be paid to the state of the roads. They are "metalled" with chalk and pebble stuff brought from some little distance, and apparently laid on in the rough with no regard to ganging; consequently they are cruelly heavy for horses, and uncomfortable and shaky for the vehicles and their occupants. This might easily have been better done, and it is a point that should be looked to in the future. As to the style of the houses much cannot be said; there are one or two which aim at being a little picturesque, not unsuccessfully; some which are harmless, and avoid bad taste; and some which are gratuitously hideous. Those who are concerned in the success of the place should endeavour to provide for some consideration for style and beauty of appearance in the houses. The beach is not nearly as good for bathing as at Bournemouth; but the sea unfortunately does not admit of being managed in its operations, even by a company.

Around Bournemouth building operations, as far as dwelling-houses are concerned, are going on with what seems reckless rapidity. All round the outskirts are to be seen houses in progress, and new houses standing empty, the supply at present being evidently in excess of the demand. The explanation of this probably is that as the length of inhabitable sea coast is a limited quantity, and the demand for seaside residence, for part of the year at least, seems likely to go on increasing indefinitely, the return for this building outlay is regarded as only a question of time, and first comers get the land cheapest. The other side of the matter is that, in the anxiety to secure land and build upon it, many portions of the place are getting unnecessarily and prematurely spoiled by cutting down trees in order to clear the land for buildings, the need for which at present seems very questionable. And even in the long run it may be found bad policy to have built too much. One of the charms of Bournemouth, and the place has not so many that it can afford to part with one,—consists, or did consist, in the profuse intermingling of trees amid the roads and footpaths and amid the houses. Residents are already saying that the place is getting quite spoiled by the cutting down of trees; and to spoil the attractiveness of a place of that sort in order to provide house accommodation for the people who are to be attracted to it is a rather illogical proceeding, and apt to lead to disappointment. As to the architectural embellishment of the neighbourhood, an eminent decorative artist and lecturer on art stigmatised the new house architecture there, in one of his lectures, by an epithet a little stronger than we care to reprint here, though hardly too strong for some of the erections to which it was applied, considering that they were built in a new neighbourhood very picturesque in some of its natural features, and which was intended especially to be a health resort for body and mind. Here and there, among the more recently built houses at the outskirts, may be seen some tolerably presentable buildings, but the great proportion of them are entirely destitute of architectural interest or beauty. A large hydropathic institution, "The Mont Dore Water Establishment," in French Renaissance style, with high roofs, is in progress on a high site overlooking the public gardens; this is what may be called a "handsome" building in a commonplace way. The architect, we learn, is Mr. Bedborough, the designer of the Westminster Aquarium. It is in a shell state at present. The new portions of the street buildings in the actual town are as dull, heavy, and uninteresting as they can possibly be, worse than the older portions even, and that is saying a good deal; and when they do emerge from absolute dullness it is only to rise into vulgarity. There appear to be some local geniuses who conjoin the professions of

architect and contractor, and a characteristic specimen of their efforts is to be seen in the new Trinity-chambers, opposite Trinity Church a kind of theatrical Renaissance, with details such as are sometimes to be seen in the box-front decorations of a showy theatre. Not far from this the building owner of a new terrace has launched out into a brilliant idea in coloured decoration, in having his own profile portrait executed in a medallion in coloured tiles, with arabesque accompaniments, on each pilaster in a range of shops. The effect of this realistic portrait,—whiskers, shirt-collars, and all,—reappearing along the whole front of "Joseph's terrace," must be seen to be appreciated. It is to be hoped Bournemouth may rise a little presently to a notion of the desirability of employing a higher class of architects when any of the streets have to be rebuilt; for the present the mischief seems to be pretty well done. An agreeable contrast to most of the buildings is Trinity Church, before alluded to, by Mr. Ferguson, of Carlisle,—a brick and terra-cotta church, in semi-Romanesque style. The treatment of the interior, plain as it is, is marked by true architectural feeling and a considerable degree of originality in some of the details. The church has a tower which may be described as a campanile with a saddle-back roof. The natives have shown their appreciation of the building by planting a large metal clock-face on the shafts of the open arcade in the upper story, without (as we understand) the co-operation of the architect. The spire of St. Peter's, which was completed from the designs of Mr. Street not very long before his decease, is, of course, good work, but it is not a very striking example of a modern spire, and appears to us a little deficient in height, in proportion to its general scale and to the character of the building.

The cliffs at Bournemouth seem to be slowly but steadily going into the sea; but apparently through the action of land water rather than of the sea. A heavy rain generally brings down a piece, or scoops a new gully somewhere. The "oldest inhabitant" remembers when some of the cliff houses had thirty yards more land in front of them than they have now, and a more recent resident characterised Bournemouth, with feminine satire, as "a pleasant place as long as it lasts." The so-called cliffs are in fact a kind of pudding of pebbles and clay, very subject to disintegration from any disturbing cause. This is so much the case that the local authorities have been induced, owing to representations in the local papers from some one who had his eyes open, to post a placard along the shore forbidding the amusement of digging caves in the cliffs, which has led once to some unfortunate children being engulfed. The present line of cliffs will last the life of the houses on them; but people who "build for eternity," if any one ever does build so at a watering-place, had better leave ample margin for landslips. The view from the cliffs is, however, all the same as if they were solid rock, and shows a wide circle of blue sea, from Swanage Head to "the Island": a sea, however, sadly empty of the enlivenment of shipping, as the natural course of all passing vessels takes them far out, leaving to the spectator only the occasional sparkle of sunlit topsails over the verge of the horizon. Bournemouth will always have its value for invalids, owing to its warm and mild climate; for others it is a delightful place to be thoroughly idle in for a few days; after that its charms seem to pall, except for those who feel, with Walter Savage Landor, that idleness is the only earthly blessing of which it can be truly said that the more we have of it the more we want.

Newcastle-on-Tyne.—There is some likelihood of an art exhibition being held in Newcastle in the beginning of next year. The committee of the Bewick Club have been looking after the Academy of Arts, Blackett-street,—the building erected at the time when Mr. T. M. Richardson was striving to establish a permanent art exhibition in Newcastle,—with a view to obtaining it for the purpose.—A new Post-office will shortly be opened on the Quay-side. The postal authorities have taken a long lease of the ground-floor of some new buildings, which Mr. Thomas Harper is about to erect on the Quay-side. The building will have a stone front, and will be set back on a line with the new property in the neighbourhood. Mr. J. C. Parsons is the architect, and Mr. Walter Scott the contractor.

STRATFORD-ON-AVON RE-VISITED.

WITH the scaffolding still encumbering the Memorial Theatre at Stratford-on-Avon, there yet remains an excuse for introducing what might appear a somewhat well-worn theme. But as we learn every day how singularly with passing years our views are subject to change on matters apparently settled, so it may be found that points on which it has been agreed that everything possible has been said may yet afford fresh matter for consideration.

We are very fond of admitting with an element of indifferent candour that the Americans visit Stratford in much larger numbers than we English, and though of late years,—so Stratford folks will tell one,—there has been a slight decline in the enthusiasm of our cousins, the visitors' book kept at the famous house in Henley-street bears the names of many more pilgrims from "the States" than from Great Britain and its numerous colonies. Perhaps of these the majority are too sanguine in their expectations, and allow themselves to be disappointed, like a comparatively recent American visitor, Mr. Richard Grant White, whose close study of the poet had led him to picture in his imagination a modern Stratford unchanged from the days of Queen Elizabeth. And with the many dear old English villages which still exist in this "little Mother Isle" there is, it must be admitted, herewithal in modern Stratford to cause some touch of disappointment. And this disappointment, we suspect, will be felt by all who visit Stratford-on-Avon in the conventional traveller mood. Whirled there by train, set down at however comfortable an inn, directed (by an enamelled iron sign) to the restored house in Henley-street traditionally regarded as the birth-place of Shakespeare, shown the somewhat puzzling remains of the foundations of Shakespeare's residence at New Place, and hurried to Trinity Church to have the freshly-painted monument of the great poet pointed out by the sexton, and then told that, with the exception of a peep at the brand new Memorial Theatre and a visit to Ann Hathaway's cottage at Shottery, about a mile from the town, there is nothing else to see in Stratford, such, the usual routine, is, it will be admitted, hardly a process calculated to rouse the enthusiasm of the lover of Shakespeare, still less of the general traveller in these restless days of globe-trotting.

Stratford-on-Avon itself requires certainly the largest stretch of imagination to invest it with much of the interest of Shakespeare's days, but what is too rarely visited by pilgrims to Shakespeare's birthplace is the lovely country which surrounds the humble quiet town which an accident has rendered so famous.

The old house in Henley-street, carefully and neatly restored exteriorly, its doorway decorated with a notice of the terms of admission, natively framed in a very questionable "Oxford" frame, we can fully understand is disappointing to many visitors, however much compensation may be found in such agreeable and unconventional guides as the present custodians of the place, the Misses Chataway. The favourable effect which must be produced on most visitors by the existing arrangement of the Shakespeare museum established in the house, we much question. To crowd together, as is here the case, a mass of interesting relics and questionable Shakespearean illustrations of every nature, the latter very largely conspicuous, is, we think, calculated in not a little degree to produce an unfavourable impression. The bewildering series of portraits (old and modern) all so dissimilar and many so singularly worthless, simply tends to excite in the ordinary mind a complete feeling of distrust, while with the serious (and well-founded) doubts attached to the so-called Stratford portrait, shown with such reverence in its fire-proof case, would it not be advisable for less importance to be attached to its professed authenticity, setting aside its evident want of artistic merit? As it is, we have enough to do to reconcile the work of the skilful burin of Droeshout, the chisel of the tomb-entier Gerard Johnson, the brush of Shakespeare's friend Taylor (to whom we owe the Chandos portrait), and the more recently-discovered Darmstadt death-mask. Grateful though we must be to each and all, which of these is the true Shakespeare? We should desire no further complications, particularly by works of questionable faith and even more questionable merit. Critics may hesitate before the painted monument in Trinity church, may

accuse the London tomb-entier's chisel of too clumsy work with the refined features of the great poet, but as that thoughtful face gazes down from the shadow of its niche in the half-gloom of the chancel, while, in the reflective calm of evening service, the pealing organ rolls through the old Gothic church, the most distant pilgrims should surely feel fulfilled.

A visit to Shakespeare's birthplace without some acquaintance made with Shakespeare's country is, we have no hesitation in stating, a fruitless, unsatisfactory pleasure. Not to have seen either in luscious spring, in sunny summer, or in golden-tinted autumn, the tall stately elms that cluster about the gentle undulations of the country between Warwick and Stratford, the rippling, winding stream of the Avon, the calm Elizabethan quiet of the red-towered home at Charleotte, still occupied by the descendants of the family of the Luysos identified with the life of the great dramatist; not to have passed along the great rustling elm avenue, and under the quaint gateway, above which stands the quartered blazon of the owners with their speaking arms, the three lances, nor to have strolled through the park, and startled the timid deer with whose distant ancestors the fair name of Shakespeare has been on somewhat doubtful testimony disagreeably connected; not to have been so prepared for an entry into the poet's birthplace, and on foot,—for there be those who, like Mr. Richard Grant White, the disappointed "Shakespeare scholar," have rolled in a fly along the delightful road from the gray towers of Warwick Castle to Stratford,—not to have been so prepared, is to have reduced to a certainty the sense of disappointment so often expressed by visitors to Shakespeare's birthplace.

Though at but a few hours' journey from the Metropolis,—one may read at Stratford the London morning papers at half-past ten,—*omnibus datum* adire thither as in the case of the too famous Corinth, but when a pilgrimage or visit,—in whichever light it may be regarded,—is contemplated, let it not be in the ordinary commonplace spirit of modern travel so rife in the present day, or disappointment must inevitably ensue. For simple enjoyment of rustic simple England, and England's simple rustic scenery, that scenery in the breezy representations of which Constable and Cromie have inspired a whole living school of foreign landscape art in the pupils of such masters as Rousseau, Diaz, and Troyon, a walk through the garden of England, the valley of the Avon, approaches perfection, and is indeed the only fitting preparation for a visit to the town in which Shakespeare saw the light and breathed his last.

Our forefathers fed voraciously on the literature of the ancients before undertaking a visit to Italy, and each scene of that classic soil they invested with a double interest when it could be associated with some resounding verse from Virgil or polished line from ever-pleasing Horace. But we in the present day do not thus prepare ourselves for our trips abroad, nor indeed is it absolutely necessary for the appreciation of the beauties of nature and of art; those same refined forefathers of ours so learnedly able to quote the classic authorities were already yawning with *ennui* as their past-chaise rattled them past the lovely Gothic cathedrals of Amiens or Rheims, and they shuddered with unaffected disgust as they entered the picturesque defiles of the Swiss Alps which we have now so successfully cockneyfied. It requires no deep acquaintance with the works of our great dramatist to appreciate the beauties of his country, those miles of green-clad rural England which lie stretched under the far-reaching gaze of the great gray keep of Warwick Castle.

Did all the American travellers to the home of our great poet, whose creations and whose tongue are the common inheritance of both our countries, devote more time to a visit to Stratford than is generally accorded during the rapid run from Liverpool through to Paris, we should have less disappointment expressed than at present accounts for the falling off of transatlantic visitors to the banks of the Avon; they might then, perhaps, feel even more than at present, something of that charm of our old country which genial Oliver Wendell Holmes has so lovingly pictured,—

"With cliffs of white, and bowers of green,
And ocean narrowing to caress her;
And hills and threaded streams between,
Our little Mother Isle, God bless her!"

COLLEGE OF ARCHITECTURE.

WITHOUT entering into the comparative merits of the two sciences, music and architecture, as subjects of national study, the recent institution under royal auspices of a college of the former, and the noble response by the nation to the royal invitation issued to it to establish the same, should be an incentive to the great body of architects to establish a college of the latter.

Probably there is no profession in which so much versatile ability, knowledge, and inventive genius is required as that of the architect. There is not a single art, science, or mechanical trade that one can name but what is brought into play in an architect's practice. The musician, the painter, and the sculptor are a perfect liberty to exercise their respective professions according to their own individual taste, skill, and design. This is not the case with the architect. He is thwarted in every direction. He is not even at liberty to carry out his own ideas of the style, material, and construction in which he personally would like a building erected, but is often obliged to bow to the crude whims, fancy, and caprice of his client, whose taste may be diametrically opposed to everything that is pure and beautiful in architecture. He has to sink his individuality to that of his patron.

To design a building in a certain style, dimensions, construction, and materials at a fixed price, is no ordinary task, and taxes the powers of the most gifted and experienced architect. When it is further taken into consideration that the architect has often to contend with the rise in price of labour and material, and to adapt his design that it may not interfere with the light and air of surrounding buildings or infringe upon neighbouring interests, one can readily conceive that the profession of the architect needs more than any other the establishment of a college, with its staff of lecturers, library, collection of drawings, models, samples of building materials, mathematical and scientific instruments and appliances, to render the facilities for its pursuit as perfect as possible. Such institutions exist in Continental countries and in America, and should find their place in England.

Beyond the classes devoted to architectural subjects, and established under the auspices of the South Kensington authorities, King's and University Colleges, the embryo architect has but little opportunity of improving his professional education. His education is meagre and devoid of any system whatever.

The education of the youth destined for architectural pursuits should commence from the latter years of his school life, the studies being so arranged as to more readily fit him for the profession in which he intends to enrol himself.

Special professions require special education, and should have their special schools, which, did an architectural college exist, could be established over the country, receiving their guidance and control from the national college. Such schools are established for agriculture, why not for architecture?

The education of the architect is an interminable one. Fresh inventions, new materials, appliances, and methods of construction are continually cropping up which the architect is supposed to be well posted in. This is not the case with the musician, painter, or sculptor, who has only to embody his ideas according to his uncontrolled imagination. A great deal of the time which is spent by the architectural pupil in an architect's office in acquiring a knowledge of mensuration, surveying, geometrical and perspective drawing, plain mathematics, and calculation of quantities might well be obtained in the closing years of his school life.

There is no more interesting and profitable pastime for the architectural student than to devote his leisure hours to architectural modelling. Whether the material used be cardboard, wood, or plaster, an assiduous cultivation of the art in either of these three materials would greatly promote the advancement of the pupil in the forms of construction and the technicalities peculiar to architecture. Modelling at one time formed a most important section of the architect's training, and it is only within the last few years that it has become an almost obsolete profession. Photography and perspective drawings have done much to do away with modelling; but these, even at the best, fail to give that complete idea what a building would be like upon erection as a well-executed

model does. You can walk round a model where you cannot round a drawing.

The earlier architects always made models of the buildings they designed. They were mechanics as well as draughtsmen; they could use the tool as well as the pencil, and it is a serious question whether a portion of the time of the architect's training career should not be devoted to modelling and to the larger practical work of a builder's shop. A good modeller always makes a good architect. He is able to see at a glance in a model where a building is defective, which he would fail to perceive in a drawing. Models cannot be too highly finished. They should be faithful embodiments of an architect's design, not caricatures of it.

The formation of a gallery of architectural models in connexion with a College of Architecture would be an imperative necessity and a national boon. Such an institution would be of incalculable benefit to the architect, his client, and the public. The architect would be spared many years of travel in an expensive sketching tour; he would be able to point out to his clients (who, as a rule, cannot understand drawings) the different styles of architecture, their relative merits, and adaptation to the class of building he desired to be erected; the client would have before him every illustration of the embodiment of design; he would acquire a clearer and quicker perception of the relative proportions that the various parts of a building bear to each other and the whole; the roof-plan, method of carrying off the rain-water, &c., all of which would cost him some considerable time to master in a series of drawings.

No important building should be erected without a model being previously constructed. The institution of a National Gallery of Architectural Models is of as much importance to the public as a National Gallery of Paintings, and if music and painting are made subjects of State and Royal support, there is no reason why architecture, which requires a life-long study to acquire a knowledge should not be represented in some public institution worthy of it. A collection of models of the baronial halls of England, well done, with the historical associations connected with them, would in itself be an exhibition of much public interest.

Too much importance cannot be attached to architectural modelling, as not only the best exercise of the inventive faculties, but calling into play a mathematical and geometrical accuracy of workmanship and a patience and perseverance worthy of a nobler and more remunerative art,—for, to use the words of one well skilled in the profession, and who certainly brought cardboard modelling to very high perfection, so much so as to merit Royal patronage, "the same skill, ingenuity and patience devoted to higher art would make a man a fortune, the pecuniary advantages of the pursuit being diametrically opposed to the consummation of such a happy result."

Without presuming to suggest, let alone dictate, the line of study the architectural student should pursue, evidently some better system could be devised than the mere articling the youth to some member of the profession, whereby he acquires but a meagre knowledge of the same, and is likely to become riveted to the style of design peculiar to his master.

It is simply absurd to suppose that the student in architecture can acquire in a term of service in one, two, or three offices that thorough knowledge of the profession to make him a successful architect.

His education should be as much in the workshop and on the building as it is in the office, that he might realise in the former that which he has learned in the latter.

When one looks at the difficulties which beset the architect's path, the multifarious trades, pursuits and professions with which his own is brought more or less into connexion; his knowledge of the sciences, the inventive faculty required, his skill as a draughtsman, his powers of calculation, organisation, and originality of design and the travel necessitated, one can but acknowledge the value of the establishment of a National College of Architecture and wonder that such an institution had not been for many years a permanent institution of the land.

The École d'Architecture at Paris is, as its name implies, a school specially for the education of architects, carried on under the direction of professors. If such an institution is good for France, why not for England? How long will elapse before the architectural profession will

be content without one it is difficult to say. They are a great and important body, not only elevating our minds by the beauty and majesty of their designs, but playing almost vital part to the comfort of our lives in the construction of our dwellings.

One cherishes the hope the time is not far distant when architecture may have its national representative building, which, in itself, should be a gem of architecture, and where may be gathered under its roof every facility and appliance for a due study of the profession, which stands second to none in the amount of talent, varied knowledge, and versatile ability required.

THE LONDON VESTRIES, THE GOVERNMENT, AND THE METROPOLITAN WATER SUPPLY.

A DEPUTATION from six of the principal Vestry Boards of the Metropolis had an interview with the Home Secretary on the 31st July, for the purpose of asking for the interposition of the Government in the matter of the charges made by the metropolitan water companies. On the appearance of the official returns for 1882 we hastened to call the attention of our readers (vol. xiv., p. 732) to their significance. In the five years from 1877 to 1882, we have pointed out that, while the capital expenditure of the eight great water companies had grown at the rate of 11·6 per cent., their income had increased by nearly 24 per cent., or an increase as nine to seven in proportion to the increase of the population. But the increase in the income, that is to say, the water-tax, was as twenty to seven compared to that of the population. So that in 1893, if matters go on as they have done for the last five years, a population one-third larger than that of 1877 will have to pay double the taxation paid in the former year.

The point to which we then called attention has been sufficiently felt to induce Mr. W. H. Smith, M.P., in introducing the deputation, to remark that the recent serious increase in the water rates throughout the metropolis called for immediate attention. The increase, serious as it was, had not, the right honourable gentleman urged, been extended to the utmost limit that the law allowed. There was great reason to fear that the rates would be raised to a point that was beyond endurance, and they could only be resisted by legal steps that would involve an expenditure of no less amount. Mr. Farrer, one of the deputation, referred to the history of the Acts under which the various water companies had attained their present powers, and compared the actual state of things with that existing in 1852. Under the Rating Assessment Act, of 1869, he said, the companies had incidentally obtained powers to increase their charges without increasing their supplies. The minimum increase of rating since that time had been 30 per cent., and the maximum as much as 100 per cent. Had Mr. Smith and Mr. Farrer consulted our columns they would have seen that the outlook is even more definite, as well as more black, than they seem to have been aware.

We decline to enter into the counter issue raised by Sir William Harcourt, who argued that the only hope for the ratepayers was to be found in some such sweeping measure for the change of the Government of London as was projected for the present Session, but not brought forward by the Government. It should be remembered that successive Governments, for several years past, have brought forward measures for the regulation of the Metropolitan water supply. Those measures have failed, for the simple reason that the framers did not take the trouble to ascertain the facts, and the whole facts, of the case, before they undertook an alteration in the law. But after two Governments have thus emphatically admitted the justice of the claim which the water consumers have upon the administration for relief from a state of things which has grown up under direct authorisation of Parliament, the latter have, we think, just reason to complain of a backward movement that bids them wait and pay more and more until a vast measure, as to which there is a very violent contest of opinion, shall have been clothed with the sanction of law. It is true that smaller cities and more modern corporations have found the means, with the aid of Parliament, of regulating their own water supply in a manner that the Corporations, Boards, and Vestries of London have not as yet attempted, or agreed on the bases for attempting. On the other hand, it has to be remem-

bered that a plan was brought forward for the purpose by the Metropolitan Board of Works, and that it was one which, in the opinion of many competent persons,—we need not now recall our own utterances on the subject,—only tended to make confusion worse confounded, and the pressure of rating higher, by the expedient of a double supply. Again for Liverpool, Manchester, Birmingham, and other places the Government have not taken the initiative with regard to regulating their water supply, while with regard to London they have assumed the initiative year after year.

Although, then, there is much in what Sir William Harcourt said on the 31st July which is in full accordance with our advice of June 2nd to London to speak for itself, the chief result of his speech seems to be to put an official sanction on our remark, "It is of little use to wait for aid from Government." "He would not hold out any hopes," said the Home Secretary, "that the Government would undertake to do for London what London ought to have done for itself." We will say nothing as to the "ought to have done." There may be two opinions on that point, under the circumstances. When Government was attempting to deal with the matter, although not by calling in the aid of those who had shown themselves to be the most conversant with the question, it could hardly have been admissible for London to attempt the same duty. Now, however, no reason for doubt or hesitation remains. "At the moment when a Government made proposals," said the Home Secretary, "every one became dissatisfied." That, no doubt, is an accurate remark. But the reason, we must hint, is that which we give above, viz., that the proposals of the Government,—and it is no party statement, for it applies with impartial truth to the two successive Governments,—are such as naturally dissatisfied every one. The situation was not grasped. It was conceded that the companies were the masters of the situation. This was not true. But where, except in the columns of the *Builder*, was it pointed out where the controlling element of the case actually lay? We showed at what date it would be necessary for each of the great companies to come to Parliament for further powers, and we showed that if a full, just, and equal scheme was, in the first place, reduced to system and to detail, these several dates would also be the dates at which the several companies, in order to obtain the Parliamentary sanction that they required, would be compelled to come into such a scheme. This practical advice was neglected, and thus we are at this moment in so much a worse position, as was stated by the deputation, and admitted by the Home Secretary.

Next year matters will, if they go on as they have done, be worse. If London is to wait for the passage of a Bill to provide a new municipal government, it must thus certainly wait till 1885, and probably till a much later date. Mean time the water tax is increasing, and will increase, as we have above pointed out. Four and a half per cent. per annum, we have shown, is the present increase in pressure of the water tax. Then to wait one year for a Municipal Reform Bill, and a second year for the new machinery to get in motion, and a third year for it come to Parliament with its own water-supply measure, will allow of the infliction of 13½ per cent. increase on the present heavy rating. This is the earliest hope that the Government hold out. Is it possible to say in louder tones,—Help yourselves?

We have had a recent instance of the effect of this kind of self-help, which, at a moment when the opinion expressed by the Board of Trade was to the effect that nothing would be done in the matter of the Embankment ventilators, we ventured to suggest. The advice was taken, and acted upon, and it now becomes clear that even the sanction of an Act of Parliament is not enough to insure the carrying out of a measure to which there is a strong and united popular opposition. For, after all, what Parliament does, or intends, or ought to do in any of those measures,—Gas Bills, Water Bills, Railway Bills, Tramway Bills, or what not, in which exceptional powers are sought, professedly for public as well as for private benefit,—is to see that the former is secured. Parliament, indeed, does more; for it makes a point of a *prima facie* case of private benefit. And when it is shown that the public welfare, so far from being advanced, is injured by a recent measure, Parliament reconsiders such a measure.

Let us remember, however, that it was to the ardent and inconsiderate haste with which certain parties, who might have been expected to know better, proposed to deal with the property of the water companies without the assent of the proprietors, that the various disasters that have befallen the various Water Bills were mainly due. The pendulum swings both ways. First, it was an easy matter to deal with the property. But a legal block was in the way. Then the pendulum swung in the other direction, and we were urged to make a bargain this year because we should only be able to make a worse bargain next year. So, no doubt, it has turned out.

But what we said was, "Do not make an improvident bargain. Neither attempt any injustice to the water property-holders. They have now certain rights. These are sacred. But they cannot escape control. In one, two, or three years they will have to come to Parliament for more rights. Then is the moment to carry out a well-considered plan, and to secure justice for all parties,—for the water-consumers as well as for the water-suppliers." This is what we urged in 1878, 1879, and 1880; and this advice, if followed, would have put us in a very different position in this actual year of grace.

To that advice we must come back, although we are now at a disadvantage,—measured by some 18 per cent.,—in entering upon it, as compared to the position that we should have now held if we had so asked in 1878. No other mode of action is possible. We must weigh the actual facts. We must measure the actual rights of the companies. And, pending the time when a well-considered measure for purchase and consolidation can be carried through Parliament, we must take care that those rights are not extended. That is what we have failed to do.

And that is what a committee of the ratepayers have to do. They have seen how little use it is to come to the Government for aid. *Aide-toi, et le Ciel t'aidera.* A water vigilance committee will, at least, be able to prevent the silent passage of any Water Bill that does not include provision for the protection of the ratepayer. If it does no more, it can thus prevent the steady increase of water-rate pressure. As to the measures which the metropolis ought to take, very full and very careful investigation of the whole subject is to be found in our own columns. We do not hesitate to say that the only grounds on which an equitable and practical arrangement can be based are therein fully pointed out. But that is a matter somewhat for the future. What is now incumbent on London is to stop the great leak,—the leak of the ratepayers' money which is growing larger and larger month by month, and which will continue to enlarge so long as it is neglected by the ratepayers. That, we apprehend, can only be done by the formation of such a committee as we now suggest. And if, two years ago, our advice was held to be premature or unnecessary, let us ask how it now appears, read by the light of Sir W. Harcourt's reply to the deputation of the 31st of July?

We may be permitted to recall the main features of the measure we suggested in 1880 as contrasted with those brought before Parliament. The ultimate cost of the purchase, according to that measure, would have been 98,253,670*l.*, including no provision whatever for extension of accommodation. The annual burden, commencing at 927,774*l.*, would rise, by 1892, without any allowance for extra reserve and accommodation, to 1,252,285*l.* The income expected would be 1,402,000*l.* per annum, the working expenses 526,000*l.* per annum, and the deficiencies, 376,585*l.* per annum. That was the analysis of the Bill. By the modifications suggested in the *Builder* the ultimate cost of purchase would be 37,000,000*l.*, but in that sum was included a provision of 9,550,000*l.* for increasing the service to meet the requirements of the increase of population for nine years. The annual burden, commencing at 830,000*l.*, would be increased by 249,000*l.* a year, but that would be an increase earning a return. And by 1892, instead of a deficiency of 376,585*l.* per annum, a sum of 289,600*l.* might be applied in the reduction of rates.

How far these figures must now be modified to meet the additional strength acquired by the water companies since we brought them before our readers we are not at this moment in a position to say. It is heart-breaking work to devote much time to minute analyses of this nature unless the public call for their production. If

the recent charges have become so far intolerable as to tend to a resolution of this nature, we shall be, as before, at the service of the public in this respect.

PROFESSIONAL PORTRAITS.

A PROVINCIAL COMPETITOR.

"Life was full of seriousness for him, by reason that he could never get enough fighting."—*Bab and His Friends.*

In those few playful pages with which Thackeray prefaced his immortal treatise on snobs he shows with what unflinching certainty the wants of any particular age are provided for. That the need produces the Man (with a capital M). First, as he observes, the world was created,—after long ages the snob appeared; and in the fulness of time there arose his biographer and historian. The American revolt produced a Washington,—the French Revolution a Robespierre,—the railway mania a railway king,—and, in like manner, the competition craze produced the competitor *par excellence*. As there were, no doubt, snobs before the fully-developed article called competition attention to their existence, so there were competitions (few and far between) before the brilliant individual appeared who was to erect competition into a system,—almost a cult. I know him well; and the familiar incantations are deeply imprinted on my memory, never to be effaced. Like the late Lord Beaconsfield and other great men before him, he had to make his way against many disadvantages, and his victory, in so far as it was creditable to him at all, was the more creditable on that account. Appearances were against him. He was tall, crooked, sour-visaged, with a sinister look and a snub nose. His gait and manner were by no means a good introduction. He was ill educated, and ill instructed in the profession of his adoption,—which, indeed, he took up informally and by chance. His strong natural ability had enabled him to collect a mass of information of a casual sort bearing upon architecture; but he had not the patience to digest and arrange it, so that of him it might truly be said that,—

"Very many things he knew
And badly knew them all."

But he was not without compensating gifts. In the first place he was endowed with the most unbounded assurance and belief in himself. He had no suspicion that his person and manner were anything but agreeable. By "nature's kindly law" the afflicted, in many ways, are in a merciful ignorance as to their infirmities and shortcomings. Does not *Martha* fancy that *Faust's* jewels are left for her? and, when undecieved, wonder, no doubt, what he can see in that pale-faced *Marguerite*. In like manner our friend was possessed by the notion that his address was that of a Chesterfield, and his smile child-like and bland, and that for shrewdness and a playful wit he had no equal. He would scent out an intended meeting to discuss the erection of some public building, thrust himself uninvited into the midst of it, and before they knew where they were convince chairman, committee, and all, that for the work they had in view he was the very man. He always took with him portfolios of sketches to meet every emergency, and was ready with a thousand suggestions for combining the peculiarities and beauties of each in a way that should exactly meet any case that could be propounded. He was loud and over-bearing in speech and manner; he talked the strong ones over and the weak ones down, and carried the position by a series of *coups-de-main*. If a competition had been secretly decided upon, and the first notification of it was a public advertisement, his tactics were pretty much the same. He wrote for particulars, said that his earliest experiences were in the neighbourhood (wherever that might happen to be), that it stood the first in his affection, and that the desire of his heart was to be connected with a large and important work, such as that in contemplation. Then he made the acquaintance of secretary, chairman, all who were connected with the affair and could be found, any one from the highest to the lowest who was likely to be useful to him. I have been with him on these expeditions, and noted his line of attack, and the skill with which it was adapted to character and circumstances,—the cheerfulness with which he bore rebuffs, and the perseverance with which he would follow up the slightest encouragement. His

energies began but did not end here. He really tried to produce a good design, and spared neither pains nor money to secure it,—vicariously, of course. Everything gave way to the exigencies of the moment. No one within reach need stand idle in the market-place. His house was turned upside down. His most private apartments were filled with draughtsmen, and night was turned into day. With the first arrangement of the plan came a season of reserve: he was grave, anxious, perplexed, almost moody, full of alternatives, but without the strong judicial faculty which could decide between rival claims. But time did this for him. A definite scheme must be selected and adhered to, and the step once taken, his spirits returned. He was always at one's side, cheery, full of encouragement and hope. At last the project was launched, and then his place knew him no more for awhile. The round of canvassing recommenced, and he took every opportunity of explaining the merits of his plans, and casting all sorts of ridicule on his rivals. If he had no good stories against them, he would invent them with ready wit. All was fair: he recognised no line below which his blows were not to be delivered. He neither asked for quarter, nor gave it. Competition was with him a trial of strength, merely,—strength of head and length of purse, as to how the day was won, if only he was the winner. And "his virtues were to his vices a just equinox," he would pay liberally for successful help, empty his pockets, and devise all sorts of junketings in the intervals between the close of one struggle and the beginning of the next. Now and then he fell among those who were too many for him,—plied him with wine, of which he was too fond, and while he thought he was getting over them, they were fooling him, and gave their vote against him.

Few men could beat him at a plan, and fewer at a scheme for the arrangement of an estate for building. He had some of the faculty which the late George Robins possessed, and of which Mr. Puff, in the *Oracle*, was the first example. He saw, in his mind's eye, roads and crescents, avenues of lofty elms, purling streams, and village spires from amongst clump of trees peeped over the horizon, and what was of more moment, he saw how the revenue could not only be enormously increased, but made the most of. He was, perhaps, almost the earliest example of a financing architect. He was, on the whole, but ill rewarded for his great labours, and a really fine intellect has left but little mark. He was instrumental in spending on buildings of peculiar magnitude perhaps a larger sum than any other architect of his time, and his later years were passed in anything but easy circumstances. Since his time the science of competition has been extended, but it has not received any fresh development. As with Shakespeare the drama rose and reached its fullest pitch of perfection, so with the subject of our sketch, the art of competing was carried to its furthest possible point,—in one direction. It is patent to all that this peculiar institution of the architectural profession has received some amelioration in these latter years. We have just seen the completion of several such struggles which have not been conducted in the rough and tumble manner prevalent but a few short years ago, and the most cynical may trust to their skill meeting its due reward in a contest which is virtually decided by such assessors as Mr. Waterhouse or Mr. Barry. I was told by an architect, whose name was well known throughout the profession, that when the forty or fifty sets of competition plans for a public building were sent in, he, having secured in the meantime the interest of the judges, was actually deputed to seeing the works of his rivals returned unexamined. This could scarcely happen now, even in little Piddlington, and would be impossible in any matter of public concern. My typical competitor could, doubtless, have told similar stories, but such was his vanity that, if he had been the hero of the above anecdote he would have believed that the affair was in nowise discreditable, but the proper reward of unapproachable merit. He was destitute of all sense of justice in the conduct and decision of the encounters in which he so often, and often so successfully, took part; but he was liberal and open-handed to a fault, bore no malice, could be magnanimous to a defeated rival, would shake hands after the fight whether victor or vanquished, and was generous by nature to friend and foe alike; and he was not always, it is to be feared, treated with the

generosity which he extended to others. He lived in and by excitement, and his life was full of extremes,—the height of elation or the depths of despair,—his pockets either full or empty, and in nothing did he hit "silver mean." Those who had the best reason to dislike him and his ways were compelled to own a sort of affection for the *bonhomme* which none could fail to see, and there were those who, spite of all his failings, and they were not few, clung affectionately to him to the last. His type also is passing away, but it is one the world can well afford to spare.

ARCHITECTURE AND DECORATIVE ART IN FRANCE.

THE architects of France held a congress in Paris a short time ago, at the Museum of Decorative Art, in the Palais de l'Industrie. The principal topic for discussion was the consideration of the means which the *Union Centrale des Arts Décoratifs* is now employing in order to develop in France the taste for applying art to industrial purposes. On the proposal of M. Corroyer (architect, and member of the administrative council of the *Union Centrale*), M. Constant Bernard had been some time ago requested to make a critical examination of the *Salon des Arts Décoratifs*, opened this year for the second time by the association referred to. On the occasion in question, the assembled architects paid a lengthy visit to the museum, and devoted particular attention to that portion of the display forming the special exhibition of 1883.

M. Bernard subsequently presented his official report, in which he encouraged the meeting not to consider the relatively small proportions which had so far been attained by the display as precluding its ultimate development on an important scale. The first exhibitions of fine arts (held some two centuries ago) were small, and even after having been eight years established, only contained fifty-six works, according to existing records. Thus he considered that the organising committee of the *Salon des Arts Décoratifs* had done very well in bringing together 212 numbers at the second exhibition. He remarked that the arrangements for giving prizes might be upon a scale of greater liberality. He also spoke of the want of clearness found by some in the expression "decorative arts," and in discussing its real meaning he referred to Bacon's definition, that art consists in man adding his soul to nature. While admitting the difficulty of rendering the term a perfectly clear exposition of all that is contemplated by it, he gave in his remarks special attention to one phase of the subject, by seeking to define the limits of decorative art, and in a particular manner its relations with architecture.

According to some opinions, he remarked, the term *decorative* indicates art of secondary importance, restricted to the ornamentation of objects of daily use, of furniture and tissues, in fact, an entirely imitative art, inspired by the traditions of the past, or copying, in a more or less skilful manner, the creations of veritable art. While admitting that, even within the limits thus defined, there is scope for much interesting work, M. Bernard sought to prove that such a restricted application of the term was not advisable, expressing his conviction that every art becomes decorative when it borrows, either from its own centre or from other arts, elements of beauty without which it would remain incomplete, or would be deprived of a portion of its artistic value. Thus an artist who utilises his talent and invention in designing ornamental works for the ceramic, carving, or textile industries is carrying out the practice of decorative art, and the works thus brought out possess all the value and elevation with which the artist is himself endowed. Architecture, almost always decorative, becomes more specially so when the monuments it creates are intended to form part of a whole,—to lean in some degree upon existing monuments, or to complete the work of nature. Thus public fountains, triumphal arches, portions, and various other edifices naturally suggest themselves as belonging to decorative architecture.

With reference to the interest with which architects would examine the works exhibited in the *Salon des Arts Décoratifs*, M. Bernard remarked that the supremacy of architecture over the other arts of design is one of those truths applicable to all times, which are never

disputed, but are sometimes lost sight of. He referred particularly to the want of recognition on the part of the general public of this supremacy, usually acknowledged by artists. This fact he ascribed to the circumstance that the influence of architecture upon the arts which concur in its work is not always visible, and, it must be admitted, is not always real. Thus the grouping together of painting and sculpture in their primitive character affords the architect, who examines this display, an opportunity of studying the best means of exercising the rights of precedence enjoyed by his art.

THE CASTLE OF FROHSDORF.

THIS edifice has within the last few months attained a melancholy celebrity as the scene of the Count de Chambord's last days. Frohsdorf (or Frotsdorf) is situated in Lower Austria, to the south of Vienna. The aspect of the castle is a striking one, the royal standard with silver *fleurs-de-lis* on a golden field making the looker-on doubt whether he is in Austria or in France. The surroundings of the castle are French, and that language is currently spoken in the adjacent village.

According to the Vienna newspapers, the building is a sober edifice of sandstone, devoid of architectural taste, and dating from the *rococo* period. Its form is that of a massive quadrangular structure, in two stories. The sole ornamentation consists of stone lilies, alternating with royal crowns, with, here and there, artificial ornaments in the shape of floral arabesques, which serve as a framework to the royal lilies. Frohsdorf has never possessed anything of that state and brilliancy which usually appertain to a royal abode, even to that of an exiled potentate.

The entrance-hall is described as being imposing in its appearance; large pilasters support the cross-vaulting, and these (as well as the capitals of the pillars) exhibit frequent representations of the lily emblem, some being painted and some worked in stone. To the right of a person entering rises from a massive block of porphyry a statue of the Maid of Orleans, executed in Carrara marble, by the Roman sculptor, Rimaldi, a pupil of Canova, this work having been carried out in 1830, by order of the Duchesse de Caen. The figure is in full armour, and the countenance is directed towards heaven, with an expression of devotion. An inscription on the pedestal records the fact that Joan of Arc snatched from the English the sceptre and crown of France, and caused the king, her master, to be crowned. Opposite this statue is a very large weather-beaten stone tablet, representing the Valois arms, and inserted in the wall. The royal lily, of course, takes a prominent position in this heraldic work, and there is also an inscription, in small Gothic writing, in honour of Louis XI. The tablet comes from Plessis-les-Tours, which was the residence of that monarch.

The house is rich in pictures, many of them being of personal and historical interest. The Count de Chambord's likeness, at various periods of his life, is to be met with in different parts of the castle. The collection of mediæval weapons and armour is spoken of as being extensive. About two years ago the Count had a room built which commands magnificent views upon three sides. The Leitha mountains and the Semmering form objects of special interest in the landscape, while the valley of the Danube contributes elements of pastoral beauty to the scene.

HUMPHREYS' HALL EXHIBITION.

AT our visit to the above on Monday evening everything was sadly behind hand. Many of the exhibits had not arrived. Many were unpacked. Some were in process of arrangement on the stalls; and some of those which had been so arranged were covered up with cloths to preserve them from the dust and dirt incident to the surrounding bustle. In the face of all this, the *Times* contrived to print on Monday morning a somewhat detailed account of the exhibition,—a feat showing more than ordinary journalistic skill. It is impossible to give anything but a very general idea of the display, which is not large, as may be supposed, and not particularly varied. There are oak and American walnut buffets *à la mode*; and there are variations on what is becoming a

little tiresome by repetition, furnished by Staub's quasi-Belgian designs for furniture, although it is variety only, and not improvement, which they afford. There are some "Sheraton" and other cabinets in rosewood and marquetry, of delicate design, and the perfection of mechanical finish and workmanship,—notably those by Mr. Stringer,—and there are some "suites" of dining-room furniture of very ordinary character indeed. These exhibits all fall in the point of art. The carving is, for the most part, execrably bad; but, as was said of the British army, "it is fortunate there is so little of it." Amongst other "attractions" there are to be seen a collection of brass and iron bedsteads, and those folding machines with cretonne cushions, which are "contrived a double debt to pay." Whether these come under the "Mediæval," the "High Art," the "Ecclesiastical," or the "Decorative" section of the exhibition we cannot say; they are such as may be seen in any variety and any quantity in the Tottenham-court-road. There are, moreover, stalls which have little else to show but rolls of linoleum; others have glass brackets and flower-stands, and such like. The "Cincinnati Majolica" department was a barren waste of green shelves on the occasion of our visit, and what it has in reserve for us we cannot at present say; nor what the stained-glass stall of Mr. Wilkinson will have to show. Many well-known manufacturers of artistic furniture and fittings are conspicuous by their absence, and it may almost be said that "art" proper is represented solely by Messrs. Jones & Willis's display of lecterns, fonts, and church plate. The rest of the show is taken up with articles which can be seen in shop-windows all over London, and for that matter, in any first-rate country town.

We can quite understand the reasonableness of an exhibition which gathers into a focus the manufactures of all the world, or which brings together for convenient examination and study a concourse of various specimens of one or more branches of art and industry. We wish well to the exhibition in the Humphreys' Hall, as we wish well to business enterprise in every form when honestly conducted, but we are at a loss to imagine where the public is to come from who will pay their shillings to see brass bedsteads and rolls of linoleum, or having an appetite for this form of entertainment will prefer to indulge it within the four walls of a hall rather than in a leisurely stroll through the West End on a bright autumn afternoon. The building in which this exhibition is located is, externally, a handsome one, and by way of a parting benison we will add that the stalls are presided over by courteous attendants and, so far as our inquiries went, the articles exhibited were decidedly reasonable in the matter of price.

THE MUNICIPAL BUILDINGS OF LONDON.

IT is questionable whether it is possible to find a better illustration of the maladministration of the present government of London than a survey of the buildings devoted to that purpose. In a provincial town of from 20,000 to 50,000 inhabitants, the town-hall, as a rule, is the most imposing (excepting, of course, the parish church) building in the place; but in London, with its thirty-eight local parliaments, independent of the City Corporation, the municipal meeting-house, with but few exceptions, is difficult to find, and comparatively of microscopical dimensions. It was not until 1879 that the Holborn District Board of Works purchased the freehold of a piece of land for 18,000*l.*, and built a town-hall and offices at a cost of 32,000*l.*, the money being raised by a loan spread over a long term of years. The large hall will hold 1,000 persons, and by being let for public meetings, concerts, &c., earned 1,166*l.* the first year it was opened, which amount was increased last year to 1,515*l.* In 1880 the Vestry of Kensington erected a town-hall to seat 1,000, the land costing 11,800*l.*, and the building, 33,169*l.* This has proved even a greater success than the Holborn one, the revenue for the year ended the 25th of March, 1883, being 2,657*l.*, showing that while the building is an ornament and a great convenience to the parish, it is also a good investment. But while there is this healthy vitality in Holborn and Kensington, the two largest parishes in the metropolis, St. Marylebone and Lambeth, do not even possess a vestry-hall, capable of seating the 120 vestrymen who are

charged with the administration of the affairs of each of these parishes.—Lambeth, with its 253,569 inhabitants, and Marylebone with 155,004, and each an annual rateable value of nearly a million and a half. The building that does duty for the latter parish was erected as far back as 1824. With respect to Lambeth, which is destitute of a public hall worthy of the name, the Vestry at their last meeting decided to erect a town-hall with suitable offices in the general interests of the parish, and referred the question as to the best means of doing this to a special committee to report upon. Another great parish, St. Pancras, the rateable value of which is even greater than Lambeth or Marylebone, has a hall that will hold about 1,000, which cost 3,488*l.*, in 1847, and which is let for a nominal charge. Going east, the Shoreditch Town-hall, which was built in 1868 at a cost (including land) of 28,000*l.*, will hold from 1,800 to 2,000 people, the annual revenue obtained from it being about 1,000*l.* gross. The premises of the Limehouse Board of Works are not let for public purposes, and the St. George-in-the-East Vestry-hall will not accommodate more than 400, consequently the lettings are very few. The Poplar District Board of Works offices cost between 9,000*l.* and 10,000*l.*, exclusive of land and furnishing, will hold 600, but are not let. The same may be said of the Mile End Vestry-hall, which was erected in 1860 at a cost of 3,993*l.*, exclusive of fittings. The St. Luke's Vestry-hall has no provision for accommodating others than the Vestry, Guardians, and their officers. It was built in 1867, and cost about 9,000*l.*, exclusive of the land, which is leasehold. Built in 1858, the Islington Vestry-hall accommodates 120 vestrymen, but is not let for meetings. The building cost 6,868*l.* 1*s.* 10*d.* originally, but there has since been 2,000*l.* laid out in additional offices. The freehold of the land was purchased for 1,550*l.* The Hackney District Board of Works have a rather more pretentious building, which cost 14,000*l.* in 1866, and the land 1,000*l.* The board-room will seat about 500. It is let occasionally at a nominal charge to cover actual expenses. The Paddington Vestry premises were erected in 1853 at the frugal cost of 6,000*l.* There is an outer hall capable of holding 200, and an inner hall with room for about eighty persons, but no revenue is derived from either. The St. James, Westminster, Vestry Offices are somewhat similar, with the exception that there is an annual revenue of 5*l.* 5*s.* The building cost 8,000*l.* The Chelsea Vestry-hall is an improvement on this. It was built in 1860, on land the gift of the lord of the manor, at a cost of 11,000*l.* It will hold from 600 to 800; the average lettings for five years being 135*l.* In 1877 the Hampstead people gave 2,800*l.* for a piece of land and built a public hall, board-room for the Vestry, and offices, at a cost of 14,000*l.* The large hall will hold 600, and earns 360*l.* a year. On the south side of the Thames, the ratepayers as a whole are worse off in the matter of municipal buildings than those on the north side. The Rotherhithe Vestry, for example, meet in a room at the Workhouse; and the St. Olave's District Board of Works, in the absence of anything better, transact their business in the vestry-room belonging to St. John's Church. The adjoining Vestry of Bermondsey, however, have a magnificent block of premises, opened last year, which includes a large public hall that will seat 1,400, board-room, offices, &c. The cost was about 25,000*l.* The Newington Vestry-hall, which has a fine frontage on the Walworth-road, was opened in 1865. The ground is held on a lease for 99 years at a rent of 96*l.* per annum. The building cost 10,735*l.* 12*s.* 4*d.* In the large hall the seats are arranged to accommodate twenty-two members, and the gallery will hold 200. No revenue, however, is derived from its use. The St. George-the-Martyr Vestry premises in the Borough-road are similar to Newington, but not so new. The headquarters of the Plumstead Board of Works, built in 1864, is held on a ground-rent of 13*l.* 10*s.* per annum. The building cost the moderate sum of 2,696*l.*, and the large room will hold 250, but no revenue is obtained from its use. The Greenwich Board of Works have a substantial block, which was opened in 1877, and cost 8,000*l.*, exclusive of the land and furnishing, which cost another 1,500*l.* each. The large hall is not let for meetings or concerts. At Lewisham, the District Board of Works have a very ornate building which was built in 1874-5, at a cost of 11,000*l.*, and 1,010*l.* for the land.

The board-room will hold about 300 persons, and is let occasionally for charitable purposes. In 1881, the Wandsworth Vestry opened a town-hall, which cost them 10,000*l.*, and the land 2,000*l.* The hall will hold 600, and the revenue derived from it is about 300*l.* a year. As for most of the similar large buildings, the money was raised by a loan from the Metropolitan Board of Works repayable in half-yearly instalments, spread over thirty years. The premises used by the Wandsworth Board of Works looks more like a country police-station than the headquarters of an important public body. The Tooting vestrymen a short time ago purchased an infant school from the London School Board for 1,250*l.*, and the lettings for the past six months had realised 25*l.* Another large parish that is very badly off in the matter of public halls is Camberwell, and although the Vestry premises are somewhat modern and well-appointed, no attempt was made to provide for the general public and at the same time ease the rates by so doing. The last new public building that has been opened in London is the Westminster Town-hall, which is provided with a council-chamber, committee-room, offices, &c., and cost something like 30,000*l.* From the above it will be seen that in the case of the Shoreditch, Holborn, and Kensington Town-halls, a very considerable revenue is obtained from letting the hall, while other equally important parishes are not only without such accommodation, but have no place to properly accommodate the gentlemen elected to carry on the work of their respective districts. That this should be the case is a matter to be wondered at, seeing that the cost may be spread over thirty years, and have no material effect upon the rates, while the outlay may be made a source of revenue.

THE STUDY AND THE WORK-ROOM, FROM A HYGIENIC POINT OF VIEW.*

THE plan and disposition of the study are points of no small importance; a study may be so planned as to permit at convenient intervals of its occupant varying the monotony of his work by a short walk,—thus avoiding the injurious effects produced by one attitude being too long retained; however small may be this dose of physical exercise, its influence is in the highest degree favourable; Dickens, if personal recollection do not deceive us, most ingeniously varied his position during literary labour by sometimes working at a standing-table on which would be placed all the requisite writing materials, and when tired continuing his work sitting at the desk. A room of greater length than breadth will be found to largely induce the exercise which, without affording any interruption, agreeably varies the monotony of a seated position. The size, form, and aspect of the study are, it will be seen, most important points. To the means of ventilation particular attention should be given; many students smoke when at work, thus adding a fresh element of vitiation to the air, so rarely renewed in the ordinary study. Who is not familiar with that peculiar odour which seems to be the special feature of the study of the writer, the scientific man, or the *employé* generally, a vitiated air to which human nature, however, seems successfully able to accustom itself.

On this one important point of ventilation Dr. Riant has much to say that is worthy of notice. Automatic ventilation, he urges, is alone feasible, no mechanical system requiring personal attention being advisable in the room of any student; Dr. Riant counsels the use of a hollow metallic cornice, divided into two separate and superposed canals; the lower introducing fresh air, distributed by numerous openings in the tube, the upper canal connected with the chimney, carrying off the vitiated air, a system which, while expressing his sage doubts, resulting from experience, of most mechanical means of ventilation, he states will be found to work admirably in winter when the windows are rarely, if ever, opened, and the fire (that simplest and most effectual of all ventilators) is lighted. The arrangement is not unknown in England. In the matter of the temperature of the study, this is usually kept far too high; a temperature, he states, much exceeding 14° to 16° C. (about 60° Fahrenheit, ample in the study) only serves to congest the brain, already overheated by prolonged intellectual labour, and this view, we think, can be

confirmed by the ordinary observation that all of us have made of the constant headaches from which in winter the occupants of well-heated rooms so often suffer; an excess of temperature is further dangerous from the risks attendant on any sudden change such as is certain to be encountered on leaving the room in a house not heated throughout. In all cases, for heating and ventilating purposes, we advocate the superiority of the open fire over all stoves. The house may be heated by stoves, but in any room occupied during several hours, the open fire, from more points of view than one, is to be recommended. Where draughts, however, have to be overcome, hot-water pipes are valuable.

Our author devotes no small attention to the mode in which the workroom should be lighted, and though for the ordinary study this point presents none of the difficulties which require to be solved in lighting a large room occupied by a number of persons, yet it none the less merits consideration; an excess of light is little to be feared, but an insufficiency of light in the workroom is most disastrous in its consequences. No cause of short-sightedness is surer in its effects. Dr. Riant lays, and in our opinion with reason, no small stress on the injurious influence of all light coming from the lower parts of the window, injurious, because it is invariably reflected light. To the important question of the means by which the study is to be lit at night, special attention should be given; the danger of the vitiated air produced by the lamp, according to the material burnt; the injurious influence on the eyes, of all direct rays of light; these, and many other points, which the hygienists have by no means satisfactorily settled, are not without their importance. Our author's third chapter is closed with an invaluable consideration of the points connected with the general furnishing and fitting-up of the workroom. Of green, the usual colour for the walls, he bids us be wary, strongly recommending some wall-covering which may from time to time be washed. Simplicity in the design of all furniture he warmly urges for the sake of cleanliness, dust being the chief enemy. The height of the table and the chair, their relative distance from each other,—points which have of late years received no small share of attention in the schoolroom,—are equally worthy of notice in the study and the workroom; most of the furniture being purchased ready-made is too often but ill-adapted for its purpose, and not unfrequently disposed in the apartment far more with a view to effect and convenience than to practical use. It is an excellent, however apparently amusing, piece of advice that one's chair should not be so comfortable as that one is loth to quit it; a necessity for an occasional change of attitude is to be recommended. Dr. Riant, in fact, formulates a most cogent maxim when he urges that hygiene and what is understood as "comfort" are always antagonists; the thickly-carpeted and carpeted study may be comfortable, but it is far from healthy or cleanly, and cleanliness is one of the chief conditions exacted by the hygienist.

In the chapter which is devoted to the offices and workrooms occupied by Government and other *employés* there is much that is worthy the attention of the architect, who is too often obliged to sacrifice the necessary conditions to the exigencies of his plan, or his façade; we in England suffer quite as much in this direction as our neighbours. Any building planned to be used for offices requires no small amount of consideration from the hygienist's point of view. But, as our author truly remarks, in the dispositions to be adopted for the arrangement and maintenance of the study, the workroom, or the office, how can we hope that the requirements of hygiene should be consigned or applied, as long as the fancy of our architects replaces a science as yet but very exceptionally taught, and as long as landlords and governments only regard the consideration of these requirements as expensive, troublesome, and superfluous points, as long as the public itself remains, through ignorance, indifferent to the conditions indispensable for the preservation of health?

Space forbids our entering as fully as we could wish into the medical and other bearings of the life led by those employed in sedentary occupations, the relative mortality in the intellectual professions, the rules for a regular plan of life to be followed by the intellectual toiler, a point which enables the example of many famous men to be cited, from Walter Scott to Thiers and Scribe; the dangers of overwork, the injurious

* See p. 242, ante.

effects of "cramming," the consideration due to the brain, the eyes, and the hand; the regimen to be adopted, the exercise to be taken, all these are points which Dr. Riant considers, each and all, with no small care and attention.

FISHERMEN'S COTTAGES, AS THEY NOW ARE.

MUCH has been, time out of mind, said on the great subject of house architecture, and on the buildings which in all parts of the world help to illustrate it, and through it the histories of each of its nationalities. But this has concerned itself mainly with the great palace buildings of each age and country, and can hardly be said, except by accident, to touch, and certainly not to fully illustrate, the common habitations, and houses or cottages, of the humbler inhabitants of a country. It is a subject of no small import, but it has not attracted that amount of attention which it might so well have done, and which its importance deserves. And it is somewhat curious, when we think about it, that it has not done this; for it is quite certain that before palaces, temples, and tombs could have been built, there must needs have been simple town houses, or habitations, whatever the materials, of some kind or other, more or less characteristic of each race and time. We have many times called attention to this somewhat neglected though important subject, and do now through somewhat more than a passing glance at the series of models and drawings of fishermen's houses and cottages, and even huts, forming part of the great show at South Kensington. It is true they form but a very small and insignificant item in it, but they are not the less interesting and suggestive.

It would take up some space to give even a slight idea of the many and divers ways in which the habitations of humanity in early days, and in far-off countries and even in our own, have been constructed, and of the materials used in them. We would cite only one or two by way of example, and to show how fertile the subject is, and how far it might lead. Illustrations there are true and ample, though much more might be got at, if but the subject would be made of sufficient interest, and this, as we think, it might well be, quite as much so certainly as is called forth by the almost infinite variety of vessels, ships, and boats from every nationality and date, as now to be found at the great fishery show; for if the vessels and their several details of management, with their machinery for the catching of fish, and thus supplying additional food, are of interest, and attract the curiosity of so many, both wise and simple, then most surely must and would the hall or houses and living-rooms of the fishermen themselves from all the divers nationalities of the world create as much, or even perhaps more, of this curiosity and interest. We cannot but think that this is amply shown by the eager curiosity evinced by the hurried sight of the Royal reception-rooms in the English section of the great show.

But leaving this perhaps too large view of the subject for the present, we would but say a word on an item of it, which has long occupied attention, viz., the special dwellings of the more humble and hard-working members of the great human family,—the cottages or small houses for farm-labourers and fishermen, miners, mechanics, and others somewhat removed from towns, and not actually living in them and in their lines of streetways. A cottage we might, perhaps, conveniently define as a small house of two, or four, or five rooms, standing somewhat apart from others, and thus possessing, or at least allowing, of a certain individuality and even character of its own. Each of such humble dwellings commonly stands by itself, and in its architecture, if the term may be allowed, betrays both the scanty means as well as the individuality of its contriver and builder, and the rough uses to which it must needs be put, and to which it can but adapt itself. The interiors of these sea-beaten dwellings, when the fishermen, are as rough to the full as the exterior, yet is there in them a certain "comfort" to be found, the result, may be, of contrast, and it is mainly to add to this comfort and habitableness in his home that this great display of the fisherman's needs has been inaugurated.

There are at South Kensington several models and drawings of such sea-side dwellings as these. We are now speaking of, from different

parts of the world, and they are of much interest to those who look into such matters, and into the humble beginnings of great things. But few of those who may have wondered at the fish supply of huge London can have much, if any, idea of the mode of living of those who supply it all, and who do the hard work of it, and how they live, and in what sort of habitations. Some curiosity has, it is true, at times been felt in this, and it may be useful at this moment to point to a few examples in actual use, and inhabited, of those fishermen's houses or cottages, weather-beaten as they are. The models and drawings are to be found in the Eastern Arcade,—Nos. 545-549, a model of a fisherman's house of two stories. This is simply an ordinary dwelling-house of the kind usually to be found in the smaller towns in England. Then we have near it a Shetland fisherman's cottage, furnished in the usual way. It contains but two rooms, the walls of concrete and the roof of thatch. Next, a fisherman's cottage, facing the sea, of one story, with two rooms for living and sleeping. Then a pair of ordinary houses, with out-house; and, lastly, a drawing of a fisherman's house, with stone walls as on the South Coast.

And there are in all this, little as it is, many things not a little suggestive, for we need hardly say that all round the coast, and the smaller islands round and about it, some points are of deeper and more novel interest than others. And there is none more so than that of Shetland, to cite but one of them. This has other points of interest as well, for it carries us to other times, and other conditions of human existence; for the old Norseman comes again into almost living existence, for the street scenes, and the very names written up over shop-windows, and even the very talk of the common people, carry us away into other times and other life modes, while the country immediately round and about the small towns is equally strange, and out of the common way. The cottages here are all of them straw-thatched, and all have a rude kiln for drying corn, and the whole process, with the making of the bread, is of the very rudest and most primitive kind. Indeed, the cottage architecture here is surrounded by and shelters things and objects as rude as itself, and there are in all that is visible in and about it perpetual reminders of another condition of things, and of other times. Much more might here be said, but we should be in danger of going somewhat too far, may be, into detail; we would therefore but add, by way of suggesting further inquiry into so curious a subject, that this small insight into it should not end here, but that the more permanent of our great museums should not allow any opportunity to pass of adding to our knowledge of so curious a subject.

THE CONSTRUCTION OF FIREPROOF WALLS WITH SELF-BINDING MORTAR.

IN the construction of fireproof, or, more properly speaking, fire-resisting walls, the mortar hitherto used has been either refractory clay or else a mixture of the latter with finely ground firebrick. Herr Fritz Lürmann, in a short paper which has recently appeared in *Stahl und Eisen*, deals with this question principally as it affects the construction of blast-furnaces, coke-ovens, generators, &c.; but as his observations apply to other structures intended to resist the effects of fire, we quote them. The author says that so-called fireproof mortars are neither self-binding nor do they combine with the refractory bricks employed. Fireproof brickwork, consequently, does not hold together well, as is the case with ordinary brickwork constructed with hardening lime or cement. Now, fire-resisting brickwork, such as is employed in blast-furnaces, for instance, is exposed to great pressure, like ordinary brickwork; but it is at the same time expanded by the physical effect of heat, and chemically changed and melted off, through the combined operation of heat and the substances contained in the space enclosed, such as slag, glass, &c. Thus, even during drying, preliminary heating, and starting of structures consisting of refractory material, a shifting of the bricks takes place if mortar has been employed which does not bind well. The joints open, the mortar drops out, and, even before work proper is commenced, the cohesion of the supposed fire-resisting brickwork is destroyed. It need not be pointed out here how such disturbing causes hinder successful working.

In order to give the required cohesion to walls of refractory bricks at once, enabling them to resist the preliminary heating and starting, Herr Lürmann proposes to construct them, contrary to the present practice, not with so-called fireproof mortar, but with a self-binding mortar of lime, dolomite, cement, slag, glass, &c., with the addition of sand, clay, firebrick, &c., which frits at high temperatures. This self-binding mortar, ground very fine, is mixed with water to a consistency permitting of the use of very thin joints. Walls thus constructed are stated to form a compact whole, which expands equally, without shifting of bricks or dropping out of the mortar from between the joints. As soon as very high temperatures are reached, the mortar sinters either partially or wholly, and frits with the refractory bricks. It is best to use small bricks, for larger bricks are generally not thoroughly burnt through, and might give rise to shifting. It is only with small bricks that an equally-expanding wall can be constructed, and, through the employment of self-binding mortar, converted into a solid fire-resisting mass. The latter, from the same cause, will also contract equally during cooling.

JAPANESE METAL WORK.

IN a lecture recently delivered by Herr G. Richter, of Stuttgart, before the Polytechnische Gesellschaft, on "Japanese Art," the author dealt principally with the skill exercised by the Japanese in working metals. He first introduced a few remarks on bronze as employed in Japan. He stated that the name "karakans" for metal points to the conclusion that the manufacture of bronze was introduced from China. But it must have been known in Japan a very long time, for the first Europeans who visited the country found bronze guns and small arms. Japanese bronzes contain principally copper and tin, with a small addition of lead or zinc. In the second half of the fifteenth century, a certain Yndo, a friend of the painter Motonubu, exerted a great influence upon the development of the manufacture of bronze. He was the founder of ornamental art, and celebrated for his great skill in preparing models. The principal products of the Japanese bronze industry are figures, vases with flowers or birds, decorations, or both combined, as well as fishes, dragons, censers, &c. The execution of the bronzes points to great care being employed, and the casting of large dragons and other objects in one piece has hitherto not been accomplished by any other nation. The best bronzes are made for the temples. A vase and a candlestick are placed one on each side of the god, in the centre a censer, and below two lanterns. The old vases and candlesticks were formerly not made in pairs; each formed a separate work of art. The manufacture in pairs was only encouraged later, by the export trade which set in.

Great care was also formerly exercised upon the ornamentation of swords. The guards and the handles of daggers and knives were adorned by the most beautiful bronzes. The sword-guards and the dagger-handles are made of chased iron inlaid with bronze. No less artistic are the "netzky's" or the "kanemonos," which are buttons serving the same purpose as the former, but are also used as sword suspenders. They are decorated with charming coloured bronzes, each being a perfect work of art. The alloy of bronzes of blue-black colour, principally employed, and called "shakudo," consists of copper with three per cent. of gold. An alloy consisting of three parts silver and one part copper gives a silver-grey colour, called "shinbuchi."

The art of working iron has attained to a perfection in Japan, the author said, which justly deserves the admiration it has called forth. Witnesses of this excellence are the old sword-blades, which are richly ornamented. A master in the art was Miyochin-Meneharu, who lived in the sixteenth century. One of his works, unique of its kind, is in the British Museum. It represents a sea eagle, standing with extended wings, bristling plumage, and outstretched claws, upon a rock. Each single feather is wrought, and the whole is so true to nature that it deserves the appellation of unique.

Proceeding to two other branches of metal-working, enamelling and *cloisonné*, the author said that it had not been proved when the art of enamelling was first introduced. It is

affirmed with certainty that it has been known for centuries. In enamelling copper, the enamel is applied to the object, the form of the flower or arabesque being completed. The Japanese are such experts that they finish with one colour everything that has to be done in that colour; they then follow on with the other colours, until the whole work is finished.

In working *cloisonné*, the process is more complicated. The gold wire employed is rubbed with the juice of a kind of onion. That juice is so sticky that it fixes the wire on the surfaces, and the figures made are then filled in with enamel. In both processes the object is placed in an oven, which is heated until the enamel begins to shine. As soon as the lustre appears, this is a sign that it has been melted. The process requires the greatest care; for, should the oven be over-heated, the enamel is burned, and drops off. It also happens that the enamel is too thin in some places, when it gets burned before the other parts are finished. When the object enamelled has become cool, the inequalities are rubbed with a fine sandstone by hand, and the enamel is finally polished.

Another method of enamelling is to cut out the figures in metal. The deepened portions are then filled in with enamel, and the whole is treated in the same manner as in the other process. Metal plates with raised and smooth enamel are used as inlays for drawers and other articles of wood. Both kinds of enamel, especially those of many colours, are also produced on porcelain. A lacquer-like enamel, like *cloisonné* work, is used for wood. This is an invention of more recent times. Chinese *cloisonné* long enjoyed the name of being the best. But the Japanese have eclipsed it in the purity and beauty of colour and the art of decoration. They are unequalled in this respect.

ST. MARTIN'S PRIORY, DOVER.*

THE Priory of St. Martin, in Dover, dates its origin from the year 1130, when the buildings were commenced under Archbishop Corboul. They were probably completed under the direction of his successor, Archbishop Theobald. Taking into consideration the size and extent, the character and magnificence, of the structures, the Priory must have been one of the grandest of the religious houses in England. Before its suppression, the buildings seem to have fallen into a state of dilapidation. Having suffered damage from the French forces at the close of the twelfth century, the Priory was surrendered to the See of Canterbury in 1555. The process of decay then went rapidly on, the materials being removed and used for various purposes, so that, at the present moment, out of nine structures, three only remain in preservation,—the gateway, the refectory, and the guest-house.

Portions of the boundary-wall enclosing the Priory are still in existence. The wall on the north side is in good order, but the portions on the east and west and south sides have been removed, except a small portion near the gateway. They enclosed the Church of St. Martin, the chapter-house, the cloisters, the dormitories, the refectory, and kitchen, all grouped closely together. At some little distance was the building known as the guesten-house, on the north-east corner, a building probably for the accommodation of some of the dependents, and on the north-west side was a cruciform barn. Of these several buildings, three have entirely disappeared, viz., the chapter-house, the dormitories, and the barn; of these, we have portions of the ruins *in situ*, viz., the church, the cloisters, and the houses in the north-east corner, and the other three are preserved, and now utilised,—the refectory, the guesten-house, and the gateway.

In 1840 a lease for building purposes was granted to Mr. Parker Ayers of a large part of the Priory estate on the south side, including the boundary-wall, a large part of the church, and the chapter-house. Up to this date much of the foundation-walls of the church and chapter-house were above the ground-level; and by the kindness of Mr. Ayers, who, before the demolition of these ruins took place, drew a rough plan and took the several measurements of the church and chapel, I have been furnished with the following details, the correctness of which is borne out by the fact that there are

certain portions still in existence of the foundations, by which the measurement is compared. The external area comprised 24,971 feet, exclusive of chapter-house. The internal area was 20,328 ft. The plan of the church was cruciform, with a tower in the centre of the cross. It consisted of a nave, two side aisles, north and south transepts, and choir. The length of the interior was 285 ft., the length of the transept was 155 ft. The width of the nave was 33 ft., and of each aisle 15 ft. The length of the choir was 50 ft. and the width 20 ft. The walls at the eastern end were about 7 ft. in thickness (that at the western end was about 5 ft.), and were formed of rubble, principally flint grouted with beach gravel and chalk lime, with Caen stone enrichments. The roof was supported by pillars on square bases, four on each side in the nave, each base being 5 ft. square; and two on each side in the choir. These bases were found to be of Bethersden marble. There were chapels on the east side of the transepts and also in the choir.

Under the foundation of the chapel, were found twenty-four pieces of silver coin of the date of Henry II., which were deposited in the Dover Museum by Mr. Ayers. Archaeologists are indebted to this gentleman for having drawn out and preserved a plan with these details, for the ground was levelled, the foundation-walls broken up and used, the bases of the pillars destroyed, and now, with the exception of a few portions which still remain as landmarks, there is nothing to indicate the grandeur and magnificence of this edifice. Portions of the carved stones which have been preserved will be pointed out, which show the elaborate workmanship bestowed on the fabric. Adjoining the north-eastern extremity of the transept was the chapter-house. A portion of its eastern end was removed in excavating for building purposes, and Mr. Ayers preserved the measurement, which he gives at about 56 ft. by 25 ft.

The Priory Estate was held under lease for many years by the family of Coleman, who, being extensively engaged in agricultural pursuits, have assisted in the preservation of the buildings, which still exist. The refectory served the purposes of a barn and storehouse. The windows were mostly closed up, the doorway built up, and the roof patched and mended so as to keep out the weather. The building called the guest-house, against the east end of which the cottage residence occupied by Mr. Coleman had been erected, was similarly used, and communication by a doorway into the interior assisted in its being an adjunct to his domestic arrangements. The gateway had suffered more in the way of dilapidation, but the external walls were preserved.

In 1868, Mr. Chignell obtained leave to make use of the refectory, having a school in one of the adjoining houses, for a recreation-hall for his pupils. Having let some daylight into the hall, he saw its architectural beauties, and his mind was at once directed to its restoration. He suggested the formation of the College Company, who should lease as much of the Priory Estate as they could obtain, and restore and preserve the remaining edifices. The company was formed, and the first portion of the work of restoration was carried out under the direction of Mr. Tavenor Perry, M.R.I.A. (who published a small pamphlet on the Priory of St. Martin), Mr. Chignell undertaking the heaviest part of the expense. The roof had to be entirely renewed. In his pamphlet Mr. Perry writes thus of the refectory, "The building on the north side of the cloisters is the refectory, and it is the most important of the remains. It measures about 100 ft. in length by 27 ft. in width, and its height to the starting of the roof is 30 ft. The windows are pierced through a simple continuous arcade, which runs all round the inside of the building. It will be noticed that the capitals and abaci of the north and south sides differ from those at the end, and do not properly accord with the style of the work. These capitals were evidently inserted after the French attack, when the refectory must have been seriously damaged by fire. The windows on the south side have their sills at a higher level than those on the north, an arrangement necessitated by the height of the cloisters below. For two hundred years at least this refectory was used as a barn. Fortunately one of the most interesting features has nevertheless been preserved. The large drawing of the Last Supper at the east end is, I believe, unique in England, and though so much

obliterated that it has ceased to be in any way ornamental, it bears most valuable traces of what was once a great work of art."

The next building to which I would call your attention is the gateway. This seems to have suffered considerably from the devastations. The outer portion appears to be partly the original construction. It was prepared for a portcullis, and was internally groined. The inner arch bears character of a later date, and was probably rebuilt without reference to the architectural character of the outer portion. At the time when the College Company became possessors of it, the gateway was in a more ruinous condition than any of the other buildings. But it was restored, and is now used as a library.

The other building which has been preserved, the guest-house, like the refectory and gateway, had fallen into a sad condition. The cottage residence of Mr. Coleman communicated with it by a doorway at the east end. On removing a chimney-stack the window at the east end was disclosed. The pointed arches carried on cylindrical piers with some fine Norman capitals denote its probable date. It was restored principally by private subscriptions under Mr. Hanson, and is now fitted up and used as a chapel to the college.

THE NEW BRIDGE AT PUTNEY.

CONSIDERABLE progress is being made in the preliminary work for the construction of the new bridge across the Thames at Putney, for which Mr. John Waddell is the contractor. The contract work specified in connexion with the new draw-dock has been practically completed. The coffer-dams for the construction of the northern and southern abutments on the Middlesex and Surrey sides of the river respectively have also been completed, as well as the first Middlesex and first Surrey pier coffer-dams. The concreting of the Surrey abutment, and the excavation of the northern abutment, are being actively proceeded with, whilst the demolition of the old aqueduct, and the erection of the temporary staging across the river are simultaneously progressing. The water mains have been removed, and the brick sewer, 4 ft. by 2 ft. 8 in., under the northern approach roadway to the bridge, and the retaining and screen walls to the Fulham Viaduct, are nearly completed. Altogether the total value of the work already executed is estimated at about 22,000*l.*, of which 3,000*l.* represents the progress due to the past month.

STRENGTHENING THE FOUNDATIONS OF WATERLOO BRIDGE PIERS.

MR. WILLIAM WEBSTER, the contractor for strengthening the foundations of the piers of the Waterloo Bridge, is making rapid progress with the work, a large number of artisans and labourers being employed on the undertaking, as well as several pumping and other engines. The works in connexion with four of the piers are complete, namely, the second, third, fourth, and fifth piers from the Surrey end of the bridge. The temporary staging around the first Surrey pier has also been completed, and about two-thirds of the permanent piling has been driven; and the staging around the second pier from the Middlesex side is likewise in progress. The amount of the contract for the whole of the work is 70,000*l.*, towards which work to the value of about 30,000*l.* has already been executed.

Victoria Restaurant, Manchester.—One of the principal features in connexion with the hotel portion of the Victoria Buildings, Manchester (a block which has already cost over 120,000*l.*) is the grand billiard saloon in the basement. This splendid "cellar" has been cut out of the solid rock. The design is of massive proportions, and is rich in ornament and coloured decoration. It was originally intended for a billiard saloon only, but the new proprietor has decided to devote it to restaurant purposes. To meet the new requirement considerable alterations have had to be made involving an outlay of between 1,000*l.* and 2,000*l.* The works are being carried out by Mr. William Dawes, the architect of the whole building, from whose design the new hotel forming part of the block is being erected at a cost of over 50,000*l.*

* From a paper read by Dr. Ashley at the Dover Congress of the British Archaeological Association.

DISCOVERY OF A ROMAN HOUSE IN SOMERSETSHIRE.

MR. C. J. ELTON, F.S.A., the recently adopted conservative Candidate for the Western Division of the County of Somerset, has lately made an important discovery of a fine old Roman villa near his residence at Whiteanton, Somersetshire. Having been favoured with particulars of the find, a description of the villa will, no doubt, interest many of our readers, especially archaeologists. The existence of the ruins of a Roman villa near the residence of Mr. Elton had long been suspected by the owner, owing to the frequent occurrence on the banks of the stream, which also was adjacent to his house, of minute fragments of an ancient kind of pottery, &c. Forty years ago the ruins of a little room or chapel, roofed with slabs, and paved with tesserae of brick, were found standing over a clear spring in the wood. Last year sandstone pillars, which had supported the flooring over a hot-air chamber, and some of the square boxlike flue-pipes, which had led the warm air through the walls of the dwelling-rooms, were found. Examinations have been made this year, under the direction of Major Davis, who is engaged also in the excavation of the Roman remains at Bath, and the result shows that the house was built under a steep hillside, facing to the south, though the windows looking down the valley westwards must certainly have afforded the best view. The bath-rooms were arranged round the atrium, or covered court, at the eastern end. The centre of the house was occupied by a furnace-room, which probably adjoined the kitchen, and here were the boilers which supplied the warm bath and steam for the vapour-bath, which was taken in a heated chamber, from which the bathers must have passed into a room containing the cold plunge-bath, lying further to the east. The hot-air room terminated in a semicircular recess, paved with square red tiles, embedded in concrete, several lines of thicker tiles radiating from the centre of the room towards the curve of the recess, where they reached the wall, and formed a support for the *solum*, or bench, where the bathers sat. On the further side of the furnace are flues or underground passages for hot air, and with thick tilework, leading to another semicircular room at the back, containing a number of red sandstone blocks, intended apparently to support the fireplace, the doorway, and a seat or projection from the wall, and towards the front to another room adjoining the atrium, where a huge slab of much discoloured sandstone marked the position of another large hearth or fireplace.

THE ENLARGEMENT OF BAKERS' HALL.
CORRIDOR DECORATIONS.

SOME time since a notice appeared in the *Builder* of the extensions then in progress at Baker's Hall, Harp-lane, Great Tower-street. These extensions, including a new approach corridor, have just been completed by the placing of a number of historical panels in the corridor, representing some of the principal events in the history of the company. Each panel is in white marble, set in a carved dado of Portland stone. The cartoons are worked in and run into the marble. One panel represents the granting of the Charter of the Company by Henry II. His Majesty is represented as sitting on his throne, handing the charter to the first Master of the Company, who is making his obeisance. Adjoining this is the second cartoon, showing the workmen engaged in the construction of the hall. A panel three represents the ceremony of investing a liveryman in his robes, the central figure in the group being the clerk, who as the record in his hand for the newly-admitted baker to sign. An ancient detail of the Company's life is set forth in the next cartoon, their barge on the Thames rowed by six oarsmen, a view of Old London being seen in the background. Active life in the bakery is presented in the fifth panel, and in the next panel the old custom of assaying bread in the fansion House is shown. Charitable deeds are recorded in the seventh panel, the poor receiving their doles at the gates of the hall. The eighth and last cartoon represents an old mayoral procession, at the moment when the liverymen of the Company are passing. This panel is not yet completed, the figure of the

Lord Mayor on horseback being minus his head. It is not intended to finish it until the next Lord Mayor, who is expected to be Mr. Alderman Hedley, and a member of the Company, is duly installed in office. The panel will then be completed by the filling-in of a portrait of the incoming Lord Mayor.

The panels have been executed from the design of Mr. F. Weekes, and carried out under the direction of Mr. J. Clarke and Mr. C. J. Shoppee, architects, Mr. J. E. Lawrence being the contractor.

THE APPROACHES TO THE ROYAL COURTS OF JUSTICE.

THE demolition of the two churches in the Strand,—St. Clement Danes and St. Mary's,—is said to be threatened in connexion with contemplated improvements and approaches to the new Law Courts. It is stated that the Metropolitan Board of Works intend to apply to Parliament next session for powers to carry out certain improvements in the Strand, with more adequate approaches to the new Law Courts. It appears that the Works Committee of the Board have for some time past had the matter under consideration, and have at length resolved upon a plan which involves the pulling down of the two churches of St. Clement Danes and St. Mary's, together with the sweeping away of the whole of the south side of Holywell-street, including also the abutting portion of the north side of the Strand. It is further stated that the plans contemplate the re-erection of the church of St. Clement Danes somewhere in the neighbourhood of Clare Market.

NEW WAREHOUSE BUILDINGS ON THE BRIDEWELL ESTATE.

THE last portion of the vacant land on the Bridewell Estate, off New Bridge-street, has just been covered with a spacious block of new warehouses, erected for Messrs. Spicer Brothers, paper-makers and wholesale stationers. The building has three frontages, one to William-street, 50 ft. in length, another to King Edward-street, 100 ft. long, and a third frontage of equal length to Water-street, the building thus covering an area of about 5,000 ft. In addition to a deep basement, 20 ft. below the ground line, the building contains seven floors, and is carried up to a height of 80 ft. above the pavement level. The ground and first floor elevation of the several frontages is in Portland stone, the upper portions being in white Suffolk brick, with Portland stone strings, windows, and dressings. The top floor has a range of recessed arched windows, with moulded hoods and labels in red pressed brick, imparting a handsome appearance to the respective frontages. The elevation is surmounted by a massive cornice in Portland stone, resting on carved trusses. Internally the building is of a very substantial character. The different floors, having joists 11 in. by 4 in., and 8 in. apart, rest on strong iron columns and girders, which are carried up through the several floors to the top of the building. There are both goods and passenger lifts, as well as approaches to the upper floors by stone staircases, the goods lift extending from the basement to the top of the building, and the passenger lift to the second floor. In the William-street frontage there are five cranes for hoisting purposes. The building contains an aggregate floor area of nearly 40,000 ft., or little short of an acre in extent. The architect is Mr. Roberts, of Broad-street, City; and Mr. George Shaw, of Westminster, is the contractor. Mr. Wright is clerk of the works, and Mr. Stockwell the foreman. The estimated cost of the building is about 25,000l.

The Manchester Ship Canal Project.

MOST of our readers are aware, as to this scheme, that on coming before a committee of the House of Lords, it has been practically rejected, after an inquiry which extended over ten weeks. In the whole, fifty days altogether have been occupied in an inquiry which has for the present been fruitless, after about 120 witnesses have been examined in connexion with it, and which it is confidently stated has cost more than 100,000l. It is said that the prosecution of the Bill has cost the promoters alone upwards of 65,000l.

A NEW HOSPITAL FOR PLYMOUTH.

IN a few months' time Plymouth will be in possession of one of the finest hospitals in the provinces. A fine hospital, known as the South Devon, has been used for many years, but it has become inconvenient and small for the requirements made upon it, and a new hospital is being erected to take its place. The new building is being erected in Clifton-place, and will be opened with a grand ceremony. The men's ward is in a very forward state, it being very nearly finished internally. The women's ward is also now being plastered, but this part of the work at its commencement was got on with very slowly, and was the occasion of some discussions in committee. The ornamental tower in the centre block has been got up, and the nurses' institute on the other side is well advanced. All the buildings are slated in, with the exception of the centre block and the nurses' institute. It has recently been determined by the committee to add another story to the accident ward. This was very much pressed upon the committee by Sir Massey Lopes, at the annual meeting, as without it there would be no spare ward in any case of emergency. About 45 ft. more ground has also been acquired to the southward, and the arrangement of that part of the site has been slightly altered. Instead of the main entrance to the hospital being somewhere near the centre of the new road at the bottom of the site, it will now be at the corner of the new road and Woodland-terrace. The design for the gates and the ornamental iron rails on each side is very good, and at the entrance will be a neat one-story lodge for the porter. In the left-hand corner from the entrance it has been determined to erect some necessary buildings in connexion with the hospital. They comprise a mortuary, a dissecting-room, and a carriage-shed to accommodate three carriages. The gas and water pipes, heating apparatus, and lifts are for the most part in the building. Messrs. Coe & Robinson, of 4, Fumival's Inn, London, were the architects; but a few months ago Mr. Robinson, who had had almost exclusively to do with the building, died. Mr. Coe remains the architect, and Mr. Jonathan Marshall is the contractor.

ADDITIONS TO MESSRS. ROTHSCHILD'S OFFICES.

THE Doric quadrangular block of buildings in St. Swithin's-lane, forming the offices of Messrs. Rothschild & Sons, the great financiers, is perhaps one of the finest commercial establishments, architecturally, in the City. Important additions are at present being made to the buildings. At the rear of the western portion of the quadrangle, in the direction of St. Stephen's Church, Walbrook, the offices are being extended by the erection of two additional stories, uniform in height and architectural elevation with the north and south wings. The extension will provide several additional office and other apartments, together with a gallery carried round the western boundary of the premises. Messrs. Cubitt & Sons are the contractors.

PONTEFRAC T OLD CHURCH.

IT is intended to remove the western ruins of the Church of All Saints, Pontefract, for the purpose of extending the present church. Mention is made of the old church in the first charter granted before 1100 to the Priory of St. John, by Robert de Lacey. No trace remains of the church then erected, though it is quite possible that some of the old work may be concealed in the *débris* which raises the level of the church and churchyard about 3 ft. The old church consisted of a chancel and large south chapel, a central tower, two transepts (that on the north had an eastern aisle) a nave with aisles, and a north and a south porch, belonging, it is believed, to the latter half of the fourteenth century.

The old church was much injured during the earlier sieges of the Civil War. On March 6, 1647, the Lords sent to the Commons the draft of an order "for re-edifying" the structure in consequence of damage by siege, but nothing appears to have been done. Parliament has, however, granted money for its repair, notably after the third siege, when it was reduced to a great ruin. The feeling in Pontefract is in favour of retaining the remains in the work of restoration.

BRANDER LIBRARY, HUNTLY.

This building is designed to provide a library 53 ft. by 24; ladies' reading and class-rooms, 20 ft. by 16 ft.; gentlemen's reading-room, 21 ft. by 18 ft., and class-room, 24 ft. by 18 ft.; rooms for caretaker, &c. The building is the gift of Mr. Brander, Crook Hill, to his native town of Huntly.

In answer to an invitation to architects through the newspapers in February to compete, twenty-eight designs were submitted to the local authority in Huntly, entrusted by Mr. Brander with the carrying out of his munificent bequest. All the plans were sent to Mr. Weymouth, of Moorgate-street, London, to adjudicate upon them as referees, and he selected the design by J. & J. R. Rhind, of Elgin. The work has been contracted for, and is now in progress.

The masonry of the principal elevations is of square dressed grey granite, having dressings of red freestone, which gives an agreeable variety and contrast to the external appearance of the structure.

The contractors are Alexander & MacDonald, builders, Inverness; Roland & Spence, carpenters, Keith; Alex. Barclay, slater; John Loggie, plasterer; James Bowman, plumber, and Theo. Gerrard, for ironwork, all of Huntly.

UNION ASSURANCE BRANCH OFFICES, BERLIN.

The Union Assurance Society of London, which has long had a considerable life business in Germany and Switzerland, has arranged to erect new offices in Berlin in place of those it at present occupies, and has purchased for that purpose a valuable site at the corner of the Wilhelmstrasse and Zimmerstrasse. The position is one of the most commanding in the city, as not only is the Wilhelmstrasse a very important street, in which are the palaces of Prince Bismarck, Herr Pringsheim, the English Embassy, the Architects Verein, &c., but the proposed continuation of the Zimmerstrasse, described in a recent number of the *Builder*, through the War Minister's grounds, will make that the principal direct communication between the east and west ends of Berlin. The whole of the Wilhelmstrasse is being rapidly rebuilt, but the older buildings which remain were mainly erected in the early part of the last century, and not a few by the rough-and-ready method adopted by Frederick Wilhelm to get his city rebuilt, as described by Carlyle.

The new building, of which we give an illustration this week, will consist of offices on the ground-floor only, the basement and the several floors above being let off in flats for private occupation. The only entrance will be from the angle of the building, with doors right and left of the vestibule leading to the offices, and a central doorway giving access to the main staircase lighted from a courtyard in the rear of the building. The style selected is a phase of German Renaissance answering to our own "Queen Anne," as not only is this being successfully revived in many of the semi-public buildings now being erected in Berlin, but it was during the reign of Queen Anne that the Union Office was established.

When it was first decided to build the new offices, it was intended that a Berlin architect should be employed to carry out the works; but some of the peculiarities of German practice rendered this arrangement difficult, and, finally, the society determined to employ their London architects to design and generally superintend the work in conjunction with a local architect, who could more particularly superintend the execution. One difficulty was to find an architect in practice who was not also a contractor, or a designer in the employ of a contractor, and in a position to be an independent adviser and act fairly between client and builder. Contractors as well as architects are members of the Architects Verein, and the large proportion of the new buildings, apart from Government buildings, in Berlin are erected by builders who also act as architects. Those who do, however, act as *bona fide* architects do their work more completely than their English confrères, as they prepare the bills of quantities, either themselves or in their own offices. The amount of the architects' fees, and the mode of paying them, also differs from ours, and is more satisfactory for the profession. Too often in England the architect is

the last person to be paid by the employer; and if the final certificate be one not altogether satisfactory to the client, the amount of it is frequently made an excuse for postponing the settlement with the architect. In Berlin, where the average charge is 7 per cent., including "quantities," about one-fourth is paid on the signing of the contract, one half in monthly instalments during the progress of the works, and the balance on the issue of the final certificate.

The new building, as illustrated, has been designed by Messrs. Perry & Reed, Surveyors to the Union Assurance Office, of John-street, Adelphi, who are associated in the superintendence of the works with Herr Lange, a certificated architect, late of Breslau, and now carrying out some important Government works at Berlin and Tempelhof.

HUMPHREYS' HALL MANSIONS, AND HUMPHREYS' HALL, HYDE PARK.

We publish in our present number an illustration of Humphreys' Hall Mansions. Humphreys' Hall has already established a reputation as a place of exhibition of special objects, and as an assembly-room on important public occasions. The Food Exhibition was held here last autumn, and also several successful bazaars during the winter. The great banquet and demonstration of welcome to the Life Guards on their return from the Egyptian campaign took place here, on the 25th October, 1882, when covers were laid for 1,000 guests. Although so spacious, it is not considered equal to the accommodation of the various societies which seek to hold exhibitions there. It is therefore anticipated so to extend the hall as to more than double its size. The additional part will be available for use either as a separate place of assembly, or in combination with the present hall, to form one grand apartment. If required, the whole area can be divided into three separate halls. There are shops under the mansions which communicate with, and are on the same level as the halls, making the total available area for exhibitors on the floor level 25,000 ft. The existing hall is very open, light, and exceedingly well ventilated. It is floored with a fine solid white marble pavement in large squares. The new halls will be carried out in an equally substantial manner, and will be fitted with hydrants and every appliance for safety in case of fire. Suitable business offices will be provided in the new buildings for the use of committees of future exhibitions.

Humphreys' Hall Mansions, now in course of erection, are a large block of buildings in front of the halls, facing the High-road, Knightsbridge. They have a frontage of 111 ft., and will contain a noble suite of rooms, for high-class residences in flats, which are greatly needed in this neighbourhood. The ground story will be occupied by shops, most of which are already let at high rentals. Between the shops are three entrances to the halls, two of which are 8 ft. wide, and the centre one 12 ft. They give easy access to the halls by means of inclines and short flights of steps.

The mansions will be approached by a spacious stone staircase in the centre of the building. There will be a large number of rooms available for residence, besides which, all the shops are provided with retiring-rooms on a mezzanine floor. The floors will be fireproof throughout, and proper hydrants and buckets will be supplied on each landing, and the whole work will be of the most substantial character. The ground-story facing the park is built of Portland stone; in the first floor there are oriel windows and projecting balconies in the same material. The upper portion is chiefly built of fine cut, rubbed and gauged brickwork. There will be passenger-lifts for the residents, a coal-lift and service-lift from the restaurant in the basement floor, and every other convenience necessary for the comfort of residents and their visitors.

On the top floor will be a spacious reception-room, about 48 ft. by 40 ft., for the use of residents, or for hire by societies, or as a first-class club or meeting room.

The sanitary arrangements will contain all the latest improvements. Mr. J. Charlton Humphreys, the spirited owner of this valuable property, has a wide reputation for his excellent iron buildings, samples of which are always exhibited on the grounds adjoining the halls. Mr. Humphreys purchased the property out of

bankruptcy, and when the works now in progress are completed he will have laid out upwards of 50,000.

We should mention how conveniently situated the mansions will be with regard to Hyde Park. If, as it is probable, the new entrance is made near the Riding School, as mentioned by Lord Fortescue in the House, their situation in this respect will be even better than it is.

A frontage of about 30 ft. of the mansions is now completed. It is expected that the whole of the works will be finished early in 1884. The carving is being executed by Mr. Seale, of Waiworth. The whole of the closets, sanitary fittings, and plumber's materials, have been supplied by John Bolding & Sons, of South Molton-street. Mr. Richard John Boon is acting as Mr. Humphreys' building manager. The architects are Messrs. Romaine-Walker & Tanner, of 19, Buckingham-street, Adelphi.

CHURCH OF ST. MATTHEW, KEMP TOWN, BRIGHTON.

The new Church of St. Matthew is designed to meet the spiritual wants of a large and growing district, northward of the College grounds, and contiguous to the Kemp Town Station. The site is at the corner of Sutherland-road and Gordon-terrace. The contract was taken by Mr. John T. Chappell in 1881 for 10,007l., and the partially completed building will be consecrated on St. Matthew's Day (Sept. 23).

The roadway being raised some 10 ft. above the natural level, concrete foundations have been brought up, and advantage has been taken to utilise the space under the chancel as a playground for the children of the Church schools to be built in Canning-street, on the north side, and from which a bridge will communicate with the north chancel chapel, to be appropriated entirely for their use. The ground-plan of the church is a simple parallelogram, 100 ft. by 73 ft., comprising nave, 70 ft. by 36 ft., north and south aisles, 66 ft. by 16 ft., chancel, 30 ft. by 36 ft., north chancel chapel, 27 ft. by 16 ft., south ditto and vestry, 27 ft. by 13 ft.

The tower at the south-west angle forms an entrance porch, in addition to the double portal at the west end of the nave. The walls are unusually massive, built of beach shingle and Portland cement concrete, faced externally with snapped flint, and internally with red Burgess Hill bricks. The lofty arcade arches are of red moulded brick, supported on circular columns of Douling stone, each banded with four shafts of red Corshill stone. The stonework of the windows, doorways, and dressings generally is from Mr. Trask's quarries at Douling.

The roofs are open-timbered throughout; the ridges of the nave and chancel roofs are continuous, that of the nave open to the ridge, whilst that of the chancel is panelled to a trefoil form. Externally the roofs are covered with pale green German slates laid on boarding and felting.

The pulpit projects from a low stone chancel screen, and is worked (by Bennett, of Lewes-wood) in Monk's Park stone, Devon marble, mosaic, and brass inlay, and was erected by members of the congregation of St. George's Church as a memorial to the vicar, the Rev. J. R. Rogers.

The font (by Davison, of London,) is embellished with ceramic mosaic work panels and risers, and was presented by Mrs. Masterman.

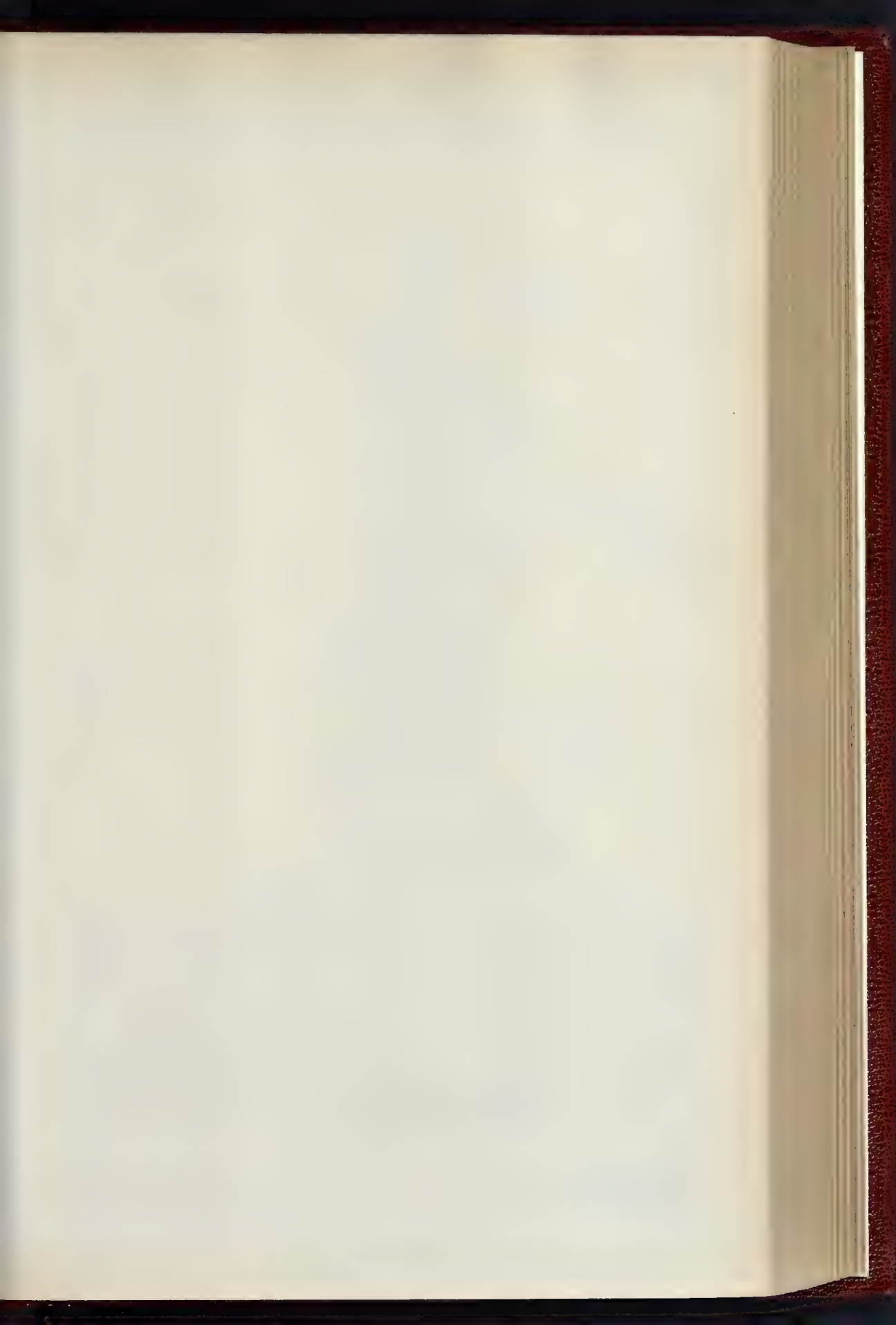
The organ (by Harper, of Brighton,) projects from a chamber over the vestry on the south side of the choir, and was the gift of Mr. Charlesley. The heating is upon Grundy's system, and the lighting by gas,—the fittings by Hart, of London.

The tower will be roofed in a temporary manner at a height of 73 ft., but will eventually be surmounted by a spire 190 ft. high. The height to the apex of the nave roof is 73 ft., and to the apex of the chancel roof 83 ft.

The accommodation will be for 1,200 when the edifice is quite complete. The works still remaining to be done are tower and spire, children's gallery, reredos, and external and internal carving.

The architect is Mr. Norton, of Old Bond-street.

Pavement.—The wood pavement in the roadway of New Oxford-street is being taken up and the compressed rock asphalt of the Val de Travers substituted.

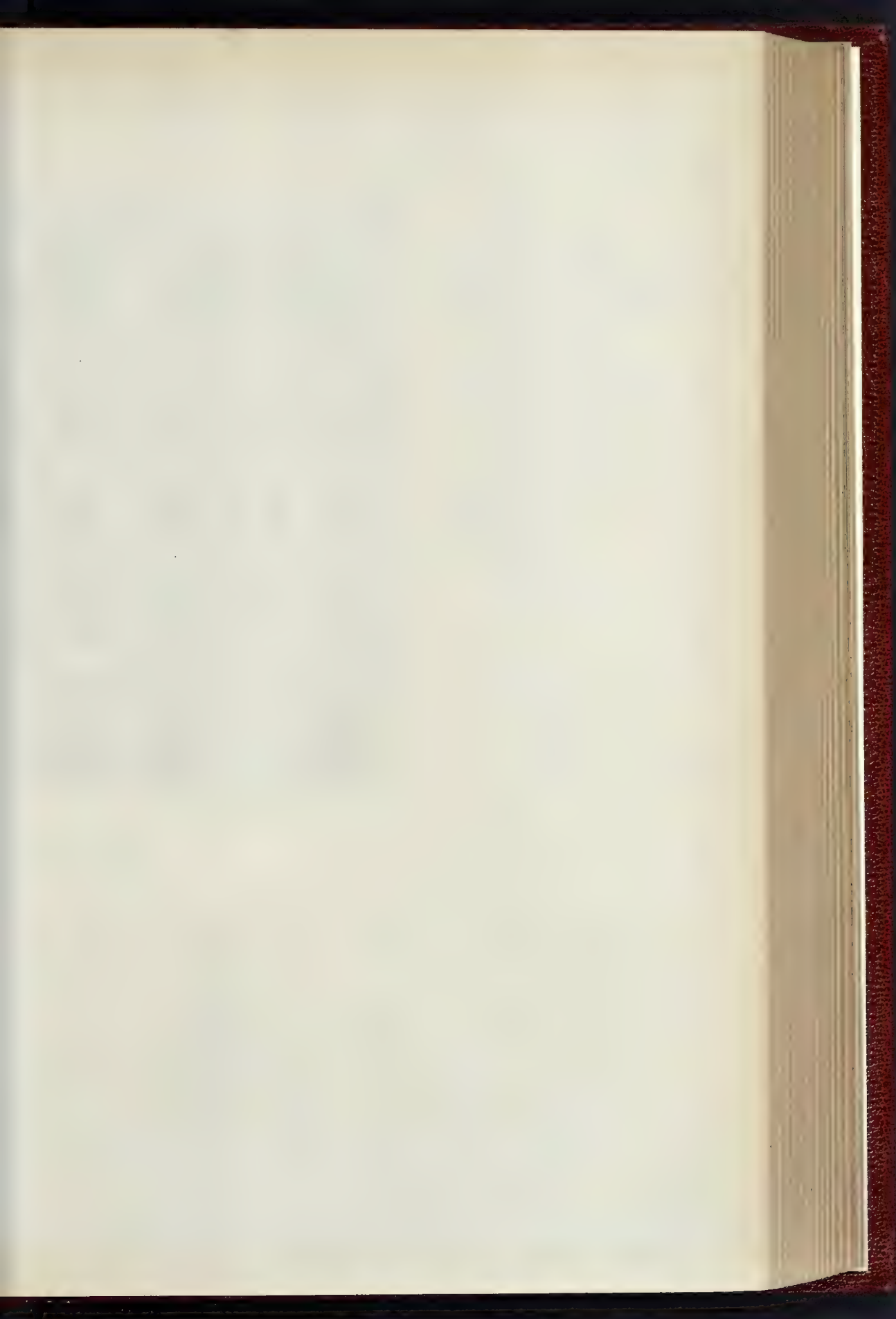




View from the East by J. C. P. & Co. Photo. Lith. W.C.

CHURCH OF ST. MATTHEW, KEMP TOWN, BRIGHTON.

MR. JOHN NORTON, ARCHITECT.



Humphreys Hall Mansions

— and —

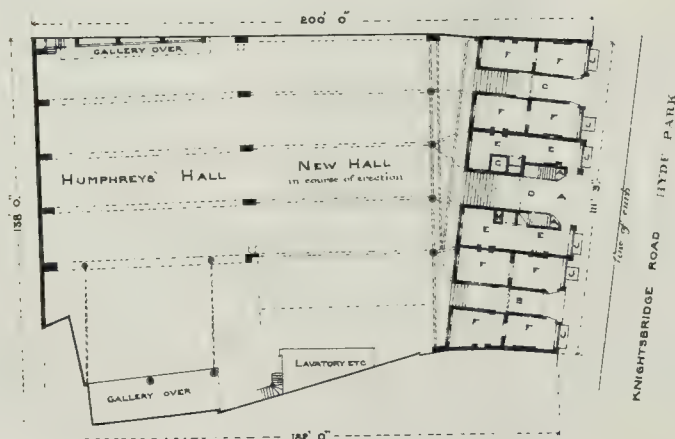
Humphreys' Hall Hyde Park

— in course of —
— Erection —

Romaine Walker & Tanner
19 Buckingham Street
Adelphi W.C.



Humphreys



Ground Plan.

View from the South East

— Scale for

— Scale for

A Ent
B Ent
C We
D Ce
E Res
F Sh
Note. M
on
acc
G Pe
H Se
I Ste
J Lig
K Cel
L Ste
M Ma
N Cor
Note. C
V



Mansions.
Front Elevation.

— 20' — 20' feet.
— 10' — 10' feet.

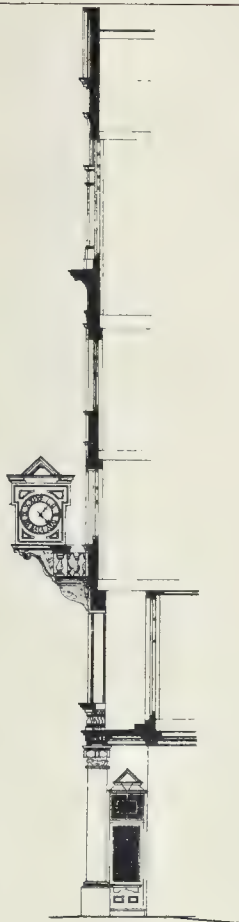
ys Hall Mansions.
halls.

of E and F
is and

at on Hall level.
or Pavement

s on Upper floor

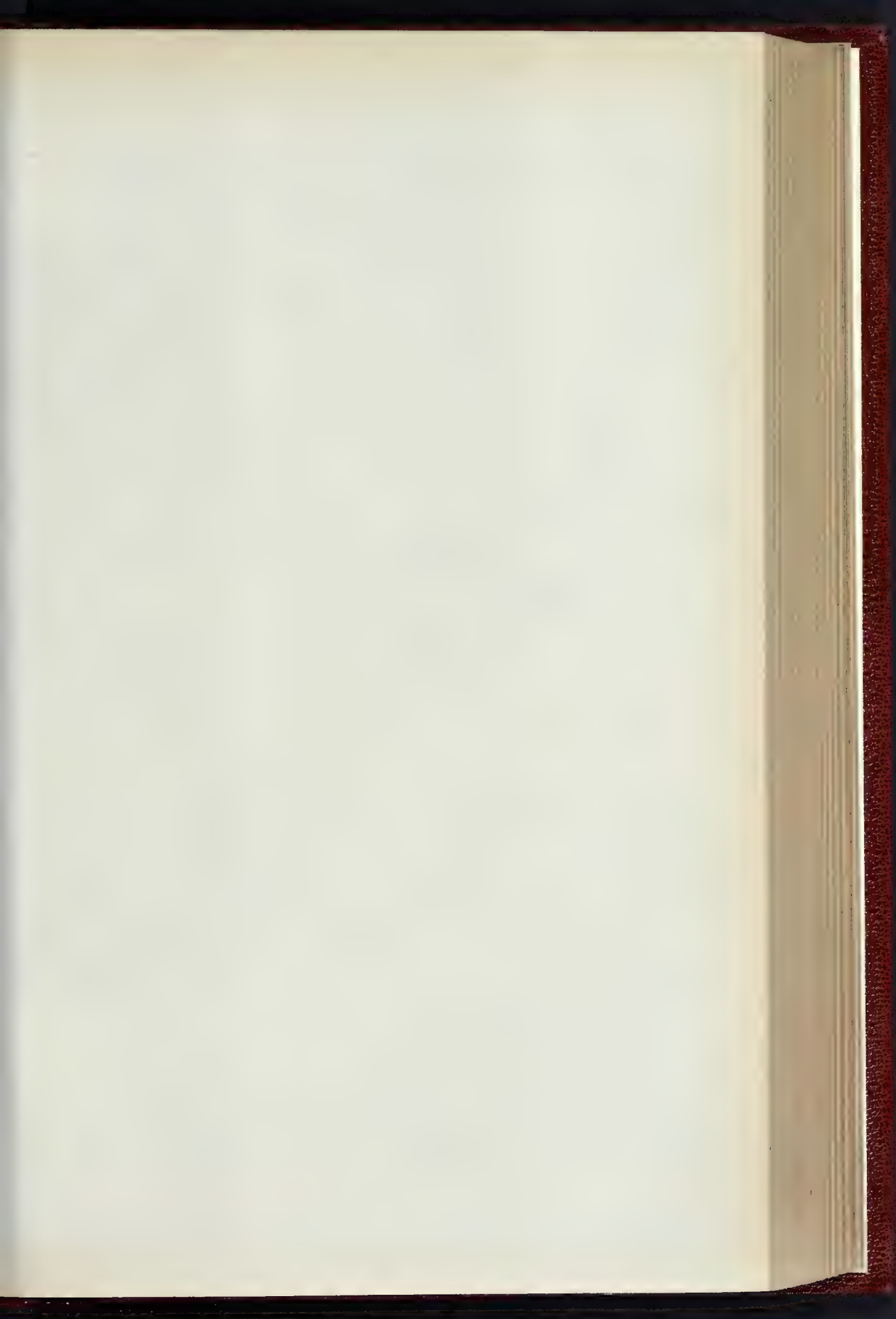
room over
building



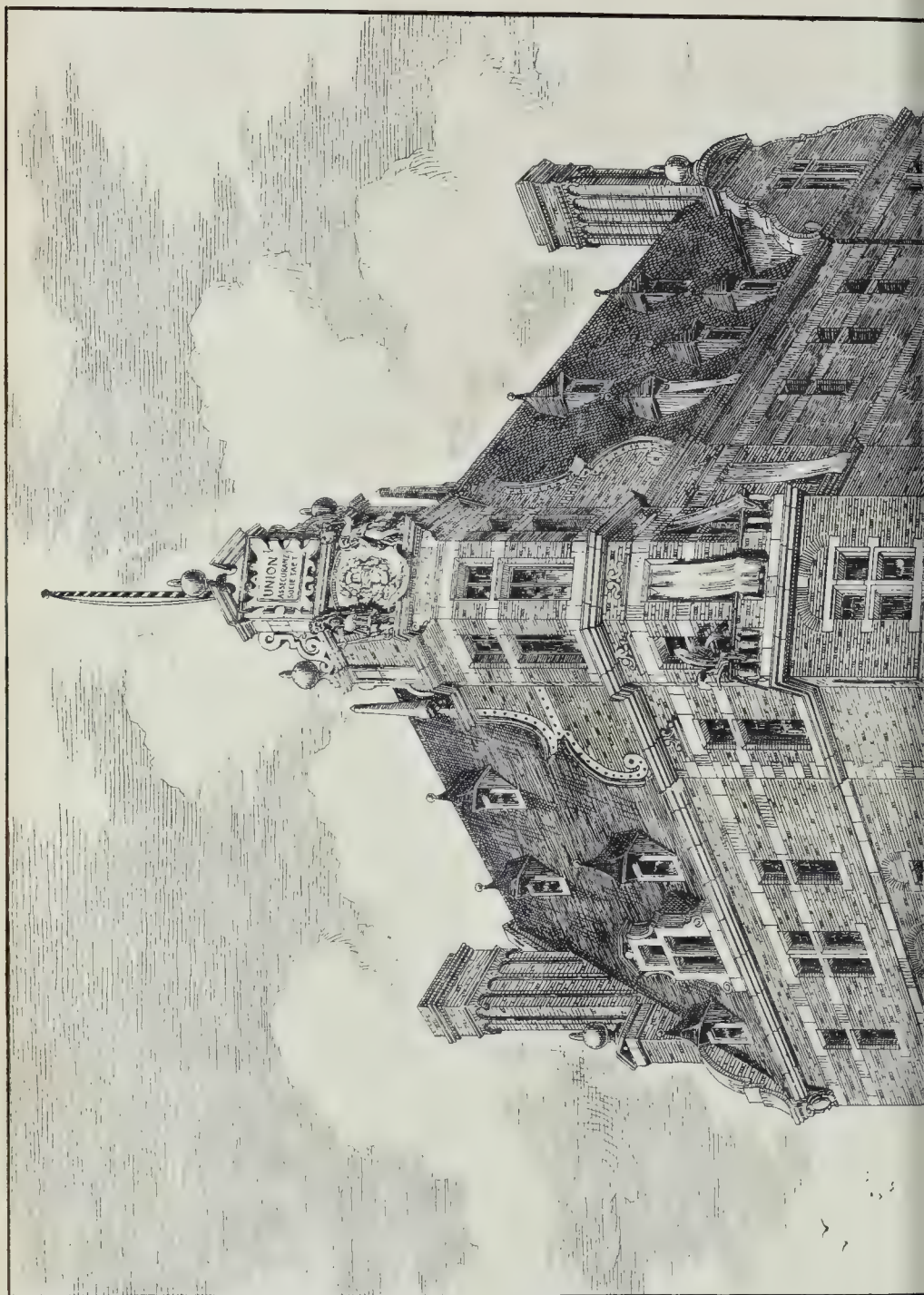
Section.

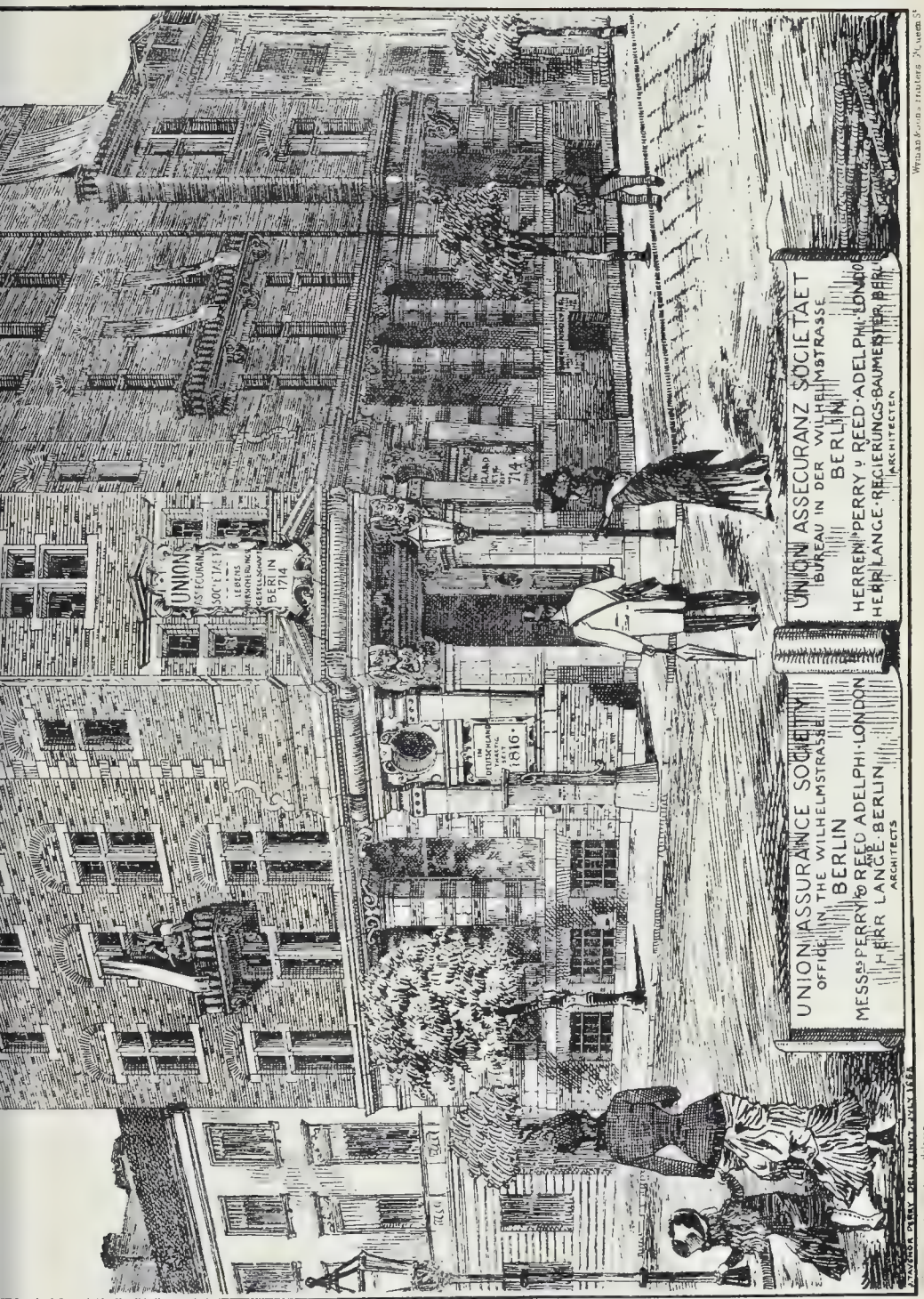


Section through Mansions connects Arcade and Halls.



THE BUILDER, SEPTEMBER 1, 1883.



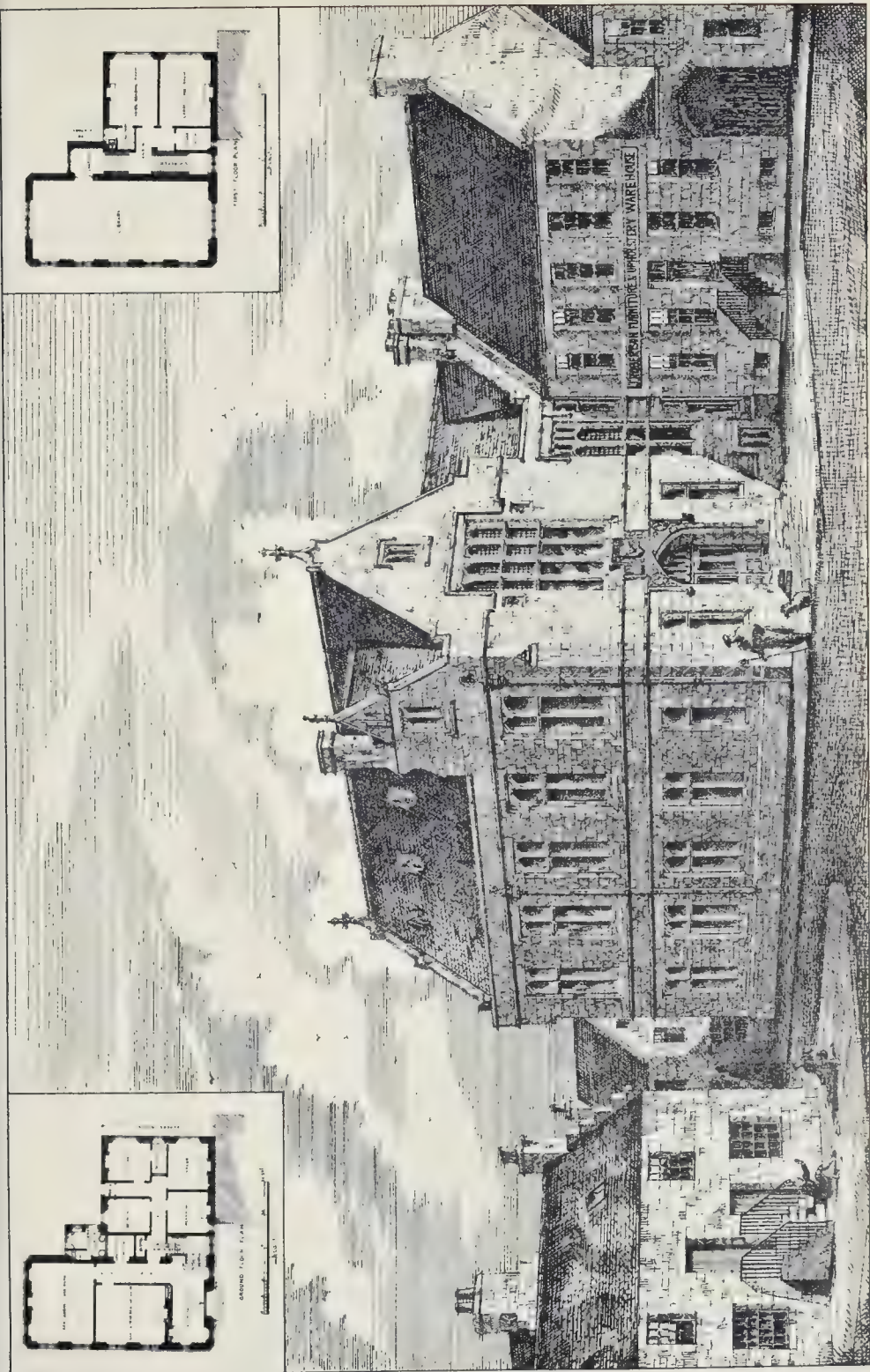


UNION ASSURANCE SOCIETY
BUREAU IN DER WILHELMSTRASSE
BERLIN
HERREN PERRY & REED ADELPHI LONDON
HERR LANGE REICHERTSBAUMSTRASSE BERLIN
ARCHITECTEN

UNION ASSURANCE SOCIETY
OFFICE IN THE WILHELMSTRASSE
BERLIN
MESSRS PERRY & REED ADELPHI LONDON
HERR LANGE REICHERTSBAUMSTRASSE BERLIN
ARCHITECTS

WILHELMSTRASSE BERLIN

WILHELMSTRASSE BERLIN



BRANDER LIBRARY, HUNTLY, SCOTLAND.

MESSRS. J. A. J. R. EDMUND ARCHITECTS.

PROGRESS OF THE VYRNWY WATER- WORKS FOR LIVERPOOL.

THE second annual report as to the progress of the new works at Vyrnwy up to the 30th of June last has been issued. As to the works at the site of the intended Lake Vyrnwy, the report says:—The embankment now being constructed across the valley of the Vyrnwy will impound the upper waters of the river, and will form a lake, having an area of 1,115 acres, at an elevation of 825 ft. above the mean sea level. The length of the embankment from rock to rock will be about 1,255 ft.; its height above the original river bed to the ordinary top water level about 84 ft., and to the parapet of the roadway to be carried on arches along the embankment about 98 ft. It is being formed of rubble masonry set in Portland cement mortar, founded upon sound rock of the Caradoc beds in the lower Silurian formation. This rock extends across the valley and up both sides thereof. The greatest depth of its surface below the river bed, within the area to be built upon, is 60 ft.; so that the total height of the masonry above the lowest part of its rock foundation will be about 153 ft. Before the works were commenced the rock in that part of the valley across which the masonry embankment is being constructed was covered with glacial drift, containing boulders of several tons weight, and blocks of rock of forty or fifty tons dislodged by glacial action. Above this drift lay an alluvial deposit, the result of silting up by the rock debris and detritus brought down by the many streams which feed the present river. In times of heavy rain this river flooded the whole width of the valley, and it was, therefore, desirable before commencing the present excavations to divert it from the left bank of the valley, where the rock is at a considerable depth below the surface, to the right bank, where it is close to the surface, and to make the new channel of sufficient capacity to pass the highest floods. This work had been completed when the memorial stone was laid on the 14th of July, 1881. The excavation to the rock then proceeded rapidly, and on the 25th of October, 1882, the masonry was commenced on the deepest part of the rock between cross sections 10 and 11. About 11,000 cubic yards have since been built. During the past winter but little work was done, and the progress must necessarily be slow until the autumn of this year, when it is hoped that the deeper hollows in the natural rock will have been filled up. The stone used is of much the same nature as that forming the foundation, and is being quarried in the Cynon valley, at a point about a mile and a quarter distant from the site of the embankment. It is brought to the embankment upon a tramway worked by locomotives. The formation of the statutory roads which will skirt the lake is progressing satisfactorily. About 5,137 lineal yards have been completed, and a further length of 5,089 lineal yards is nearly formed. The construction of the bridge to carry the road on the south-west side over the Afon Hirdydd has been commenced.

The aqueduct from the intended Lake Vyrnwy to the present Prescot reservoirs of the Corporation has a length of 67½ miles. It consists of three tunnels, through which the whole expected yield of the works may be passed without pipes, and of three lines of parallel pipes, only one of which, with a few short exceptions, will be constructed at present. The discharging power of each line of pipes will not be less than 13,000,000 gallons per day. The Hirnant tunnel, 2 miles 478 yards in length, is being constructed from the intended lake to the Hirnant valley. It will form the first part of the aqueduct. The inlet end was driven and timbered by Corporation men through earth and loose rock to moderately sound rock for a length of 128½ lineal yards. The outlet end was similarly driven and timbered for a length of 267 yards, and was lined with concrete and brickwork. For the driving and, where necessary, the lining of the intermediate portion, 3,597½ yards in length, a contract is being carried out by Messrs. J. W. & M. H. Larmuth, of Manchester. This work is being done by blasting, and the shot holes are drilled with machines worked by compressed air. The total length of the tunnel now driven, but not completed, is 1,275½ yards. From the outlet end of the Hirnant tunnel to the intended Parc Uchaf relieving tank the length of pipe line is 7 miles 177 yards. This portion of the aqueduct has, with the exception of

certain special works, been completed. From the Parc Uchaf relieving tank to the inlet end of the Cynnyion tunnel the length of pipe-line is 6 miles 283 yards, and has, with the exception of certain special works, been completed. The length of the Cynnyion tunnel will be 1,515 yards. For the driving and, where necessary, the lining also, a contract (No. 9) has been entered into with Messrs. Gabbutt & Owen, contractors, of Liverpool, who have now driven, but not completed, about 683 lineal yards. Between the outlet of the Cynnyion tunnel and the inlet of the Llanforda tunnel, a distance of 165 yards, lies the Morda Valley, which will be crossed by inverted syphon pipes, carried over the river by a small masonry aqueduct. The length of the Llanforda Tunnel will be 1,614 yards, of which 390 yards have been driven, but not completed. The work is being done under the same contract as the Cynnyion tunnel. The balancing reservoir at Oswestry and the filter beds for the whole of the water will be situated near the outlet of the Llanforda tunnel. From the Oswestry filter-beds to Malpas the distance is about 17½ miles. Contracts (Nos. 2 and 14) for the supply and delivery of the pipes have been entered into with Messrs. Cochrane & Co., of Dudley, and contracts (Nos. 17 and 19) for the pipe-laying have been entered into with Messrs. Fotherby & Son, contractors, of Burnley, and Messrs. Jowett & Dyson, contractors, of Brighouse. About 4 miles 1,486 yards of pipe-line have been laid. From the Malpas tank to the Cotebrook tank, a length of about 11 miles 1,033 yards, the construction will be generally similar to that of the last length. No contracts have yet been entered into, or works executed in connexion with it. From the Cotebrook tank to the Norton water tower, a length of about 10 miles 1,720 yards, the construction,—except beneath the river Weaver,—will be generally similar to that of the two last lengths. A contract (No. 6) for the supply and delivery of the ordinary pipes, has been entered into with the Widnes Foundry Company, and another (No. 13) for the pipe-laying with Mr. Joseph Walker, contractor, Crewe. About 4 miles 699 yards of pipe-line have been laid. From the Norton water tower to the existing Prescot reservoirs, a length of about 9 miles 475 yards, the construction, except beneath the river Mersey, will be generally similar to that of the last three lengths. A contract (No. 3) for the supply of the ordinary pipes has been entered into with Messrs. D. Y. Stewart & Co., of Glasgow, and another (No. 5) for the pipe-laying with Mr. John Jowett, contractor, of Brighouse. About 6 miles 1,220 yards of pipe-line have been laid.

WILTSHIRE ARCHÆOLOGICAL SOCIETY.

THE annual meetings and excursions of the Wiltshire Archæological and Natural History Society were held at Andover this year. The annual meeting was held in the Town Hall, on the 15th ult., when Mr. Story-Maskelyne, M.P., was unanimously selected to succeed Lord Edmund Fitzmaurice, M.P., as president of the society.

The report showed that thirteen members had been lost during the past year, but eleven others had been secured, leaving the number of members now at 370. There was a balance in hand of 351l. 15s. 10d., being an increase of 12l. 14s. 5d. on the year. The projected railway schemes that had been before the public were referred to, and the timely interference of the president, Mr. Story-Maskelyne, in Parliament, in respect to Stonehenge and Vespasian's Camp, was acknowledged.

The President delivered an exhaustive address on "Flint." On the motion of the Rev. Canon Jackson, seconded by Mr. Buxton, M.P., the president was warmly thanked for his inaugural address, and he was requested to allow it to be printed in the society's magazine.

The Vicar of Andover, the Rev. G. Collier, followed with a paper upon "Andover and the Neighbourhood," in which was embodied a large amount of historical information. The rev. gentleman having been thanked for his paper,

The Rev. R. H. Clutterbuck gave a lucid description of the articles contained in the town museum, and the company then rambled through the town, inspecting the various objects of interest, the parish church being particularly admired. Later on the anniversary dinner was held at the Star and Garter Hotel, followed by a *conversazione* in the Town-hall,

when a paper was read by the Rev. W. H. Awdry on "Ludgershall Castle and its History," and one by the Rev. Canon Jackson, on "Notes on the Borders of Wilts and Hants."

On the 16th ult. many of the members assembled at the Town-hall for the purpose of making excursions to the various places of interest arranged for that day, and shortly after nine about forty left in three large brakes from the Star Hotel for Penton. Here they were met by the Rev. W. H. Simcox, of Weyhill, who showed them over the church, pointing out the various objects of interest to archæologists, but the centre of attraction appeared to be a window of the fourteenth century, and the bell turret, both of which were declared to be unique in their way, the latter especially being of great rarity. The party then went on to Weyhill, where the church also excited much interest. From thence the next move was made to Ludgershall, where the Rev. W. H. Awdry, who acted as guide, showed traces of the outer and inner circles of the ancient fortress, while he pointed out that in the remains of the building there were traces of Roman work. Next he proceeded to the well mentioned in his paper, and which he said was about 110 ft. deep. Proceeding through the extent of the encampment, the party reached the old cross, and it appears this ancient relic once had a narrow escape of being used as building material. Some thirty years ago it was taken down, and a resident in the place was using the stones forming the base of it as the foundation stones of a house opposite, when a stranger passing called attention to what he was doing, and the then curate prevented the spoliation going on, replacing the old base with bricks. From the cross Mr. Awdry conducted the visitors to the sites of the old banqueting hall, the bowling green, and the "Cursed Plot," as one portion of the castle was called, after which the party proceeded to the church. A start was subsequently made for South Tedworth Church, which was declared to have been restored in the most perfect manner. From this church the visitors went to that in Tedworth Park, and afterwards wended their way to Tedworth House, to which they had been invited by Sir John Kelk. There they were met at the door by Sir John, who conducted them through the picture gallery, the library, and other rooms, explaining in a pleasant manner the various art objects specially worthy of attention. This inspection afforded the utmost gratification to the visitors, who, at its conclusion, were entertained at luncheon by Sir John. On the way back a visit was paid to Thruxton Church, where the brasses let into the floor in memory of a member of the Lyle family, some pieces of armour, the tomb of the Lyles, and some Italian sculpture, in a wonderful state of preservation, were exhibited by the Rev. H. D. Baker. It was then so late it was decided to omit the intended visits to Abbots Ann Church and Bury Hill, and the company kept on their way to Andover, which was reached shortly before eight o'clock, a pleasant day having been spent. In the evening a second *conversazione* was held in the Town Hall; the chair was again occupied by the president of the society. Interesting papers were read by the Rev. R. H. Clutterbuck and Mr. W. W. Ravenhill. It was reported that the secretaries, having raised by subscriptions 380l. in the county, had secured the antiquities of the Stourhead collection, besides 135l. for books specially relating to Wiltshire.

MOSAIC WORK AT AIX-LES-BAINS.

THE Committee of the Casino at Aix-les-Bains have exhibited to the public a fine piece of mosaic work executed by Dr. Salvati of Venice, viz., the decoration of the large cupola in the Grand Hall. It is one of the most extensive mosaic decorations of modern times, covering an area of 3,500 square feet. The work has been executed under the superintendence of the architect, M. A. Bondier, after a cartoon by M. Lamoignon, in the short time of six months.

The ceiling is divided into a large central cupola, surrounded by four smaller ones below it. The subjects represent symbolical signs of the Zodiac and of the Four Seasons, and the details of each subject are plainly visible without interfering in the least with the elaborate ground which they seem to be placed over. Upon the shield which each figure holds are written the names of the architect, painter, and

mosaicist. The four elements are represented in the four small cupolas by boys mounted on various symbolical animals. Different shades of gold and many new tints, representing various precious stones, are introduced, giving to the *tout ensemble* an effect which is compared to a graceful work of lace intercepted with gold and gems.

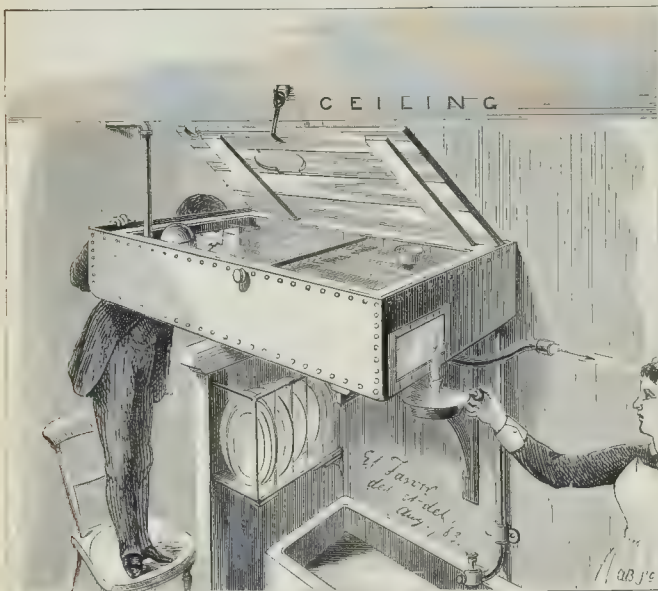
Dr. Salvati declares that he has never had such a favourable opportunity of making such a display of all the resources of the mosaic art.

CISTERN AND CLOSETS.

SIR,—It has always appeared to me that there is no place in a house too good for the cistern. For the upper cisterns it is generally possible to contrive a position both easy of access and well lighted. This is not quite so easy of accomplishment for what is known as the "scullery cistern," the most important of all, as it usually supplies the drinking and cooking water. It has, for obvious reasons, to be placed near the ceiling, and there is consequently a difficulty in getting a good light to shine down into it. In order to meet this difficulty, I have arranged to introduce sheets of plate glass in the walls of

but it has no practical use, except to form a back to lean against. Under these circumstances, it is right to make the outside of the earthenware pan fairly ornamental. [No object that has any use is unworthy of being treated aesthetically.—a term that has lately been much misused and abused; for example, the old cast-lead cisterns of which so many beautiful examples exist. There is one in this house (10, Craig's-court), dated 1705, with a geometrical pattern cast upon it, including the figures of St. Martin dividing his coat with the beggar.] Acting upon this principle, I have contrived a Doulton-ware pedestal to support a flush-out closet pan, and thus to render its external appearance sightly. It is a mistake, however, to ornament the inside of the pan, which, for obvious reasons, should be plain white.

The "water-waste preventer" is usually a noisy concern, which also requires consideration. Noiseless ones are made at extra cost; but there is the possibility of fixing an ordinary one at a little distance from the closet, with intervening ceilings, in order to drown the noise. Even granting the noise, however, what a comfort it is to be quit of the complicated apparatus connected with a pull-up handle!



the cistern. The best position for these sheets is at the opposite corners of each end, so that the light reaches the whole of each side; and if the cistern can be placed in a line with a window, so much the better. When that is impossible a lighted candle can be held to the glass. Every portion of the interior is thus exposed to view, and by employing convex glasses the impurities will be magnified, and be thus more easily detected.

In a slate cistern it is simple enough to provide fixing for the glass in rebates or grooves; and for galvanised iron cisterns, a manufacturer will provide the fixing at a cost of 2s. 6d. for each opening, so it is not an expensive matter.

Another sanitary object that should be much easier of access than at present is the water-closet pan. Most of us have, doubtless, contrived seats and risers made to open and disclose the apparatus, and there is a great improvement on this in the closet in use at the Parkes Museum, where the riser is entirely omitted, and the space under the seat has the walls lined with nice clean tiles. I propose to go further and to expose the pan to the fullest extent. The seat can rest either upon skeleton framing, secured from rickety by bolts, which, when drawn, will allow of this frame being lifted bodily away, or the seat can rest upon bearings fixed against the side-walls and, being hinged and thrown back, reveal everything. An upper flap may be considered necessary;

All that is needed is a lead supply-pipe brought into the top of the pan, and it should be exposed to view. Here, again, is a chance of ornamenting the useful. A hint may be taken from some lead rain-water pipes at Llanelly, which are decorated with cast ornament that vies in effect with Early English carving.

We are gradually demolishing the concealed mysteries of the plumbers' trade, and, if they cannot earn a living out of simple and sound work, the public would not begrudge their making up their profit by treating their work aesthetically as well as openly.

EDWARD J. TARVER.

Bristol Cathedral.—A memorial tablet of statuary marble to the late Canon Reeve has just been placed in a moulded recess formed in the wall on the south side of the nave. The inscription is arranged in an oval panel, on the upper side of which is a lily branch and in the lower laurel. The memorial inscription states that the tablet is erected "In memory of John William Reeve, M.A., son of Benjamin Reeve, esq., of Wangford, Suffolk, for thirty years minister of Portman Chapel, London, chaplain-in-ordinary to her Majesty the Queen, and canon of this Cathedral." The work was executed by Mr. Frank Bell, sculptor, College Green.

LARGE SALE OF BUILDING SITES AT CLACTON-ON-SEA.

On Monday a very large sale of building sites took place at the rapidly-rising watering-place of Clacton-on-Sea. The sale was by direction of the Clacton-on-Sea Land and Building Company, and was announced to be the last of the season. For the convenience of parties from London attending the sale a special train left the Liverpool-street Station of the Great Eastern Railway for Clacton about ten o'clock, conveying a large number of passengers. The sale took place in the afternoon, at the Public Hall, which was much crowded, upwards of 300 persons being present.

Messrs. Harman & Matthews, of Walbrook, conducted the sale, which consisted of eighty-five plots of building land, some of them having frontages to the Marine Parade, and others fronting the different roads which have been laid out by the company. Mr. Harman, the auctioneer, before commencing the sale, adverted to the importance which Clacton was assuming as a sea-side town. They, as visitors, might plainly see what it was destined to become. The number of visitors during the present season had been larger than in any which had preceded it, as well as the number of excursionists who came to remain only a short time, and these results he attributed to the recent opening of the railway. The number of visitors having so greatly increased, it was felt that the erection of more houses in the town to provide for their accommodation was necessary. Referring to the class of houses now required he observed that what was now wanted was variety to meet the requirements of the general public. The parade and roads immediately contiguous were, to a large extent, covered with high-class residences of the value of some 600, or 700, per annum, as well as several of the roads more inland, and the erection of houses at rentals of from 300, to 400, per annum would be found to be profitable to builders. Unfortunately those amongst them who had come down for the first time to-day had not very much choice of sites, for in the neighbourhood of the parade, more especially, nearly all the sites had already been sold.

The sale then proceeded, when two plots on the Marine Parade West, one having a frontage of 40 ft., with a depth of 100 ft., and the other a frontage of 52 ft. and a depth of 110 ft., were sold for 2000, and 2500, respectively. The conditions as to these two lots were that the houses erected are not to be of less value than 6500, each. Eight lots, immediately adjoining the two last-named, and running northwards of them, with frontages on the west side of Alton-road of 50 ft., and a depth of 92 ft., were next sold at prices ranging down from 1550, to 1390, each, no detached house of less value than 4500, or semi-detached house of less value than 3500, to be erected. Two lots, with frontages of 75 ft. to Alton-road, and an equal depth, were sold at 1450, each, no house of less value than 4500, or 3500, to be erected. These were followed by the sale of two plots in the Marine Parade East, having frontages of 50 ft. and 70 ft. respectively, and a depth of 103 ft. and 107 ft. to Connaught-gardens. The first lot was sold for 1390, and the second lot for 1550, not less than 6500, to be expended on each house. Twelve adjoining plots, having frontages of 50 ft. to Connaught-gardens, and a depth of 120 ft., were sold at prices ranging from 980, to 750, each, not less than 6000, to be expended in the erection of each house. The disposal of the foregoing plots was followed by the sale of fifty-nine plots at the north-eastern boundary of the estate. Of this number, fifty-three of the plots, with frontages of 25 ft. to different roads on the estate, near the railway station, and a depth of 100 ft., were sold at prices averaging 300, each, no house to be erected on any of the plots of less value than 1500, each. Six plots, having frontages of 50 ft., and a depth of 91 ft., were sold for 500, each, 3500, to be expended in the erection of each house. The total proceeds of the day's sale amounted to about 5,2000.

New Organ, All Saints', Friern Barnet. Messrs. Bryceson Bros., of Charlton Works, Islington, have just erected this new organ of three manuals, twenty-nine sounding-stops, and eight couplers. The opening recital by Mr. J. C. B. Tibbutt, of All Saints', Reading, took place on the 23rd ult.

THE DOVER CONGRESS OF THE BRITISH ARCHAEOLOGICAL ASSOCIATION.*

We briefly noticed the opening proceedings of this congress in our last. We now give some further details.

In the course of Mr. Edward Knocker's paper in the Borough Archives, he stated that the earliest documents which the Corporation now possess relate to the *Domus Dei*, or the Hospital of the Maison Dieu. That hospital was founded by the celebrated Hubert de Burgh, Mr. Burges said, at the end of the reign of King John, or in the beginning of that of his son. He added that in all probability it was little more than a large hall, with a kitchen and a few rooms for those whose management it was entrusted, the hall serving as a dining-room during the day and "a hake-down" during the night. This hall stood in the site of the present new Town-hall. King Henry III. subsequently added a chapel to the Maison Dieu, and is said to have been present at its dedication in the eleventh year of his reign (A.D. 1227). The building, where the Sessions Courts are now held, at the northern end, constitutes the remains of that chapel. As now seen, it consists of a very short nave divided from the chancel by an arch; but Mr. Burges thought it by no means improbable that this short nave may be the easternmost part of the hall of Hubert de Burgh. Some time to the reign of Edward I. (most probably in 1277, for we read of extensive alterations then) another hall was added on the south side of Hubert de Burgh's building, the communication being effected by piercing the party-wall with a series of very large and boldly-moulded arches, now remaining. Above these occurred sundry windows forming a sort of clearstory, but on the other side the windows went down much lower,—indeed, near to the ground, some 8 ft. or 10 ft. beneath the present floor of the hall. There still remains the tower at the south-west side of the Edwardian hall, which, from the two arches in its western face, may possibly have served as an entrance. King Henry III., who built the chapel, was a great patron of this institution. It had been founded by de Burgh for the reception of the great flow of pilgrims to the shrine of the Continent to worship at the shrine of Thomas à Becket.

Mr. Thomas Morgan, F.S.A., treasurer of the Association, preceded his paper (read at the evening meeting on the 20th ult.) by a short inaugural address, one point of interest in which was a statement to the effect that on the 10th of September, 1597, Shakespeare and a company of players visited Dover, and gave a performance, and were afterwards supposed to have proceeded to Calais. Referring to the Association, Mr. Morgan said it was established in 1843, and since that time its chief objects had been kept steadily in view, namely, to correspond with local antiquaries, to register facts, and to compare them rather than to put forth theories, and to spread a taste for archaeology; also to endeavour by every means in their power to preserve ancient monuments from destruction. Referring to the kindred societies which had since been established, Mr. Morgan said one had been more successful than the Kent Archaeological Society. For the great success which the British Archaeological Association had achieved they owed very much to their hon. secretary, Mr. G. R. Wright, for the disinterested manner in which he had given his time to the services of the Association.

The Mayor (Mr. Dickeson) remarked that he was not aware before that Shakespeare ever visited Dover with a company of players, and inquired as to whether any further information could be given upon a subject so interesting to the inhabitants as well as to the meeting?

Mr. Wright said the circumstance alluded to by Mr. Morgan was culled from some of the old documents in the possession of the town of Dover many years ago, in the perusal of which Mr. E. Knocker, who was Town Clerk at the time, gave very great assistance. Shakespeare was supposed to have visited Dover during a tour through Kent with a company of players.

The Rev. Scott Robertson next read a paper on "St. Thomas of Dover," and this was followed by a paper by Mr. Syer Cuming, F.S.A., on the samphire which is found growing on the cliffs in the locality, and which has been immortalised by Shakespeare in connexion with the cliff which takes his name. The paper was

read by Mr. Loftus Brock, in the absence of its author.

At Richborough Castle, visited on Tuesday morning, the 21st, Mr. George Dowker read an interesting paper descriptive of the remains, in the course of which he said that archaeologists were much indebted to Mr. Boys, who, with untiring energy and zeal, explored the mines of Richborough in 1792. The walls, as could now be seen, were in the form of a regular parallelogram, enclosing an area of about five acres; they were originally flanked by two square towers on the north, and one on the west still remained. Boys stated that there were two on the west and two on the south. At the angles of the north walls were circular towers. The square towers were solid to the height of about 8 ft. from the foundation, hollow in the centre, and united at the top. In the main walls within these towers were large smooth holes in a row, each about 9 in. in diameter, penetrating the main wall, and smaller ones which ran about 10 in. into the wall. Mr. Boys supposed that these were used to support defensive machinery. In the west wall, nearer to the north-west angle of the castle than to the south-west, an opening existed in the wall 34 ft. wide. Mr. Boys dug down, and found in the foundation large square blocks of stone forming a platform 24 ft. wide, or more than twice the width of the wall. This must have been the principal entrance into the castrum. The walls on either side of this entrance sloped inwards. The north wall of the castrum was best preserved, and near the middle of it was the postern-gate, the inner opening of which was 7 ft. 8 in. wide, and at the west side the main wall was turned at right angles, leaving an inner depth of 15 ft., when it was turned again at right angles, with a depth of 10 ft. 4 in. The opening from this gate was thus turned to the east, and at its end was 3 ft. 10 in. wide. A drain underlay this gate. As to the structure of the north wall, it was 11 ft. 3 in. thick at the base, and 10 ft. 8 in. thick at the top, and to within 6 ft. of the bottom was composed of large flint boulders, chalk stones, and sandstone from the Pegwell Cliff, or belonging to the lower tertiary beds. The foundation of the wall was very superficial, being only a few feet below the surface on the side of the hill, and composed of stones without mortar. The outside of the wall was faced on the north with squared stone of different sorts, probably some Portland, some tertiary, and some travertine; the latter entered into the composition of the postern gate. At about 3 ft. apart were bondings of a double row of large flat tiles. The inner portion of the wall was not faced with squared stone, but with boulders laid in mortar. Mr. Dowker said he believed, from an examination of broken portions of wall, that after a height of 2 ft. or more had been laid as a facing, the inner portion was formed by pouring in liquid cement or mortar, and then filling in with loose stones. The south wall showed signs of having been thus constructed. In the south wall was an opening which was probably the principal gate. The eastern wall of the castrum,—if there had been one,—had fallen with the undermining of the cliff, large fragments of wall being found below next the river. Mr. Boys thought he saw traces of a return wall on this side. A large portion of wall had been undermined and turned into the Stour during the construction of the railway. This and some other debatable points with regard to the subject of the paper were discussed at one of the evening meetings, as herein-after mentioned.

Mr. Dowker, having described the walls, went on to refer to the most remarkable portion of the structure. Mr. Boys, in trenching round the projecting mass of masonry in the centre of the space enclosed by the walls, and popularly known as "St. Augustine's Cross," and seeking to determine its structure, found that it rested on a solid mass of stone, 144 ft. 6 in. long, 104 ft. wide, and 5 ft. deep, and covered with mortar. In 1826 Mr. Gleig excavated from a cave in the bank next the river, and reached below the platform, where he found a continuous mass of masonry down to 30 ft. or more from the surface. He likewise discovered a sloping terrace from the eastern edge of the platform. In 1843, Mr. Rolfe, of Sandwich, excavated beneath the platform round two sides of this lower masonry; he tried to penetrate the masonry on the east side, and made a hole 11 ft. deep into the mass near the south-east angle of the cross. In July, 1865,

the Kent Archaeological Society continued these investigations under the direction of the Rev. Mr. Drake and the author, who continued the excavation entirely round the platform. They caused a shaft to be sunk at the south side, which did not, however, determine its depth, the work being stopped by water-springs at a depth of 22 ft., or 30 ft. from the surface. They found an opening broken into the masonry on this side near the south-east edge of the transverse part of the cross, extending 20 ft. This had been filled up, and was evidently the attempt of some one to penetrate the mass. Mr. Dowker called to mind the description of the cave given by Leland, to which it appeared to Mr. Dowker strictly to answer. Mr. Dowker and Mr. Drake excavated over the platform and exposed the whole surface, showing the foundations of the cross, which Mr. Dowker considered was certainly not of the same date as the platform on which it rested. Besides the cross, they discovered foundations of another building of rectangular oblong form, corresponding with the direction of the cross, which was in the centre of the walls; but though these foundations were built of stone and bonding tiles like those in the outer walls, the mortar was different; the tiles, moreover, appeared to have been derived from some other building. When he drew up the report of these excavations for the Kent Archaeological Society, Mr. Dowker said he did not venture on any opinion as to the age or meaning of these superstructures, but he believed they were of Saxon date, and that they were the foundations of the church known to exist here and mentioned by Leland. He was borne out in this view by the fact that the Roman camps at Dover and Reculver each contained within their walls a Saxon church. It was stated on the authority of Thorn that St. Augustine landed at Richborough, and that a church was built there to commemorate the event. Mr. Godfrey-Faussett had suggested that the huge platform of masonry before described had been the foundation of a *pharos*, but Mr. Dowker did not think that a *pharos* would have had a cross-shaped foundation. Many conjectures had been made as to the purposes of this stupendous mass of masonry. It consisted, as far as at present laid bare, of 61,834 cubic yards, or as many tons weight, if it were solid. Could we conceive that the Romans (who in the construction of their defensive walls more than 30 ft. high and 11 ft. thick laid very superficial foundations), would require such a mass as a foundation for a *pharos*? On the other hand, should it not be solid, its sides appeared as thick as from 16 ft. to 20 ft. It appeared to have been built in this wise: firstly a large excavation was made in the hill down to or under spring water-mark, which was then filled in with mortar and stone. At whatever period built, the material,—flint stone,—was easily obtainable near the site. The platform evidently conformed to the outer walls, for though not in the centre of the castrum, it was opposite the Decuman Gate, and if the castrum was continued on the eastern side, as Mr. Dowker had little doubt it was, the platform was situate exactly where one would expect to find the pretorium.

Proceeding to Sandwich, the Hospital of St. Bartholomew was visited, under the guidance of Mr. R. J. Emmerson, who described the building and briefly narrated its history. The chapel, he said, was of great interest and architectural value, dating back as it does to the thirteenth century; it is really a double work of that period, the southern half with the remarkable doorways in the south and west front forming the original nave, and the chancel being of that or even in part of an earlier date, while the northern half with the beautiful range of windows on the north wall, and the fine eastern lancets are, undoubtedly in the best style of that century, added to the original chapel. This arrangement of two chapels, so to call them, placed side by side or separated by an arcade, renders the building an unusually fine and interesting specimen of the best period of Early English work. A small portion of the building has been restored from plans by the late Sir Gilbert Scott, but it is stated that much remains to be done to preserve the building from structural failure.

St. Clement's Church, Sandwich, was next visited, the *cicerone* here being the vicar, the Rev. A. M. Chichester, who said he had often been asked which was the oldest church in the town, but that was a question which it was very

* See p. 265, ante.

difficult to answer. The stalls in the choir had been assigned to a confraternity of St. George. The church is now collegiate. It had once been a cruciform church, with transepts, as evidenced by gable marks on all four sides of the tower. The tower had outlasted the adjoining church towers, which both fell in 1661 and 1667 after a severe earthquake, and though once in a critical state, it was now firm and strong. All three were very ancient churches, having been erected in Norman times; 3,000*l.* has been expended in the restoration of St. Clement's, which had been very carefully carried out so as not to injure in any way its ancient features. The fine Norman tower, which gives to the church almost a cathedral character, was much admired, as were also the capitals and ornaments of the pillars, the arch over the door of the belfry stairs, the eastern window of the chancel, the windows of the north aisle, and the unique figure of the piscina.

The other two churches of the town, St. Peter's and St. Mary's, were also visited. St. Peter's (now in course of restoration) being described by the Rev. H. Gilder.

The Town Hall, the Fisher Gate, and some other ancient remains of the town having been visited,

Carriages were taken to Walmer Castle, where, by the kindness of Earl Granville, the Lord Warden of the Cinque Ports, and the distinguished President of the Association, the party had been invited. Unfortunately, the business which presses at the close of every session prevented the noble earl from being present. The Countess Granville was, however, there to receive her guests. The castle, with those of Deal and Sandown, were erected by Henry VIII., and there is nothing very special in its architectural features to interest archaeologists, but Walmer Castle is associated with memories of Pitt and Wellington, and of the long line of distinguished Lord Wardens and eminent statesmen who have sought rest there from the cares of State.

At the second evening meeting, held in Dover, an interesting paper on "The Ethnology and Nomenclature of Kent" was read by Sir James Picton. A second paper was by the Rev. Canon Scott Robertson, "On the Destroyed Churches of Dover." The author said that only two of the ancient churches remained, St. Mary's and St. James, although, writing in the reign of Henry VIII., a great writer said there were six. During the references to the several churches, the author said he had found an entry which stated that "the revenue of the church of St. Martin was so small that no honest priest would stay in it." The church of St. Peter was continued until 1611, when it was amalgamated with that of St. Mary. The church probably stood on the north side of the market-place.

On Wednesday, the 22nd ult., there was an excursion to Westenhanger, Lympne, Lympne, and Hythe, and on returning to Dover another evening meeting was held, at which the first paper was "On the Saxon Church in Dover Castle," by Mr. J. T. Irvine, in whose absence it was read by Mr. Lynam. The author referred at considerable length to details of the masonry and the substructure of the old church, as supplied by Mr. Marshall and Mr. Gilbert Scott. In his opinion the church belonged to the Saxon period, and he pointed out that there was a great similarity in the structure to a church near Faversham, and to Rochester Cathedral.

The Rev. H. T. Craig, chaplain, Dover Castle, asked, if the building were Saxon, how they could account for the use in it of a large number of tiles which must have been manufactured in the times of the Roman occupation.

Mr. Loftus Brock said he was not responsible for the opinions expressed by Mr. Irvine. In his own opinion the church belonged to a much earlier date.

Mr. Lynam said as a matter of fact these tiles were found in Saxon and Norman work. Only that day they had seen some in the church at Lympne.

Colonel Goodenough, B.A., said it might not be known to many present that a careful description of the church had been written, attributing its erection to the British-Roman period, and there were a great many persons living in the locality who had long regarded it as such. It was extremely rare to find in any Saxon building arches of the great height of those which were found in this church. These resembled very closely the arches found in the old basilicas, and

he thought there were many people who would be loth to give up the belief they entertain that the church is older than Saxon, and dates back to the period of the first and not the second establishment of Christianity in England.

A second paper read was "On Debatable Subjects relative to Richborough Castle," by Mr. George Dowker. The points raised were, Whether Richborough was an important town as well as a port; the date of the walls; the meaning of the extraordinary subterranean structure, and its probable date; the cross upon the platform; the walls built around the cross; and the harbour at the west of the island. Mr. Dowker treated the above questions in their order, and in doing so he said unfortunately no inscriptions had been found in Rutupia, and they must, therefore, fall back upon what evidence there remained. Outside the great quantity of coins which had been found, there was but little evidence of Richborough being a large and important town. Mr. Roach Smith inclined to the idea that a town existed there, and they must place against this the fact that Richborough was nearly an island. There could be no doubt that this was as important a station as Sandwich was at a later period. As a military position its importance could not be doubted. The eastern side next the estuary had the wall built in such a manner that access could at once be had to the ships drawn up behind. Mr. Dowker then went on to say that he had no doubt whatever that there was a wall on the east side as well as on the west, a point upon which there was much controversy, for he found about 150 ft. of masonry in the river, where it had evidently fallen; the materials of which it was composed speaking of one architect and of the same period as the other three walls. The item in Mr. Dowker's paper which elicited most discussion was as to the block of masonry found inside Richborough Castle, and commenting upon this Mr. E. Loftus Brock said it was impossible at present to give a decided opinion as to what it had been, although he was certain it had not formed the foundation of any building.

On Thursday, the 23rd, the party left by a special train on the London, Chatham, and Dover Railway, for Canterbury, where they were received at the Town-hall by the Mayor and Corporation, who had arranged for exhibition and examination their very fine collection of charters, seal-muniments, civic maces, and other regalia. These were commented upon by Mr. de Gray Birch, G. Lambert, and others. This part of their programme being concluded, they proceeded under the guidance of Mr. J. R. Hall to the cathedral, where the vice-Dean, the Ven. Archdeacon Harrison, gave a history of the sacred fane, assisted by the Hon. and Rev. Canon Fremantle, Mr. Loftus Brock pointing out and commenting on its most interesting architectural features. After more than two hours spent in the perambulation of the cathedral, ending with a visit to the crypt, where Mr. Brock suggested there were evidences of Roman work in some of the columns supporting the vaulted roof, the party repaired for luncheon to the Foresters' Hall. Afterwards a visit was made to St. Augustine's Monastery, now used as a college for Church Missionaries, and where a paper on the history of the establishment was read by the Rev. J. Orger, the late Sub-Warden. With a visit to the museum of the city, and an inspection of some of the Roman antiquities given to it by the late Mr. John Brent, F.S.A., and an examination of the fresco lately discovered in the hall of the King's Bridge, formerly a house for pilgrims and wayfarers, and now used as a charitable institution for certain poor women and men, the day's proceedings came to a close, and the party returned to Dover.

At the fourth evening meeting, held on the return of the party to Dover, the first paper read was one by Professor T. Hayter Lewis, on the subject of "Sandown and the kindred Castles between Sandown and Sandgate." In the absence of the Professor the paper was read by Mr. Brock. In it the author said that the whole of these castles—Sandown, Deal, Walmer, and Sandgate,—were built about the same time, and the solidity of their construction did not interfere with a careful attention to artistic design in details. Sandown had a special interest to archaeologists, inasmuch as the walls were recently deliberately stripped of their best masonry, and the remains left for Time to do its work. The central tower of Sandown Castle was 84 ft. in diameter, that of Sandgate being

somewhat similar. The origin of these castles would appear to be from an Act of Parliament 4th Henry VIII., 1540, which was entitled an Act for making bulwarks and fortresses in Cornwall and other places on the seaside; although it would appear that some of these were completed before that date. In 1539, Hausted said, Henry VIII. built three castles no far from each other,—Walmer, Deal, and Sandgate. In 1539 Sandgate Castle was mentioned as being completed. In the year 1805 a reference to this same castle said it had been restored and certain damages by the sea made good. In 1688 Queen Elizabeth was said to have visited Sandown Castle. In 1693 there was a letter referring to Deal Castle, in which it was reported that the sea had undermined the foundations, which were subsequently repaired. Colonel Hutchinson was imprisoned in Sandown Castle in 1663. When he came to the castle,—so stated the history of his imprisonment, written by his wife,—he found it a lamentably ruined place. In 1808 it was mentioned that some repairs had been made to this castle. Sixty years later it was stated in the journals of the day that the castle had been pulled down, but this referred only to the central tower and the upper part of the four bastions, thus providing a level platform. Up to the latter portion of last year this lower portion remained, with its masonry complete, when some of the stone-work was allowed to be taken for building purposes at Dover Castle. Three hundred years ago Deal Castle was reported to have had its foundation eaten into by the sea, but the danger was averted, and the old castle still remained to us. But the far more interesting castle at Sandown had been uncared for until it was found to be suitable for a quarry for an officer's residence.

Mr. G. Lambert said he believed Sandown Castle to be one of the eight "Block Houses" erected by Henry VIII.

A second paper, by Mr. Richard Sim, "On the Dover Records in the British Museum," was read by Mr. de Grey Birch. The earlier manuscripts in the British Museum connected with Dover were stated to be about 150 in number, one half of which consist of manuscript of from two to a dozen pages, and the remainder of the works in the form of volumes containing from 50 to 500 pages of closely-written matter. A great number of documents had been obtained from certain booksellers of Ipswich. The manuscripts recently obtained were forty-six in number, and were divided between the "Egerton" and "additional" collections, the funds for their purchase having been provided out of the grant by the Earl of Bridgewater, and the annual sum set aside by Parliament. They are said to have been obtained by the above booksellers at an auction sale in Kent. How they were brought from Dover could not be said, but probably they were borrowed for literary purposes and never returned. Instances of this kind have often been met with in England. The paper then proceeded to give in detail the names of the various manuscripts which formed the recent additions.

At the conclusion of the paper, Mr. de Grey Birch said he must regret that he was unable to see any member of the Corporation present, particularly Mr. Edward Knockor or his son, who would have been able to tell them how valuable the manuscripts found would be in the history of the town. They appeared to him to range over far wider ground and a much earlier period than any of those which he saw exhibited by Mr. Knockor on the opening night, and no doubt if they were judiciously and theoretically examined they would throw a great light upon the ancient history of the town. It struck him that the Corporation of Dover would not be acting unwisely if they were to endeavour to obtain some extracts from these deeds, with which to supplement their own library and original records.

A third paper, by Mr. George Lambert, F.S.A., "On St. Dunstan, Patron Saint of the Guild of Goldsmiths," was full of interesting matter.

On Friday, the 24th ult., a second visit was paid to Canterbury, where, under the guidance of Mr. Cecil Brent, F.S.A., visits were paid to the Castle, now used as a storehouse for coals; to St. Mildred's Church, where Mr. Hall and Mr. Loftus Brock gave descriptions of the edifice; to the ruins of St. Pancras; and afterwards to St. Martin's Church, where the Roman remains were pointed out and commented on by

Rev. H. Goodwin, in the absence of the Rev. Canon Routledge and Mr. Brook. Mr. Cecil Brent then took a portion of the party to the ruins of the Norman infirmary church, adjoining the monastery of Christchurch, and thence to the Green Court to see the Norman staircase and the two Roman columns brought from the chancel arch of the ruined church of Reculver (the Regulbium of the Romans). Thence the archaeologists went to the remains of the Blackfriars, to the West Gate of the city, and the gateway of Margaret Roper's house, and then to the Church of St. Dunstan, and the history of which Mr. Hall read a short account.

Afterwards the party proceeded by rail to Shepherd's Well Station, whence, carriages being waiting, they were driven to Barfreston church, a fine specimen of rich Norman work, and there, after the Rev. E. Austen had said a few words, Mr. Loftus Brock gave a fuller description of its history and architecture. The drive was then continued to Coldred Church, and attention was directed by the Rev. Irvine Imberley to the Roman campment close by. The drive was then continued by Waldershare Park to Dover, where the fifth evening meeting was held, with General Newdigate, C.B., the general commanding the South-Eastern District, the chair. An interesting and exhaustive paper on "The Castle of Dover" was read by Mr. Thomas Blashill, followed by another by Mr. Walter de Grey Birch, F.S.A., "On an Ancient Manuscript List of Territories and Peoples of England."

On Saturday last, the proceedings commenced with a walk to the famous Brede-Down-hill, in the Western Heights, where a short account was given by the hon. Congress secretary, Mr. Wright, F.S.A., of the remains of the Church of the Templars, discovered a few years ago while excavations were being made on the hills for some military purposes. Thence, under the conduct of Major Sturt, R.E., the party proceeded to the Brede-Down, where the Court of Shephway or the subscribing of the "Serement," or oath of office, by the newly-appointed Lord Warden of the Cinque Ports, used to take place. After inspecting the fragments of some rough masonry resting on the spot where, a few years since, a massive platform of concrete of a hexagon shape was discovered, some 15 ft. beneath the present surface, the party descended to the married soldiers' quarters in the fort below, and then examined the remains of the base of this interesting object, which, being of Roman work, made up of reddish material, with flint and Kentish ragstone placed longitudinally, is presumed to be the base of the Roman Pharos which formerly stood there, and of which Darell, in his "Ara Cæsariæ," gives an illustration corresponding in its features to the still existing eastern Roman Pharos on the opposite Castle Hill. On leaving the Western Heights, the party proceeded to the parish church of St. Mary, in Dover, and here the vicar, the Rev. Canon Fuckle, gave an interesting account of the history and restoration of the Norman fabric, built, as was proved to be the case, on the remains of a Roman villa. After other visits had been paid, the proceedings of a most enjoyable and beautiful week were brought to a close at the Town-hall, although a party of the members, still on archaeological pursuits intent, devoted Monday, Tuesday, and Wednesday last to visits to Calais, Amiens, Abbeville, and Boulogne.

Maghill Church (Adelaide).—A large stained-glass window for this new Colonial church has just been completed and shipped by Messrs. Powell, Bros., of Leeds. It embodies an illustration of the well-known text (Matt. xi. 8).—"Come unto me, all ye that labour and are heavy laden, and I will give you rest." The Lord is presented as seated on a short flight of steps, converted into an impromptu dais, in the act of addressing the above words to the hearers before him. These latter are also seated on benches and stools placed on the floor for their accommodation. Immediately behind Jesus and two of the Apostles, intently listening, the expression of the other countenances is in distinct response to the various emotions evoked by the Saviour's gracious invitation. Above the subject-painting is an ornamented canopy of old thirteenth-century style; and beneath a series of ornamented work to correspond, a suitable border enclosing the whole. The window in parts rich in colour. Mr. A. Coke Hill, Derby, was the supervising architect.

GOVERNMENTAL WORK IN THE WEST.

The three blocks of buildings to form part of the new Seamen's Barracks (Keyham), Devonport, will be ready for occupation within the next three months. The work is being pressed forward as rapidly as possible, almost every week showing some new feature in its formation. "A" block will be finished by next month, the time of the annual visitation of the Lords of the Admiralty. The "B" block has so far progressed that the framework of the roofing has been fixed, and the whole will be up ready for slating in two or three days. The towers of the three buildings have been completed, and the officers' quarters are also in a fair way of completion. The other two blocks, which are to cost 6,000*l.*, and are to be situated in a line on the town side of "A" and "B," will be commenced as soon as practicable, in all probability before the expiration of the present year.

The old South chamber wall of the Devonport Gun Wharf having given way, a new one is now being erected by Mr. Debnam. It will be constructed of concrete blocks made of lias mortar. This is an exceedingly cheap method of doing the work, and is the first time it has ever been introduced for Governmental purposes in the West. Should the experiment prove successful, it is intended to bring it more generally into practice, and thus save much unnecessary expense.

A NEGLECTED ART EPOCH.

In the pages of the *Builder*, in June last [vol. xlv., p. 771], a period of English Medieval architecture, of very interesting character, great beauty, but very short duration,—less than a century,—was referred to with regret as having been neglected. What, then, shall we say of a neglected style that was not only interesting and beautiful, but maintained its vitality, if not its purity, for at least ten centuries; whereas Greek and Gothic, and, indeed, all other architectural styles decayed in less than five?

Although no one in England can fairly complain that any particular style or phase of architecture is obstinately indulged in for any great length of time to the exclusion of others, there existed,—perhaps I should say exists,—a wonderful art epoch which has, likewise, not had the attention its inherent beauty and immense geographical distribution would seem to claim for it. I allude, of course, to the Mahometan style, which lent its architectural splendours to the cities of Delhi, Ahmedabad, Ispahan, Bagdad, Damascus, Stamboul, Cairo, Tunis, and Granada; to India, Persia, Mesopotamia, Egypt, Spain,—in brief, to a territory larger than the whole of Europe.

How is it, then, that in England, where, for the last fifty years, cosmopolitanism in architecture has been a national characteristic, this Oriental style has been entirely neglected? Our Queen is the Kaiser-i-Hind. As a nation of travellers, who have some 60,000 Mahometan fellow subjects, the style must be tolerably familiar to Englishmen. Our Anglo-Indian interests seem naturally to suggest it as peculiarly appropriate. We are, perhaps, more eclectic than original. We cannot be prejudiced against it on the ground of difference of religion, for we have not hesitated to adopt the architecture of the Greek and the Roman, whose religious notions and ceremonies were infinitely more obnoxious to Christians than are those of the Mahometans. Nor can the style that gave us the pointed arch, that used every other form of arch, that can show us more beautiful cupolas than were ever conceived by Renaissance architects; domes of equal magnitude and more difficult construction than any in Europe; towers as elegant as any designed by Gothic architects,—be wanting in the requirements of a modern style. With our architectural history before us, it cannot be matter of prejudice.

Is it that as colour forms such an important element in the style, that it is so emphatically an artistic style, that we are afraid to have anything to do with it? If so, this is much to be regretted, for this charming characteristic is just the one demanded by a grey and cheerless climate. In this particular, not harmony, but contrast, is most devoutly to be desired. At all events, thanks to the strong and very universal art instinct manifested of late by the country, the Government, and our manufacturers, architects have all the materials at command,—

natural and artificial,—for carrying out this striking and beautiful style in all its integrity, should they desire to do so. Minton and Maw can give us tiles veined in lustre and colour with those of Persia, and which, with their glazed surface, would be ever clean in our smoky atmosphere. Bricks as bright and beautiful in colour as those found by Mr. Loftus in Mesopotamia may be seen daily in the market. And as to the use of choice natural materials,—marbles, breccias, and such-like,—as more or less essential to a perfect revival, our native soil not only yields limestone and sandstone and dolomite, but pink and grey and white granites, and red syenite and green serpentine and black basalt, which, owing to the mechanical ingenuity of our countrymen, can be shaped and burnished with wonderful despatch and economy. By these means smooth-faced Saracenic traceries, pleasing alike for their geometry and colour, could be realised with facility, and, in the result, something strikingly new be presented to the admiring gaze of the million.

The numerous details at South Kensington, and the superb works of MM. Prisso d'Avennes, Bourgoins, Prangey, Coste, Texier, and Vogué in the Art Library at the same place, render an acquaintance with the style a matter of easy acquisition for those who may not have already studied it.

H. DE SIVART.

"THE COAL YARD."

SIR,—If Mr. Chart will consult the plan of London (Roque), 1735, &c., he will find all the Coal Yards he mentions, and one more. The one in Willow-street, and the other in Goswell-street, which he refers to, are in the plan marked "Cole Y." The third, marked in the plan "Cole Yard," is now named Smart's Buildings; and the fourth, which runs out of Drury-lane, and which is now a portion of Goldsmith-street, is in the plan named "The Cole Yard."

Mr. Chart writes (p. 268):—"Coal Yard.—I drop the unnecessary prefix," &c. I have given my reason for not dropping the prefix.

Whether or not parochial authorities are judges of what constitute euphonious sounds, I am not prepared to say. In changing the names of the streets and alleys, it would be well if, at the same time, they altered their sanitary conditions for the better. King-street, Drury-lane, has not been improved by naming it Macklin-street.

THE WRITER OF THE ARTICLE.

COLOUR TO THE EXTERIOR OF HOUSES.

SIR,—A word may, perhaps, be in season on a subject which, as it affects the appearance of London, cannot be thought altogether a trifling one. This is the introduction of colour to the exterior of houses. It certainly remedies the defects of some of our older buildings, and gives an animated aspect to many of our deadliest streets and squares. But the result is sometimes almost an outrage. I am not now alluding to any particular system or style of colouring, though many defects under this head might be avoided by not leaving everything to painters. The irritating result I allude to does not proceed from want of knowledge, but from some other want in the characters of landlords or tenants. I need not specify any particular street or square, but you have only to go into one where there is any design or uniformity in the architecture, and, where there is a pediment, you will be certain to find that a half or a third of it is in one colour and the remainder in another; where there are twin porticoes, a very common thing, the same disagreement will prevail, the division in both cases being drawn generally down the centre of one of the columns! The intelligent foreigner can hardly envy us a liberty of this kind! Surely some agreement between landlords or tenants might be arrived at to avoid such absurdities. On the other hand we see in Waterloo-place an illustration of the good effect of carrying out the intention of the architect, and treating the buildings as a whole (though marred at present by two houses at the south-east corner preferring their distinctive dirt). It is too much perhaps to wish that Regent-street,—a gross offender in the way of defacing generally its architectural features,—would take example

from this. I am not saying that in every street, or in every square, one system of colouring should run through the whole. In many cases this might be an advantage, even if confined to whitewashing the whole at the same time. But I do maintain that a great deal to improve the appearance of London, and our character for good taste, might be done, especially where architectural design ought to be considered by the exercise of a little common sense and some public spirit.

A. P.

NEW BUILDINGS IN PATERNOSTER-ROW.

SIR,—In your issue of last week (p. 266), you refer to the rebuilding of Messrs. Kegan Paul, Trench, & Co.'s premises at the corner of Paternoster-square and Rose-street, which, some few months ago were destroyed in the great fire which occurred in that neighbourhood, and you state these new premises are being erected by the Phoenix Insurance Company, "from the designs of their own architect." Allow me to state this requires some explanation. The designs from which these premises are being erected were prepared by my late brother, Albert Bridgman, and the company are restoring the premises, I might say, exactly as they were; the only exception being some slight alteration of an entrance, &c., to suit Messrs. Kegan Paul, Trench, & Co.'s own business. Indeed, the same plans which were originally used are being worked from in all respects, for I handed them myself to Mr. Cumber, the Insurance Company's Surveyor, for that purpose.

I would add that I am myself giving an eye to the progress of these works on behalf of the owner, the company preferring to re-instate than to hand over to the owners the amount of the insurance, or the matter would have been entirely in my hands.

I am sure you will oblige by giving publicity to this statement, or an injustice will be done to the memory of a promising young architect, not yet forgotten, who was taken away by death just as success and fortune seemed to wait upon his earliest struggles.

H. H. BRIDGMAN.

MS. SAID TO BE 2,700 YEARS OLD.

I FOUND last Monday that this object of curiosity had been removed from exhibition in the King's Library; the attendants stated that it was finally withdrawn, the owner objecting to certain freedoms indulged in by a French connoisseur, possibly M. Clermont-Ganneau.

Pressing the matter, I was courteously conducted to the interior, and found M. Shapira seated with Dr. Ginsburg, quietly pursuing the laborious task of decipherment; I also saw a fair sample of the skins, which consists of strips of leather, like so many belts, say from 2½ in. to 3 in. wide, and neatly sewn together to make lengths.

The colour is of a brownish-black, and the letters faintly legible; I should venture to say that they never were continuous, but inserted in blotches. The inscription appears to be in red, and, if the writing is recent, great care has been exercised to remove all appearance of freshness by a process of partial obliteration.

I take it to be quite impossible to establish a character of genuineness for this production, and do most sincerely hope that this anticipated break-down will serve to reopen questions as to the Dibun stone which I have never accepted.

A GENERAL READER.

OLD BUILDING.

SIR,—The letter of Mr. Harry Hems in the *Builder* of the 25th ult. (p. 269) is very interesting, though it deals with a different material than that mentioned by Mr. Percival the week previously. I have met with reeds instead of laths in several old buildings; they are quite common in Cheshire. As to rafters being fixed without a ridge-piece, this is far from rare. I roofed a church in a similar manner not twenty years ago, from the designs of a worshipper of the old, without any regard for the good; it was the only new one I have seen. I have seen several old roofs which had their purlins flush with the rafters, the latter being in short lengths, from purlin to purlin only; sometimes tenoned into the purlins or ridge, at each end, sometimes only

at one, with a lip let into the purlin at the other and always pinned.

Slating on eleven laths, too, has not been abandoned many years. When I was a boy it was the custom for a lath-cleaver to follow the fallers in the woods, and to work up the smaller timber into felloes, pins for shipbuilding, and heart and sap laths; the former for slating, and the latter for plastering.

AN OLD CARPENTER.

DANGER FROM LIGHTNING.

SIR,—Is the practice of putting lightning conductors to buildings anything more than a superstition? No doubt, like other superstitions, it is quite correct in principle, but are not the means and the desired end out of all proportion to each other? Would the current of electricity which would pass through an ordinary conductor do any harm to a building; and is not the application of such a conductor to carry off a flash of lightning something like laying an inch-pipe to carry off the Thames floods?

It will, no doubt, be said that a lightning conductor carries off gradually the electricity which would otherwise accumulate, but is this actually the case? Has the current of electricity passing through a lightning conductor ever been measured during a thunderstorm? I presume there would be no difficulty in measuring this, and, probably, it has often been done, but I have never seen a record of any such measurement, neither have I ever seen the vaguest estimate of the quantity of electricity in a flash of lightning, nor of the least current that would be dangerous to a building. Any information on the subject would be interesting to your readers generally as well as to

AN IGNORAMUS.

SUB-CONTRACTS.

SIR,—Your correspondent (p. 234) is drifting away from the point he raised. It is well that we should understand what we are discussing, and to do this we must amend the title, and call these special contracts. A sub-contract is one between the general contractor and the subordinate he employs, and with this the architect has nothing to do (1).

Taking certain work out of the contractor's hands, and giving it to a specialist under a special contract, is, I think, what we are discussing.

As a builder's surveyor, before I became a clerk of works, I have had the adjusting of numerous accounts, and with all the old school of architects 10 per cent. was allowed the builder, on the special contract, for the services, your correspondent N. no Crane seems to think, from the special contract, but was a charge on the client. Of late years there appears to be a desire to evade such an allowance to the general contractor, and to leave him all the little services and losses unrequited; and, at the same time, to increase the number of specialists brought on the building.

To read some of the modern specifications, you would think the general contractor had simply to put in the foundations and find scaffolding and attendance. Stone from a special merchant, bricks from another; a special carver; a special slater, a special gasfitter, lock merchant, bellhanger, sanitary plumber, stove merchant, &c.

As a clerk of works I find many of these men have a common speciality,—a fluent tongue; and the clerks of works have to arrange their work, and the builder is constantly asking who is to pay for carriages and labour of all kinds, demanded as a right by the special contractor.

ROBERT PHILLIPS, Clerk of Works.

DAMPNESS.

SIR,—If dampness is the sole cause of the unhealthiness of new houses, why are not tents unhealthy in wet weather? I have seen a good deal of tent life, and always found it agree with me.

GEORGE DICK.

A Pleasant Outing.—On the 18th ult., the employees, to the number of about forty, of Mr. Alfred Tattersall, builder and contractor, White Hart-street, Strand, and New Cross-road, had their annual banquet at the Crown, Knockholt Beeches, near Sevenoaks, proceeding thither from the shops at New Cross by road. The chair was taken by Mr. W. Baxter, the general foreman; and the vice-chair by Mr. W. Cross, foreman of the bricklayers. Among those present were Mr. Tattersall and Mr. Edward Clarke, the architect of several of the buildings which the firm is now erecting in and around London.

NEW OFFICE BUILDINGS FOR THE LANCASHIRE AND YORKSHIRE RAILWAY COMPANY, MANCHESTER.

The Lancashire and Yorkshire Railway Company are about to erect a large block of buildings at the Victoria Station, Manchester, and at the same time important alterations in the existing offices will be effected, so that the old and new buildings will form a complete block of offices that will meet the requirements of the departments. In the present building this cannot be done, and the inconvenient necessity of renting offices away from the official centre has for some time existed. The new buildings will be in the Classic style, and will harmonise with the existing building. Designs have been prepared by Mr. William Dawes, of Manchester, who has been appointed by the directors architect to carry out the work.

BUILDING PATENT RECORD.*

APPLICATION FOR LETTERS PATENT.

4,051. J. P. Rickman & A. B. Wood, London. Manufacture of tesserae for use in mosaic work, &c. Aug. 21, 1883.

NOTICE TO PROCEED

has been given by the following applicants on the dates named:—

August 21, 1883.

3,685. W. A. Bonella, London. Fastenings for securing doors and gates. July 27, 1883.

August 24, 1883.

2,303. S. C. Overton, London. Producing mural, ceiling, or other architectural hangings, &c. May 7, 1883.

2,321. B. Hess, Bayreuth, Germany. Manufacture of artificial stone, &c. May 8, 1883.

ABRIDGMENTS OF SPECIFICATIONS.

Published during the week ending August 25, 1883.

5,971. H. Hawgood, Richmond. Covering stairs with carpet, &c. Dec. 14, 1882. Price 6d.

Instead of covering stairs with a continuous length of carpet, frames are made to cover each tread, and are hinged beneath the nosing, and in the frames are secured separate pieces of carpet, &c.

6,017. W. Ferguson, Guernsey. Glazing roofs, &c. Dec. 16, 1882. Price 2d.

The panes of glass are placed in juxtaposition on the sash bars, each tier or row overlapping the lower one, and are kept in position by screws which pass between them into the bars. (Pro. Pro.)

6,035. G. T. Ball, London. Window-fasteners, Dec. 18, 1882. Price 2d.

In the lower rail of the upper sash is a bracket with a screw-tapped hole therein, into which a screw-bolt, secured on the lower sash, passes when the window is to be secured. (Pro. Pro.)

6,068. E. R. Hollands, London. Open stoves or firegrates. Dec. 19, 1882. Price 6d.

This is an improvement on Patent No. 4448 of 1880 in mounting the rake on two arms on either side of the grate, by which the live fuel is lifted when the fresh fuel is inserted underneath.

6,101. C. Major, Bridgwater. Dies used in the manufacture of roofing and other tiles. Dec. 21, 1882. Price 2d.

Instead of using overlapping ends on the upper die to confine the clay in the moulds, these dies have no such edges, and, when the tiles are pressed, the superfluous clay is cut off all round. (Pro. Pro.)

6,121. W. R. Lake, London. Water-closets and sewers and traps for the same. (Com. by C. F. Pike, Philadelphia, and E. L. Collings, Camden, U.S.A.) Dec. 22, 1882. Price 1s.

This consists of various improvements and arrangements which are stated in forty-one claims and illustrated by eighty-eight figures in the drawings, but which cannot be condensed.

6,126. E. Hopwood, Ryde, and E. Jenner, London. Apparatus for warming rooms and buildings. Dec. 22, 1882. Price 6d.

Water boxes are placed on each side of the fire, connected together by pipes round the back thereof, to which boxes is connected a series of endless hot-water pipes, led where required to warm the room.

6,156. J. E. Cope, Birmingham. Sash-fasteners. Dec. 23, 1882. Price 6d.

A spiral guard is pivoted on the circle-plate of an ordinary sash-fastener, so that when the arm is closed the guard is held transversely across the meeting-rails of the sashes to prevent the opening thereof from the outside.

6,169. H. Edwards and H. Harris, Glamorgan. Manufacture of silica firebricks, silica fire-cement, &c. Dec. 27, 1882. Price 4d.

Portland cement is mixed with the siliceous material.

* Compiled by Hart & Co., Patent Agents, 186, Fleet-street.

FOREIGN COMPETITIONS.

Italian Houses of Parliament, Rome.—The conditions of the competition for this building are published in the *Gazzetta Ufficiale*. Only Italian architects are permitted to compete, and designs must be sent in by November 30, term evidently too short. The jury have not yet been appointed. The first premium is 6,000 lire (400*l.*); there are also two minor prizes of 1,000 lire (40*l.*) each.

New Stadt Theatre at Halle.—The magistracy of Halle (Germany) invite designs for a new town theatre. It is to serve both for opera and the drama, and to give sitting accommodation for 1,000 spectators. The cost is limited to 21,500*l.* A very strong jury has been appointed, consisting of Herren Bauratthe Ende and Schmieden, of Berlin; Giese, of Dresden; two civil engineers, Herr Fölsch (the author of "Fires in Theatres," reviewed at length in the *Builder*), of Hamburg, and Herr E. Kelling, of Dresden; and Herr Lebrun, theatre manager, of Berlin. The date for sending in plans is December 1st next; 300*l.* have been placed at the disposal of the jury for premiums.

COMPENSATION CASES.

CONOLLY v. METROPOLITAN AND METROPOLITAN DISTRICT RAILWAYS.

THIS was an action heard before Sir Thomas Chambers, the Recorder, and a special jury. The claim was in respect of the compulsory sale of the business premises of the plaintiff at 5, Eastcheap.

Mr. E. Clarke, Q.C., in opening the case for the plaintiff (after the jury had viewed the premises), said that in 1876, Messrs. Fudge & Co., hatters, had the lease at a rent of 84*l.* a year from the Corporation. At this date the property was advertised for sale by auction by Mr. Inman Sharpe, and was bought by Mr. Conolly, through Mr. Bullen, solicitor, who acted as a friend of the plaintiff. Mr. Conolly then leased the premises from his friend at 235*l.* a year for a period of 33½ years. For two years and a half, however, Mr. Conolly paid only 4*l.*, the amount of the head lease from the Corporation. At the present time the plaintiff carried on the business of a hatter, paying 235*l.* a year rent. The upper floors were let to Messrs. Thomas & Co. (the Passmore & Thomas) at 180*l.* a year, the lease being for fourteen years from 1877. There was also another tenant in part of the basement, namely Mr. Bains, paying 35*l.* a year. The value of the basement where Mr. Conolly transacted his business was about 315*l.*, which, added to the sub-lease made a total of 550*l.* After paying his rent of 30*l.*, Mr. Conolly reckoned a net annual profit of 520*l.* to 220*l.* If the jury multiplied this by thirteen, and added 10 per cent. for compulsory sale, and allowed a proper sum for the extinction of the business,—for the character of the neighbourhood had so altered that a new business would be impossible,—he (Mr. Clarke) thought the right amount of compensation would be obtained.

By Mr. T. Bullen, solicitor, of 69, Cheapside, said he had bought the lease for 2,350*l.*, "subject to a John Perry for 23 years at 85*l.* per annum, but of the estimated value of 220*l.* per annum, held under the Corporation of London from Christmas, 1834, and at a ground-rent of 12*l.* per annum." He purchased at Mr. Conolly's request but in his own name. He offered to transfer the property to Mr. Conolly or to lease it to him, and Mr. Conolly preferred the latter course.

By Mr. George Augustus Lang (of Messrs. Jones, Lang & Co., auctioneers and surveyors, 3, King's Street) estimated the total value of the lease at 3,117*l.* The carpet area of the shop was 243 ft. superficial.

Witness, cross-examined by Mr. Bidder, said there had been a temporary depression during the last few years. He was not aware that in 1875 Mr. Inman Sharpe, an auctioneer, had estimated the value of the property at 220*l.*, and that it actually realised less, but the circumstances may have been different.

By Mr. Clarke.—Property was often bought very cheaply, and by a judicious outlay the value was doubled.

Mr. R. A. Ellis (Messrs. R. Ellis & Sons, auctioneers and surveyors, 49, Fenchurch-street) valued the shop and part of basement at 300*l.* a year, giving a total for the house of 516*l.* The net rental would be 203*l.*, which capitalised, he placed at 1,267*l.* He regarded this as the fair value of the house.

Mr. T. Chatfield Clarke, surveyor, Bishopsgate-street, also estimated the value of the shop and part of basement at 300*l.* a year.

Mr. Philbrick, Q.C., in opening the case for the company, said these corner premises opposite Bishopsgate being required for the widening of the street, the real question was, What was the value of the shop? In 1876 the upper portion of the house was let for 180*l.*, when there was not a suggestion

that the parties were not anxious to get the very best rent. It seemed to him a very high rent, but he took it at 180*l.* There was a let-off of part of the basement at 35*l.* There was no reason for reducing the ordinary allowance for repairs from 20 per cent. to 15 per cent. What was the ground-floor worth? In 1875 the auctioneer valued it at 220*l.* a year. Mr. Conolly actually bought the premises for 2,350*l.* They were asked by the claimant to put on something like 300 per cent. His clients valued the lease at about 1,000*l.*, the trade was about 200*l.* or 220*l.* a year, and it was idle to talk of a loss on the stock.

Mr. Clifton, architect and surveyor, was called to give evidence for the railway company, but was objected to by Mr. Clarke as having exercised the judicial function of umpire in respect of this property.

The Recorder thought the evidence must be received.

Witness had had great experience of property in Tower-street, Mincing-lane, &c., and he estimated the rental value of the whole house at 292*l.* Taking the shop with all its advantages, he valued it at 378*l.*

Mr. S. Walker, surveyor, Moorgate-street, had purchased the sites for the Courts of Justice and the Post-office. He valued the leasehold interest in the property at 1,001*l.*

The jury gave a verdict for 3,000*l.*

PROVINCIAL NEWS.

Swaffham.—The Bagge Memorial, Swaffham, was unveiled by Lady Walsingham on the 13th ult. The structure, of which we gave a view in our last volume (p. 742, June 2, 1883), has been erected by public subscription in memory of the late Sir William Bagge, for thirty-six years Member of Parliament for the western division of Norfolk. The memorial being in recognition of the deceased baronet's great personal worth and long public services, was promoted by men of different political sympathies. It is of Classic design, and consists of a fountain and traveller's rest, and a bust of Sir William in statuary marble, by Mr. Hamo Thornycroft,—a well-executed piece of sculpture, and a striking likeness. The fountain is hexagonal in form. It is built of Ancaster stone, on a base of granite, with Ketton stone for the tracery. The east and west sides are open, and balustraded with arches and spandrels richly foliated, and Corinthian columns at each angle. There are two recessed drinking-basins of granite, with cattle-troughs beneath of the same material, the water supplied to the former flowing through bronze lion-heads. The structure, which is 32 ft. in height, has a roof of Broseley tiles, surrounded with an ornamental parapet, and crowned by a cupola and vane. There is a raised moulding to the cornice, which bears the following inscription:—"This Rest and Fountain were erected by his numerous friends in memory of Sir William Bagge, Bart., M.P. for West Norfolk, A.D. MDCCCLXXXII. Spes est in Deo." The Rest, which is entered on the south side by four steps of Hopton Wood marble, has a handsome mosaic floor, and in a niche on the north wall is the bust resting on a floor of black marble, by Messrs. Burke & Co., of Newman-street. The architect was Mr. Arthur Blomfield, M.A., of London; the contractors for the stonework were Messrs. Bardell Bros., of Lynn; and for the carving, Messrs. Earp & Son, of Westminster. The total cost of the memorial is about 800*l.* Lord Walsingham, in the course of some remarks made on the occasion of the unveiling of the memorial, referred in complimentary terms to the success which architect and sculptor had combined to achieve in this memorial of "a fine old English gentleman."

Arundel.—The new cemetery here was consecrated on the 10th ult. by Bishop Tuftell, who attended on behalf of the Lord Bishop of Winchester. The chapel, of which there are two, are in the Early English style, connected by a covered way. They are built of Kentish rag, with Bath stone dressings. The interior measurements are 40 ft. by 20 ft., while at the east end of the consecrated chapel there is an apse, and the north end of the other chapel is rounded. The floors are of pine blocks and Minton tiles, ornamentally arranged, and the windows of quarry glass with cathedral edgings. The interiors of the roofs, which are covered with Broseley tiles, are stained, and the seats are of varnished pine. The carving still remains to be executed. The lodge at the entrance of the cemetery is in character with the style of architecture displayed in the chapels. The cost of the buildings is something like 1,700*l.*, and the total cost of the cemetery, when the

wall and railing shall have been completed, will be about 2,500*l.* The architect is Mr. Edward Watkins, of Beckenham, Kent. The contractor was Mr. Chamberlain, of Arundel. The ground was the free gift of the Duke of Norfolk.

Dover.—At the meeting of the Dover Town Council on the 22nd ult., Dr. Marshall opposed the payment to the architect of the new Town Hall (Mr. R. P. Pullan) of 59*l.* as commission in relation to the decorations. At one of the meetings of the Town Hall Committee the architect said the decorations would cost 500*l.*, and, after considerable discussion, the committee agreed to spend that sum, and it was understood, he thought, by every member of the committee that that was to be the maximum amount to be expended. Now, however, they had received a demand from the architect for his commission. Perhaps the Town Clerk would state what the actual amount spent in decoration was. The Town Clerk said it was 650*l.* 5s. 1d., including the commission. Mr. Pullan reported at the meeting on the 1st of May that the approximate estimate would be about 500*l.*, and it was agreed Mr. Stiff should do the work. Dr. Marshall moved that the bills in question be not paid.—Mr. George Fry remarked that Dr. Marshall was wrong about the 500*l.* The architect did not say the cost would be about 500*l.*, but gave that sum as an approximate estimate. Then, as regards the architect's fees, if Councillor Marshall would take the trouble to write to the Institute of British Architects, and send 3d. and a postage stamp, he would be able to obtain a list showing that the regular charges for such work were 10 per cent., and railway expenses.—Mr. E. W. Fry said he agreed with Dr. Marshall, and added that if he would alter the wording of his resolution allowing the architect 5 per cent., he would second the motion.—Dr. Marshall replied that he would agree to his motion as suggested.—Alderman Rees was of opinion that the architect was entitled to his commission. On the building itself the architect had charged 5 per cent., and he found that in decorations, where there were a great many sheets and designs to draw out as well as much deliberation to go through, that was considered special work, 10 per cent. was always allowed. That was to say, there was more time and trouble in deliberating over the decorations of a room than there was in planning out the brickwork of a large building. Therefore, looking at it from a professional point of view, he did not think there was any irregularity in the architect's charges, and thought they ought to be paid.—The motion proposed by Dr. Marshall, and seconded by Mr. E. W. Fry, that the bills for decorations should not be paid unless the architect would amend his fee and agree to take 5 instead of 10 per cent., was put to the meeting and lost, the mover and seconder only voting in its favour.—Alderman Rees and the majority of the Town Council, although only doing what is right in this matter, have set an example which may be commended to the attention of other public bodies who have relations with architects.

Shepton Mallet.—At a special meeting of the Shepton Mallet Local Board on the 21st ult., a letter was read from the Local Government Board with reference to an inquiry held by Captain Hildyard (one of the Local Government Board's inspectors), as to an application made by the Local Board to borrow 2,000*l.* for sewerage works and sewage disposal. The Local Government Board, having regard to the nature of Captain Hildyard's report, which called attention to the unsatisfactory character of the works already carried out, requested that they might be furnished with a full report on the present state of the sewers and the sewage disposal land, together with a detailed estimate of the further works required to complete the scheme and to put it in proper working order. The following is an extract from Captain Hildyard's report:—

"I learned that the sewers, as laid by the late contractor, were letting in such large volumes of water, that it was found necessary to take them up in many places. . . . On going round the work I found very indifferent pot-pipes being used, full of fire cracks, the sockets in most cases put on after the pipes were burned, and so untrue in form as altogether to forbid good work. I saw a line of pipes being laid in water with clay-joints, in a most unskilful way, so as to render its stability most unalloyed, and a land-water drain was being laid in the same trench with the sewer, and seemed to take away from the latter all proper support, at one part the land-water pipe was dispensed with, and

a stone drain was formed, having the sewer-pipe as one of its side-walls. . . . Coming to the land at the outfall, the slopes of the ground are very steep, yet no attempt has been made to obviate this by narrow terracing; the carriers, formed of half-pot pipes, are laid on rough dry stonework, having slopes below them of perhaps one in three. I do not believe that these will stand when the sewage is turned on. I even doubt whether the stonework would stand without being put to the strain of having sewage running down over the edge of the pipe. . . . I believe this land as laid out now, would, in two years at the latest, be a scene of utter ruin."

It is stated that Mr. Catley has been requested to give his answer to the above at the next meeting of the Board. Mr. Hickes protested against any further payments being made to Mr. Catley without his first having given due security. This he declined to do, and four members of the Board subscribed between them the expense of obtaining a bond for 100*l*. from the Guarantee Society. Mr. Catley, we are informed, is the engineer of the works, which he has been carrying out for the Local Board at daywork since the dismissal of the contractors. We are also told that there is no clerk of the works.

Amersham.—The sanitary arrangements and sewerage of "Latimer," the seat of the Right Hon. Lord Chesham, near Chesham, Bucks, have lately been reconstructed, and the sewers and soil-pipes ventilated. Mr. Mansergh, of Westminster, was the engineer. Mr. Geo. Darlington, of Amersham, was the contractor, and Mr. G. W. Dormer the clerk of works.

Books.

The Dragon-fly, or Reactive-passive-Loocomotion. By THADDEUS HYATT. Chiswick Press: Whittingham & Co.

This book at first reads like a jest,—and the title as a wilful paradox,—but there is reason to think that it is seriously intended nevertheless. The author is a determined student of the subject of aerial navigation. So determined indeed is he that "for fully ten or eleven years, with little or no intermission," he watched the flight of birds with a view of ascertaining in what the secret of flying consisted. Learning nothing, however, from birds which could be turned to account, an accident directed his attention to insects,—and here a strange story of a dragon-fly is told,—"too strange (it is charitably hoped) not to be true." Going to Washington to see an experimental flying-machine which had been made by a Frenchman, the author found no machine visible, but in its stead a dragon-fly. Returning hastily to Philadelphia, a distance of 140 miles, while sitting at an open window pondering on the ever-present problem of flying, to him there entered the dragon-fly which he had just seen at Washington,—very limp and very tired,—as indeed he would naturally be, so the author suggests, after so long and sudden a journey. This wonderful fly exhibited at the word of command all the phenomena of its construction and its adaptation to aerial locomotion,—expanding its wings when so bidden, and going through its drill with extreme precision and docility,—until it was dismissed by a final order of release and flew away. The writer begs us to note that he simply relates occurrences *truthfully* and *only* states facts. Well! we have no right to doubt his veracity,—he was very fortunate in meeting with such an intelligent and obliging fly,—that's all.

The book is written pleasantly enough, and on page 70, we at last get at the gist of this author's theory, which is, that by the rapid motion of the insect's wings, turning in every direction, a "hollow sphere or vacuum centre in the air is formed," and that this spherical vacuum floats away by its own levity and the creature with it. If the creature were imponderable, this would, perhaps, be the case, but having a specific gravity in excess of the atmosphere by which it is surrounded, it must, if unsupported by anything better than "a partial vacuum," fall. This fallacy vitiates the author's theory in all its suggested applications, and he very prudently leaves to others to reduce, if they think well, his suggestion to practice.

After another decade of unintermittent observation, the author will perhaps oblige us with another theory as pleasantly advocated as the present one, and if advancing years shall have then left us the relish for a good story, we

shall, no doubt, enjoy it as much as we have enjoyed this very good story about a dragon-fly.

The Baths of Bath's Ayda in the Reign of Charles II. By CHARLES E. DAVIS, F.S.A. (City Architect). Bath: Lewis & Son.

A CAREFUL and curious drawing of the king's and queen's baths as they appeared in 1675 was made by one J. Johnson, and is now in the British Museum, and, using it as a clue to the Bath of that day, the City Architect has put together some interesting notes, which he has published, together with a plan of the city and a facsimile of the drawing referred to.

The Roman baths which have been recently discovered were on a large scale, and occupied an area four times that of their modern successors. They were deserted in 577, and an Anglo-Saxon poem of the seventh century laments, melodiously, "the dreary court where the crowned roof lies low in the shadow of the purple arch." The same poem says: "There stood arcades of stone; the stream hotly issued with eddies widening up to the wall, encircling all the bright-bosomed pool. Then the baths were hot with inward heat, so they caused to flow into a sea of stone the hot stream." In the following century the baths were again in use, and then a long gap occurs in their history. Bathing was not a mediæval custom, and it is not till 1542 that we hear of them again. From the beginning of the seventeenth century downwards they have been the subject of frequent description. At the date of the drawing which has furnished the *motif* for the above work, the baths were surrounded with houses arranged so that the bathers could go to and from the baths and their bedrooms with "convenience." The buildings show all the architectural characteristics of the Restoration, and Mr. Davis has been at great pains to collect particulars of each, its exact date, owner, cost, &c. Amongst them "Mr. Symon Sloper," a person of quality then, was accommodated in 1676 in lodgings, rented of the Mayor. Although the use of the hot mineral springs for bathing is of such antiquity, "drinking the waters" was not introduced till 1572. The visit of the Queen in 1702 added to the popularity of Bath. In 1705 the first Pump Room was erected, and the town became the rendezvous of fashion. A noticeable feature is the number of offerings in thankfulness for cures which adorn the walls:—"Thos. Delves By God's mercy and Pumping here formerly ayded," is one of many curious specimens.

Ladies and gentlemen bathed together wholly or (very) partially clothed, or "where juvenile" (age not given) "devoid altogether of apparel." If the contemporary picture is a trustworthy guide, some of the figures which are "devoid of clothing" are by no means juvenile. Smoking in the bath was common. Coffee was served on trays, and gentlemen were accommodated with snuff boxes in little boats. In 1753 the sexes were separated,—no doubt with reason, and each had three days of the week allotted to it,—but the separation did not long endure, and the self-denying ordinance was quickly repealed. Every window in the surrounding houses was occupied by idlers gazing at the bathers, an occupation which was the only available one in the intervals of the bath. Pepps looked into the baths in 1668 and records that he found them "full of a mixed sort, good and bad," and we may well take his judgment on the point.

The author of this pleasant book takes an imaginary visitor round the town as it was at the date of the picture referred to, and introduces him to the shops, the tennis court, and all the sights. He has collected from various sources an astonishing amount of curious information which he imparts in a gossiping style which is very "diverting," as our grandfathers used the word,—and we are quite sure that he will have achieved his object of interesting many besides those who "seek the healing springs of the City of Bladud."

VARIORUM.

"Principles of Mechanics" (T. M. Goodeve, M.A.; new edition; Longmans). It is only necessary to announce a revised edition of this popular text-book, whose merits are sufficiently known to students. From the definition of the idea of force, to the application of the most complicated mechanical principles, the subject is treated alike with fulness and simplicity.—"Saw-filing: a Practical Treatise in Popular

Form," by Robert Grimshaw (New York: Wiley & Sons; London: Trübner & Co.). "A very handy manual, designed 'as a practical aid to those who use saws.' It is copiously illustrated, and appears to deal with every conceivable phase of the subject.—*Nature*, Aug. 16, 1883. This periodical maintains a high standard of excellence, and has something to suit all tastes and requirements. An article on "The Earliest Known Plotting Scale," dated from before the fifteenth century B.C., is of unusual interest; but, in fact, there is no lack of interesting subjects, and all are ably treated.—A female writer in the *Magazine of Art* for the new month says of "Women as Flower Painters":—"Many women are impelled to believe seriously that because they are women they must have an innate comprehension, a special instinct, which helps them to a right interpretation of floral mystery and beauty. They are encouraged as well by much talk of the dignity and sanctity of women's work, and a half-scornful belief that 'surely any one almost can paint flowers!'" So that, on an average, more than half the innumerable flower-pieces in our exhibitions are by women. In all this there is the confidence of ignorance; for, as a matter of fact, there are many who paint flowers creditably, and only a few, and those not usually women, who paint them worthily. The present high standard of art certainly forbids that being false to nature, or entirely mediocre; yet, for "refined taste and delicate handling,"—quote a leading art critic,—you look in vain. Painful memories crowd round you of the work of lady-exhibitors,—medallists, art-scholar-mistresses, and others well on in the profession: work all clever, conscientious, scrupulously careful, curiously trenchant, and wanting in qualities of mass and delicacy; ask without, absolute, self-assured, as though the task of flower-painting was esteemed almost too trivial for the painter's powers. The true flower-lover cannot help shuddering at such scanty measure of observation and tenderness. The general effect is nearly always premeditated, trim, strained, and utterly lacking in the careless profusion of nature. The drawing and composition may be good, admirable,—anything you will; but successful,—if success means revealing to the observer, with a sudden flood of emotion, some subtle impression in nature till then unknown or half-forgotten,—no successful they are not. They might succeed in interesting, would they only believe it, by the careful delineation, with M. Zola, of overgrown vegetables and realistic black-pudding; but with flowers, as they might and may be, never. For if in painting them, besides faithful analysis and care, there be not added,—what is intangible, but more necessary,—some degree of real love and understanding of their peculiar differences, their secret essence, their being the most beautiful of all subjects, the most void of any but decorative interest. And if these public examples leave much to be desired, who shall be said of most amateur achievements. Of those ghostly tentative, or wooden outlines (so frequently supported by a vague structure purporting to be an Oriental vase), which partial friends declare to be "sincere and loving copies of nature"? I take it, they had better be left alone.

Miscellaneous.

Sanitary Institute of Great Britain.—The Autumn Congress will be held in Glasgow from September 25th to the 29th, 1883. A exhibition of sanitary apparatus and appliances in connection with the Congress will be held in the Bazaar Drill-hall from September 25th to October 20th. The president of the Congress will be Professor G. M. Humphry, M.D., F.R.S. The sections of the Congress will be three in number:—Section I., "Sanitary Science and Preventive Medicine," will be presided over by Professor W. T. Gairdner, M.D., LL.D. Section II., "Engineering and Architecture," will have for its president Professor T. Roger Smith, F.R.I.B.A., the vice-presidents in this section being Mr. John Honeyman, F.R.I.B.A., Professor Fleeming Jenkin, Professor Ker, F.R.I.B.A., Professor James Thomson, LL.D., and Mr. James Thomson, F.R.I.B.A.; the honorary secretaries of the section being Mr. H. H. Collins, F.R.I.B.A., Mr. Alexander Fyfe, G.E., and Mr. A. Lindsay Miller. Section III., "Chemistry, Meteorology, and Geology," will be presided over by Dr. E. Angus Smith, F.R.S.

Decorations at the Peel Park Museum, Halifax.—For several months past two of the picture-galleries, the staircase hall, and the power corridor in the museum have been in the hands of Messrs. Best & Lea, of Manchester, for painting and decorating, and the manner in which they have accomplished the work is well spoken of by those who have seen it. The intention aimed at was so to colour and adorn the rooms as to make the most of their architectural details, and, at the same time, to adapt the work to the paintings and objects displayed in the walls. The walls of the galleries are painted in oil, of rich Indian red colour. The north gallery has, in addition, the ceiling more elaborately decorated with hand-painted illustrations from the vegetable world. This room has a suite of cases filled with samples of natural products, raw materials, and such like articles, and the decorations are designed to be illustrative and educational in a similar direction. The ceiling is divided into five bays by arches springing from the beam below the windows. Each bay has the flat of the ceiling, and the cove with four panels, besides the spandrels of the arches, available for special decoration. The whole of the sixty botanical drawings which form part of the decorations, are taken from illustrated works on botany in the Reference Library, and in the selection and arrangement of the decorations the artists, Mr. Wharton and Mr. Plant, the curator of the museum, may be equally credited with whatever praise they may obtain. The committee will endeavour to continue the work of beautifying the remaining gallery and rooms early in the coming year.

The Employment of Brickfield Children. At the Uxbridge Petty Sessions, Mr. F. H. Deane in the chair, Messrs. Eastwood & Co., Mr. Ralph Ratcliffe, and Mr. F. Harrison, brick manufacturers, were summoned by Mr. E. Gould, district inspector under the Factory Act, for employing in their fields boys who had not been certified by the medical inspector as physically fit for the work required of them, and others or whom certificates of regular attendance at school as "half-timers" could not be produced. Messrs. Eastwood were further summoned for not keeping a register of the young people employed in their field. Mr. W. Garner, solicitor, on behalf of Messrs. Eastwood and Mr. Ratcliffe, represented that the children were employed by moulders without the knowledge of the defendants, who, however, would acknowledge great care to see that the Act was not infringed in future. Mr. Harrison's foreman, who whom the management of the field was intrusted, pleaded that he was ignorant of the requirements of the Act prior to the 27th of June, when Mr. Gould visited the field, and that he had since failed in his efforts to get Mr. "Arrot," the medical inspector, to examine the boys. The chairman suggested that complaint should be made at the Home Office if the officer neglected his duty. Messrs. Eastwood & Co. were fined 9l. and costs. Mr. Ratcliffe 7l., exclusive of costs, and Mr. Harrison 2l. 10s. 6d. and expenses, the chairman remarking that if the defendants repeated the offence the full penalty would be imposed.

The Will of Miss Bewick (says a writer in the *Northern Daily Express*), is a matter in which the town (Newcastle-on-Tyne) and district are interested, for some of the art-treasures of the reviver of wood-engraving have been left to the perfection of the name and fame of the great artist in wood. It is to be hoped that Newcastle, in which the work was done which made him famous, will not be forgotten in the disposal of the treasures; and the Bewick Club ought to be favoured with some mementoes of the artist whose name, memory, and work they, at least, are doing something towards perpetuating, and are therefore carrying out the desire and wish of Miss Bewick, as expressed in her will. The woodcuts are to be sold, but the announcement of the sale, which may lead to the reprinting of the cuts, and their circulation of Bewick's gems by thousands or tens or even hundreds of thousands,—for in these days of cheap issues editions are reckoned by tens and hundreds of thousands,—has already had a depreciating effect on the original editions of Bewick's works, which have hitherto commanded a large price.

East Meon Church.—A correspondent complains that some circular openings in the Norman central tower of this church are about to be occupied by the dials of a clock. We do not know enough of the circumstances to offer any strong opinion on the subject.

The "Grand" Theatre, Islington.—This new theatre, which replaces the building known as the "Philharmonic" (burned down in September last), has been erected at a cost of about 15,000l., from the plans and under the superintendence of Mr. Frank Matcham, architect, and is described as being of fireproof construction, and planned in conformity with the requirements of the Metropolitan Board of Works. The style is the Early Renaissance, with here and there a touch of Gothic treatment. The auditorium is spacious, its seating capacity being 3,000. As many as nine exits are provided to facilitate egress. The interior is comfortable and luxurious. The space underneath the second private box is the entrance to the stalls, giving it the appearance of a private box. These boxes are divided by a large column, on the top of which stands a figure, which supports the soffit dividing the ceiling over the stalls from the large ceiling. The first-named ceiling is divided into three panels, each containing a painting illustrating Music. The larger ceiling is a square, designed into an octagon, the spandrels having circular pateras, with an electric light in the centre. This octagon is formed by Gothic lines meeting at a circle, forming a dome in the centre, and includes eight paintings. The whole of the interior decorative work was entrusted by the architect to Mr. J. M. Bookbinder, of whom we made appreciative mention before when we described the Avenue Theatre. The proscenium border is of concrete, by Drake, of rather sombre colour, but relieved by gilt cartouche-pieces. The lighting has been executed by the Hammond Electric Light Company, and the gasfittings by Messrs. Z. D. Berry & Sons. The whole of the theatre was executed at a cost of 15,000l., of which the decorations alone amount to nearly 2,000l. Mr. E. Toms was the builder, and his foreman was Mr. Webber.

The Sewage Question at Wednesbury.—At a meeting of the Wednesbury Local Board, on Monday night, Mr. Trow introduced the sewerage question, and moved "That the sewage of Wednesbury be purified by precipitation, overflowing tanks, and, if required, by filtration; and further, that a civil engineer, who has had experience in sanitary matters, more especially in the purification of sewage by precipitation or otherwise, be appointed to advise with the surveyor as to the best means of carrying out the above work, and that plans and report for the collection and purification of the sewage of the town be prepared, and, subject to the approval of such plan by this Board and the Local Government Board, the engineer and surveyor, with a sub-committee appointed by the Board, do proceed to carry out the necessary work." Dr. Blackwood seconded the resolution. After a discussion lasting two hours the resolution was carried by six votes to two. On the motion of the chairman, seconded by Mr. Trow, it was decided to engage the services of Mr. Pritchard, C.E., of Birmingham, to prepare the registration plan and report.

Rochester Castle.—Rochester Castle is about to pass from private ownership into the hands of the Corporation of Rochester, who are to pay the present owner, the Earl of Jersey, 8,000l. for the structure and surrounding grounds. The Corporation have for some years had a lease of the property at an annual rental, and the grounds are laid out as public gardens, for which purpose the Earl of Jersey stipulates they are to be maintained, while the castle is to be kept as a ruin.

The "Cobden" Coffee Tavern, Birmingham.—was opened by Mr. Bright on Wednesday last. The building occupies a site at the corner of Corporation and Cherry streets, and has been erected for the Birmingham Coffee-house Company from the designs and under the superintendence of Mr. W. Doubleday, architect, Mr. Moffatt being the builder. We gave a view of the building in our last volume, p. 382 (March 24, 1883).

The North Wales College.—The arbitrators, Lord Bramwell, Lord Carlisle, and Mr. Mundella, M.P., have unanimously decided that Bangor is the most suitable site for the North Wales College. The town has just received a charter of incorporation.

Fall of Buildings in the Minories.—On Thursday, the 23rd ult., at about 10-30 p.m., the front walls of the houses, 36 and 37, Haydon-street, Minories, fell with a tremendous crash. The buildings belonged to the Metropolitan Railway.

An Engineer's Commission.—At an adjourned meeting of the Ashford Local Board, held a few days ago, the clerk read a letter from Mr. Mansergh, the Board's engineer, in response to the resolution requesting him to send an account of all his charges against the Board. Mr. Mansergh charged 1 per cent. for taking out quantities, and 2½ per cent. on estimated outlay, making a total commission of 560l. 8s. Besides these items there were others for travelling and payments out of pocket, amounting altogether to 55l. 18s. 10d., the total claim being 616l. 6s. 10d. The accuracy of certain charges of Mr. Mansergh was briefly questioned, and the way in which the money to pay Mr. Mansergh could be raised was discussed. It was resolved to send a deputation to the Local Government Board upon the matter.

TENDERS.

For erecting new house, carriage drive, fencing, &c., for Mr. George Kemp, Mayfield. Mr. Edward J. Thomas, No. 78, Mark-lane, architect.—
Clayton & Cornford (accepted).

For making, and draining with surface-water drains, new roads on the Hendon Estate of the Imperial Property Investment Company, Limited. Mr. G. H. L. Stephenson, surveyor.—
T. Adams (accepted) £2,100 0 0

For alterations to the Sugar Loaf public-house, Cannon-street, City. Messrs. Wilson, Son, & Aldwinckle, architects, 2, East India-avenue.—
Axford £21,310 0 0
Shurmer 1,246 0 0
Heale 1,238 0 0
Drew & Cadman 1,200 0 0

For alterations and additions to "Dunedin," Surbiton for Mr. D. T. Smith. Mr. R. Peters, architect, Wool Exchange, Coleman-street.—
J. Burchell (accepted) £700 0 0

For the erection of double cottages at Padbury, Bucks. Mr. R. Hutchinson, architect, Huntingdon.—
Pair of Cottages.
Woodin, Bucks. £453 0 0
Holton, Buckingham 417 10 0
Tew, Buckingham 368 18 8
Brown, Buckingham 390 0 0
Bunting, Fenstanton 380 0 0
Ingram, Winslow 383 0 0
Smith, Padbury 380 0 0

For the erection of farm buildings at Wood-Walton. Mr. R. Hutchinson, architect, Huntingdon.—
Saint, St. Ives £820 0 0
Rowe, Huntingdon 785 0 0
Howard, Holme 780 0 0
Balmer, Huntingdon 770 0 0
Edey, St. Neots 737 0 0
Bunting, Fenstanton 730 0 0
Bateman, Ramsey 685 0 0

For the erection of a new flour-mill at Ipswich. Mr. R. Hutchinson, architect, Huntingdon.—
Thwaites, Ipswich £5,300 0 0
Bennett & Co., Ipswich 5,300 0 0
Catchpole, Ipswich 4,911 0 0
Cox, Ipswich 4,887 0 0
Wray, Ipswich 4,885 0 0
Pells, Ipswich 4,840 0 0
Girling, Ipswich 4,815 0 0
Bunting, Fenstanton 4,700 0 0
Grimwood, Sudbury 4,695 0 0
Edey, St. Neots 4,634 0 0
Gibbons, Ipswich 4,450 0 0
Page, Buckden 4,229 0 0
Wallis, Harwich 3,700 0 0

For powderer's work at The Falcon, St. John's Hill, Wandsworth, for Mr. J. Taverne. Mr. H. I. Newton, architect.—
Warratt £2107 0 0
Kemble 158 0 0
Heath (accepted) 187 10 0

For rebuilding 128 and 129, Cheapside. Messrs. Ford & Hesketh, architects.—
Nowlem & Co. £9,164 0 0
Nightingale 7,736 0 0
Rider & Son 7,453 0 0
Boyc 7,203 0 0
Clark & Bracey 7,201 0 0
Stimpson & Co. 7,215 0 0
Scrivenner & Co. 7,173 0 0
Adamson & Son 7,087 0 0
Woodward 7,063 0 0
McLachlan & Sons 7,034 0 0
Lawrence 6,992 0 0
Brass 6,887 0 0

For alterations to professional chambers, Nos. 1 and 2, Waterloo-street, Birmingham, for Mr. H. C. Ogden. Mr. T. Foden Flint, architect, 22, Bennett's-hill. Quantities by Mr. Charles Sharp Smith, 72, Victoria-road, Aston.—
Twigg & Son £745 0 0
Smith, James & Son 685 0 0
Smith, Thomas 690 0 0
Chaffer, W. H. 680 0 0
Floore, William, Aston New Town 650 0 0
Coombs, G. W., Moseley 625 10 0
Dark, Thomas and David, Aston New Town (accepted) 605 0 0

For painting, decorating, and repairs to be done at the Board-room, library, and other offices attached to same, at the Licensed Victuallers' Asylum, Asylum-road, Old Kent-road. Mr. W. F. Potter, architect. Quantities prepared by Mr. C. K. Griffiths:—

Simpson & Annet, Kensington	£258 10 0
J. Buckman, Peckham	245 0 0
E. Burford, Bishopsgate-street	280 0 0
W. Smith, Kennington	198 0 0
E. Stace, Peckham	199 0 0
J. Bull, Westminster	197 0 0
S. Hayworth, Kingland	165 0 0
B. Cooke, Stonecutter-street	159 0 0
W. Whyte, Dalston (accepted)	125 7 0

For additional floors and other works to the manufacturing premises of Messrs. Welch, Margetson, & Co., No. 17, Bridge-place, Southwark Bridge-road, for Mr. H. W. Wilson. Mr. E. Croase, architect, 32, Bernondsey-square. Quantities by Mr. J. S. Matthews:—

Greenwood	£3,490 0 0
Colls & Sons	3,454 0 0
Rider & Son	3,421 0 0
Shepherd	3,395 0 0
Tyerman	3,319 0 0
Croaker	3,230 0 0
Higgs & Hill (accepted)	3,190 0 0

For the erection of four small cottages in the rear of the "Princess of Wales," Deptford, for Mr. Frank Barnes. Mr. Henry Roberts, architect and surveyor, 113, Lewisham-road:—

H. Keylock	£700 0 0
H. L. Holloway	653 0 0
M. Redman	597 0 0
Hubble & Trot, Deptford (accepted)	595 0 0

For oak road horses, per dozen, delivered, roughly wrought, framed, and bolted, for the South Hornsey Local Board. Mr. William H. Pipe, surveyor to the Board:—

Austen, St. Alban's	per doz. £9 16 0
Shepherd, Kingland	9 10 0
Ridley & Sons, Abbey Wharf, Reading	7 0 0

* Accepted.

For additions to St. Mary's, West Kensington, for the Rev. J. Macnaghten, and the committee. Mr. E. P. Loftus Brock, architect:—

H. Browning & Son	£3,240 0 0
Chamberlain Bros.	3,175 0 0
T. H. Adamson & Sons	2,976 0 0
Stimpson & Co.	2,917 0 0
Lucas & Son	2,750 0 0
E. Grover	2,727 0 0
H. Haynes	2,620 0 0

For alterations and additions to the Brown Bear, Hanworth, for Messrs. Fuller, Smith, & Turner, Chiswick. Mr. Geo. More, architect:—

Hiscock, Hounslow	£1,297 0 0
Rogers, Turnham Green	1,285 0 0
Brimsden, Brentford	1,167 0 0
S. Hunt, Chiswick	1,095 0 0
Lambie, Kentish Town (accepted)	1,067 0 0

For alterations, &c., at Astley's Theatre, for Messrs. Sanger. Mr. F. Matcham, architect:—

Dove Bros.	£3,900 0 0
Wall Bros.	3,750 0 0
Toms	3,530 0 0
Palman & Fotheringham	3,400 0 0
W. Shurmer	2,968 0 0

For the erection of a new schoolroom, vestry, &c., in connexion with the Congregational Church at Hemel Hempstead, Herts. Mr. W. A. Fisher, architect, Hemel Hempstead:—

W. L. Bear, Biccot's End, Hemel Hempstead	£418 0 0
E. Horn, Hemel Hempstead	415 0 0

* Accepted.

For alterations, and repairs at No. 20, Compton-terrace, for the "Missionary Leaves Society." Mr. W. Waymouth, architect:—

W. Shurmer (accepted).

For alterations and repairs at No. 9, Hornsey Rise. Mr. F. Chambers, architect:—

W. Shurmer (accepted).

For alterations and additions to the Iron Bridge Tavern, East India Dock-road, Bromley, for Mr. B. C. Howe. Mr. G. T. Trills, architect. Quantities by Mr. J. F. Wesley, Forest Gate:—

Walker	£2,475 0 0
Harris & Wardrop	2,431 0 0
Holland	2,393 0 0
Hughes	2,338 0 0
Shurmer	2,298 0 0
Smith	2,264 0 0

For the erection of Villa Residence, Warwick-road, Coventry, for Mr. Oliver Minister. Mr. Herbert W. Chattaway, architect, Trinity Churchyard, Coventry:—

J. Marriott, Coventry	£2,240 0 0
J. Worwood, Coventry	1,917 0 0
C. Haywood, jun., Coventry	1,860 0 0

* Accepted.

For the erection of fitting-shop, show-rooms, &c., adjoining the Carochie Tricycle Works, Jordan Wall, Coventry, and repairs to various premises, for Mr. E. Ralphs. Mr. Herbert W. Chattaway, architect, Coventry:—

J. Wilson, Coventry	Fitting shop, &c. Repairs. £440 0 0
C. Haywood, junior, Coventry	430 0 0
J. Malepeace, Coventry	421 0 0
R. Wootton, Coventry	333 0 0
T. Mayo, Coventry	333 0 0

For alterations, &c., at No. 8, Porchester-terrace. Messrs. Joseph & Pearson, architects:—

McLachlan & Sons (accepted).

For providing new blinds to the Town Hall, Keesington, for the Vestry:—

G. A. Williams & Son, Bayswater (accepted).

TO CORRESPONDENTS.

W. S. & L. Son—D. W. A. J.—W. P. P.—P. F. J. F. W.—W. H. P. H. W. C.—H. E. S.—C. S. S.—W. S. H.—S. H.—J. J. W. C.—W. W.—K. J. T.—Dr. F. A. W. B. Bros.—W. D. H. P. F. M.—N. W. M. A. B.—J. C. P. Bros.—H. W. V. J.—J. H. J.—D. A. S.—J. M.—W. V.—S. W. (we know nothing of the papers in question).—A. J. B. (no names or amounts given).

Correspondents should address the Editor, and not the Publisher, except in cases of business.

All statements of facts, lists of tenders, &c. must be accompanied by the name and address of the sender, not necessarily for publication.

We are compelled to decline pointing out books and giving addresses.

NOTE.—The responsibility of signed articles, and papers read at public meetings, rests, of course, with the authors.

NOTICE TO ADVERTISERS.

Persons advertising in the *Builder* may have REPLIES ADDRESSED TO THE OFFICE,

46, Catherine-street, Covent-garden, W.C.,

FREE OF CHARGE.

Letters will be forwarded if addressed envelopes are sent, together with sufficient stamps to cover the postage.

CHARGES FOR ADVERTISEMENTS.

SITUATIONS VACANT, PARTNERSHIPS, APPRENTICESHIPS, TRADES, AND GENERAL ADVERTISEMENTS.

Six lines (about fifty words) or under..... 4s. 6d.
Each additional line (about ten words)..... 6s. 6d.

Terms for Series of Trade Advertisements, also for Special Advertisements on front page, Competitions, Contracts, Sales by Auction, &c. may be obtained on application to the Publisher.

SITUATIONS WANTED.
FOUR Lines (about thirty words) or under..... 2s. 6d.
Each additional line (about ten words)..... 6s. 6d.

PREPAYMENT IS ABSOLUTELY NECESSARY.
** Enquiries must not be sent, not all small sums should be remitted by Cash in Registered Letter or by Money Order, payable at the Post-office, Covent-garden, W.C. to

DOUGLAS FORDPINTER, Publisher,
Addressed to No. 46, Catherine-street, W.C.
Advertisements for the current week's issue must reach the Office before THREE o'clock p.m. on FRIDAY.

The Publisher cannot be responsible for DRAWINGS, TESTIMONIALS, &c. left at the Office in reply to Advertisements, and strongly recommends that of the latter COPIES ONLY should be sent.

TERMS OF SUBSCRIPTION.

"THE BUILDER" is supplied direct from the Office to residents in any part of the United Kingdom, at the rate of 12s. per annum, *Postpaid*. Remittances payable to DOUGLAS FORDPINTER, Publisher, 46, Catherine-street, W.C.

Best Bath Stone.

WESTWOOD GROUND,
Box Ground, Combe Down,
Corsham Down,
And Farleigh Down.
RANDELL, SAUNDERS, & CO., Limited,
Corsham, Wilts. [Adv.]

Bath Stone.

Facilities for selection and quality unequalled, having upwards of
350,000 Feet Cube
In Stock of all known descriptions.
PICTOR & SONS, Box, Wilts. [Adv.]

Doubling Freestone and Ham Hill Stone

of best quality, in blocks, or prepared ready for fixing. An inspection of the Doubling Quarries is respectfully solicited; and Architects and others are CAUTIONED against inferior stone. Prices, delivered to any part of the United Kingdom, given on application to CHARLES TRASK, Norton-sub-Hamdon, Dorset, Somerset.—Agent, Mr. E. WILLIAMS, 73, Charlotte-street, Portland-place, W. [Adv.]

Doubling Freestone, Of best quality, supplied from their own Quarries

HAM HILL STONE,
and Kils by Starks & Hays, Stoke, Dorset.
BLUE LIAS LIME
Agent, Mr. H. MROCKLEY, 18, Abchurch-lane, London, W. [Adv.]
(Ground or Lump),

Asphalte.

Seyssel, Patent Metallic Lava, and White Asphaltes.
M. STODART & CO.
Office:
No. 90, Cannon-street, E.C. [Adv.]

Asphalte.—The Seyssel and Metallic Lava Asphalte Company (Mr. H. Glenn), Office, 38, Roultry, E.C.—The best and cheapest materials for damp courses, railway arches, warehouses, floors, flat roofs, stables, cow-sheds and milk-rooms, granaries, tun-rooms, and terraces. [Adv.]

Immense quantities of

DRY WAINSCOT,
DRY MAHOGANY,
DRY WALNUT,
in all thicknesses.

B. J. HUDSON & SONS,
Whitfield-st., W., and Great Peter-st., S.W. London. [Adv.]

J. L. BACON & CO.,

MANUFACTURERS OF IMPROVED
STEAM AND HOT-WATER
APPARATUS,

FOR WARMING AND VENTILATING
Private Houses, Churches, Schools, Hospitals,
Manufactories, Greenhouses, &c.

OFFICES AND SHOW-ROOMS:—

No. 34, UPPER GLOUCESTER PLACE,
DORSET SQUARE, LONDON, N.W.
And at DUBLIN, BELFAST, and NEWCASTLE,
Illustrated Pamphlet on "Heating" post free.

SPECIALY PATRONISED BY H.R.H. THE PRINCE OF WALES.

BARNARD, BISHOP, & BARNARDS,

Original and Sole Manufacturers of the

SLOW COMBUSTION

(Registered), Specially adapted for burning "Anthracite" or Smokeless Coal, as advocated by the Fog and Smoke Committee of the National Health and Kyrie Societies.

Known as the "Country Parson's Fire-Grate."

DESCRIPTIVE CATALOGUES POST FREE.

OR

"NORWICH" STOVES.

One of the great advantages of these Stoves (amongst others) is that they will burn "Anthracite," or Smokeless Coal, which has been so strongly recommended by the various speakers at the recent discussions at the Society of Arts on the subject of "London Fogs."

"DIAMOND," "UNIVERSAL," AND "NORFOLK" RANGES,

As supplied to the Great Eastern Railway, London and South-Western Railway, Eastern and Midland Railways, and Lancashire and Yorkshire Railway.

BARNARD, BISHOP, & BARNARDS,

Norfolk Iron Works, Norwich.

London Show-rooms, 91, 93, & 95, Queen Victoria-street, E.C.

The Builder.

VOL. XLV. No. 212.

SATURDAY, SEPTEMBER 6, 1903.

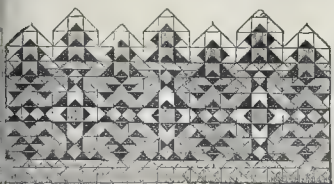
ILLUSTRATIONS.

Prize Design: Architectural Association.—By Mr. Geo. W. Ward	318
Chelwood Beacon, Nutley, Sussex.—Mr. G. N. Bessley, Architect	320
Seville Cathedral: View of the Transept (Large Engraving)	322
Sunderland and Durham County Institute for the Blind.—Messrs. J. & T. Tullman, Architects	329
Villa near Stoke-upon-Trent.—Mr. R. S. Topham, Architect	331

CONTENTS.

Statues, for Whom, and When, and Where?	307	Seville Cathedral	316	The Obelisk on Putney Heath	336
A History of Painted Glass	309	Chelwood Beacon, Nutley, Sussex	316	Staining Wood	336
Professional Portraits: Some Minor Characters on the Architectural Stage	310	House near Stoke-upon-Trent	316	Fall of Buildings, Minor	336
Corfe Castle	311	New Public Hall at Kingston	330	The Lambeth Vestry and House Drainage	336
The Archaeology of the Shapura Manuscript	312	New Infirmary at Bolton	333	Ventilating Cows	336
Archæology in Ireland	312	The Leeds and Yorkshire Architectural Society	333	Shepton Mallet Sewerage	336
The Valley of the Chess	314	The New Patent Law	333	Scaffolding	336
The Practical Utility of Public Gardens	314	Artisan's Dwellings for Provincial Towns	334	What he had Failed in: Funchay Local Board	336
Edinburgh	315	New Convalescent Home at Southport	334	Wooden Structures: the Metropolitan Management and Building Act (Amendment) Act, 1892	336
Exhibition of Coloured Plastic Works	315	Large Sale of City Property	334	Memorial Window to Lord Frederick Cavendish	337
Congress of the Social Science Association	315	Obituary	335	Gossip with the Editor	337
The Testing of Bricks	316	Building Patent Record	335	Church Building News	337
Prize Design, Architectural Association	316	Provincial News	336	Exhibition of Architecture in Brussels	338
The Sunderland and Durham County Institute for the Blind	316	Foreign Hotels	336	Miscellaneous	338
		Fireproof Paint for Large Buildings	336		

Statues, for Whom, and When, and Where?



STATUE of life-size, and even particularly a statue of metal, as of bronze, commends itself to the imagination as the highest of honours, as the most appropriate recognition of merit in public service of the noblest character. It is not unnatural, therefore, for a feeling to grow up that it is an honour which ought to be strictly reserved for merit so supreme. There is something in this feeling of the traditional; it doubtless owes much to associations with the usage of classical antiquity which directly, or indirectly, have become worked into the very tissues of our most prevailing sympathies.

"Bring him with triumph home unto his house!
Give him a statue with his ancestors!"

are the exclamations which Shakespeare assigns to the Roman citizens when they are roused to enthusiasm by the oratory of Brutus. The scene, indeed, does not change before, in response to the warmer and more ardent oratory of Mark Antony, the same crowd shouts as eagerly,—"We'll mutiny; we'll burn the house of Brutus!" The revulsion is a warning that it were well if the assignment of a statue should be delayed until after a career has been closed and completed by death, and also after a lapse of time sufficient to secure the dying out of temporary passions, and false estimates of merit, to whichever side they may incline. Some restriction of this kind is required and adopted even for the collection of a National Portrait Gallery, of which the interest is historical,—a place in which is, therefore, challenged of equal right for all who have influenced the fortunes of the country either for good or ill, for its best benefactor and for the most pernicious traitor. But the erection of a public statue is essentially of the nature of an honourable distinction, and to maintain this character it should be reserved for those whose title to it will be readily admitted by posterity. If any statue whatever may permissibly bear a name which will not justify it at once to long future generations, it can only be one that commemorates services which future generations should be ashamed to require to be reminded of.

The images of the ancestors of a great Roman patrician were ranged in his vestibule; the public places of a capital city constitute the proper vestibule of a nation, and the men who have contributed most largely to the making of a nation, to its political consolidation, to its glory in science and in art, are the true progenitors of whatever qualities of power and glory are the common heritage of the nation at large, of the characteristic energies of national vitality. That a statue is that form of personal commemoration which admits of such exposure and permanent presentation is, no doubt, one element in its capacity for dignity. Beyond this we must appreciate the capabilities of sculpture; this is the art to which, in spite of frequent disappointment, the world will persist in looking for the highest expression of noble characteristics. The conviction owes something to the accidental analogies of solid form and durable material; but if, as has been said, something also to tradition, it is, doubtless, because the tradition has a basis in what the art of former times has nobly achieved. What the labels in the antique galleries of the British Museum call *iconic* sculpture,—why not *iconic*?—why not simply and idiomatically, portrait sculpture?—began in Greece with statues of victorious athletes, especially at Olympia. Pindar, whose career covers the Persian war, already alludes to this application of the art; he vaunts that an ode of his, in celebration of a victory in the games, can pass over land and sea, and so far has the advantage of a statue, which must remain fixed firm upon its basis in one place. He might have anticipated for his work the further advantage of superior permanence, for of the crowd of *iconic* statues which once peopled the sacred area, recent excavations of the scene of the Olympic games have recovered but a fragment or two; the most remarkable is a bronze head, of considerable merit, which is unmistakably "ear-marked" as that of a boxer.

But the poet fully concedes and confirms the assumptions that stimulated the genius of the sculptor; he is never tired of insisting that the perfection of bodily development was not merely the type, but that it was the true expression, of corresponding mental and moral excellence. A beautifully-proportioned figure of a man or boy was to the Greeks godlike; as the exactest possible manifestation to sense of creative power, it was accepted as the very image of divinity under one certain aspect of unsurpassable perfection. "One is the race of gods and men," says Pindar, "and from a common mother are both descended; the difference of mortality for man is the only difference of moment." Human life, to the thought of the lyric poet, is not only worth living, but having in view its noble capacities, as evidenced in the very perfection of which the godlike human form is capable, it is worth living for ever. A godlike form is the universal

attribute of the Homeric heroes, who are at least as nearly allied to Divine as to human ancestry, who excel in the same exercises as the later athletes; and even these, according to Pindar, required but that endowment which elsewhere is attributed to partaking of the tree of life to be, not merely similar, but equal to the gods.

How far the earlier sculptors may have made it their endeavour to produce exact portraits of the victors whom they were employed to commemorate, and how far they may have succeeded, it is impossible to say. Monumental evidence may be said to be entirely wanting. We can only be certain, from analogies of later date, that what portraiture was aimed at had reference even more to the general figure than to the countenance of the athlete. It would be quite in accordance with that ruling spirit of Greek art which may be safely assumed to have dominated its commencement, that portraiture in either direction was but the starting-point from which the artist endeavoured to advance to a conception and realisation of character that excluded the accidental, though not absolutely the individual. That certain simple typical attitudes may at first have been adhered to is probable enough on general grounds,—as probable as that certain typical proportions may have been allowed an undue preference, and that both were controlled by rigid archaic conventionalities. At a later date it is certain that scope was admitted for specification and incident. We have the record of a foot-racer, who was represented as drawing his very last exhausted breath at the moment of victory, and of a boxer in the characteristic action in which he excelled. The Discobolus of Myron, and that of which the more quiet type is ascribed to Naucydes, may preserve the motives of proper athletic memorials. Such may have been the original suggestion of one at least of the beautiful pair of bronze discus-throwers at Naples from the excavations of Herculaneum. The same unrecovered and all but identical attitude is repeated in each youth as bending forward he eagerly watches the flight of his discharged discus; but with the very finest discrimination this general agreement is made consistent in one with hopeful anticipation, and in the other with the slightest nervous contraction under apprehended failure.

Repose is the characteristic of all fine sculpture, but it is a repose which by no means excludes the representation of vehement action; the repose which is realised is in the mind of the worthily appreciative spectator,—it is the repose of entire satisfaction at the perfect definition of a crisis, of a present moment dependent without ambiguity on what has gone before and what is to ensue. But within the limit which is thus imposed, memorial sculpture has extensive range between quietude all but absolute and excited action. And the intermediate gradations are infinite. An air of cha-

racteristic reflection is susceptible of as many varieties as an expression of interest or passion. The two conceptions of characteristic representation tend to blend into each other insensibly, but yet the distinction between them is as real as that which has always been recognised between contemplative and active life. The difference may be exemplified by the contrast of two admirable ancient statues,—the tragic poet Sophocles, the political orator Demosthenes.

The Demosthenes in the Braccio Nuovo of the Vatican, a spare figure, stands as if in the midst of a speech, but with arms straight down, as each hand grasps one margin of a half-opened scroll before him, the very embodiment of a concentrated yet alert intellectual power and resolution. In face and figure, form and gesture, the statue expresses perfectly the distinctive quality of his oratory which the ancients designated by a word most expressive, but most difficult to render by an adequate English equivalent,—his *deinotês*. The literal "dreadfulness" does not meet the case; the original word ascribes a special formidableness that is compounded among much else of ever-ready and inexhaustible resource as well as unflinching resolution. Cobden, who turned with more than insensibility,—with contemptuousness,—from the majestic conceptions of Michelangelo in the Sistine Chapel, set down on paper an excellent characterisation of the Demosthenes; he recognised that air of deep conviction of the truth and importance of his pleas, and of his conviction, no less firm, of his power of bringing that truth and importance fully home to his hearers, which illustrates his celebrated, but often misinterpreted, dictum, that the secret of oratorical power lay first of all, and secondly, and thirdly, in the orator's capability of acting,—of assuming and supporting a part. The statue of Sophocles, in the Lateran Museum, represents no specially characteristic action of the poet, but his characteristic demeanour. We have not to consider what he is doing; it is his frame of mind, his cast of thought; the difference is the same as between two portraits by Reynolds,—Dr. Goldsmith, tranquil, and with a book closed but for a place kept with his finger, and Dr. Johnson, shortsighted, poring intently over a page held close before his face. Simple attitude, the poise and balance of a head, may be as characteristic as any action; to define disposition, which controls the spirit of all possible action, is more important than to illustrate specific gesture. The liability is in no sort so dangerous and disastrous as in sculpture, for fundamental character to be confused and lost through eagerness, at any cost, to give force and colour to particular passion. The fault is the same, but less permanently annoying, in some other arts, as when on the statue the jealousy of *Leonato* may be undistinguishable from that of *Othello*, the ambition of *Macbeth* from that of *Richard III.* To return to our statue, Sophocles stands erect and calm, with his arms composed within his robe, with clear and open brow, sympathetic at once and dignified, the very expression of that well-balanced nature and self-controlled genius which were capable of giving smoothness to "the very torrent, tempest, and it may be said whirlwind of passion" of his "King *Edipus*," which, but for "King *Lear*" in our minds, we should call the dread of all dramas. We see before us the true sculptural representation of the poet whom fallen Athens lamented, but who, the comedian Aristophanes said, might for his own sake as well be left in Hades as brought back to earth again,—certain as he was to be equally at ease in one place as another.

That one conception of sculptural representation is, in itself, more legitimate or universally appropriate than another, is not to be said; and the same remark applies to painting. Sentiment may predominate according to occasion, or purpose be more salient; the comparative value in result depends on the perfection of the inspiring idea, and the genius which finds exercise in its embodiment. What may be called the dramatic element prevailed in the statue of the Athenian general Chabrias, kneeling on one knee, and with protended spear, the position by which he had foiled even a Spartan attack. On the other hand, the statue of Alexander the Great at Delphi only represented his general aspect; yet the sight of it so affected Cassander at the height of his inde-

pendent power, as to throw him into a cold perspiration, with such force did it recall to him a moment of peril when he unexpectedly had incensed the son of Ammon by utterance of an Hellenic expression of contempt at sight of Hellenes degrading themselves by Asiatic prostrations.

A memorial statue is nothing unless characteristic, and unless expressive of the qualities most characteristic of the commemorated celebrity. So important a work as a statue is not to be set up merely to show us,—in agreement with the vulgar phrase,—"what sort of looking person" the original was. The function of satisfying curiosity so far has been finally withdrawn from art proper by photography. But even the leading characteristic of an individual is susceptible of a variety of phases; and the propriety of selection among these and of its presentation, either by general aspect and bearing, or by particular interest and action, must depend on a variety of circumstances. Among these the site of the monument is of especial importance. Characteristic action of an individual may be out of place for perpetuated exhibition, even where the individual himself was perfectly in place and at home in its display. It is just possible that the statue of a judge might be allowable within the actual court where he had presided; but that of a great advocate represented in the excitement of earnest pleading, or even as composed to smooth persuasiveness or bland exposition, could scarcely be admitted. Decision in accordance with rigid truth, and not disputation as to what is truth, is the ultimate aspiration of the world at large in relation to a court of justice. No more appropriate works could dignify the grand vestibule of the New Palace of Justice than statues of the judges who in one generation after another have given form and solidity to the great body of English law. That advocates, and that judges who have been great advocates, should have characteristic statues as advocates, is right and proper; but the places for these would be most fittingly within the advocates' own halls, even as statues of the great physicians and surgeons, so far as represented engaged upon the actual business of diagnosis or anatomy, may be best relegated from the entrance-halls of patients to the schools and lecture-rooms.

The neighbourhood of Palace Yard is gradually becoming populous with the effigies of statesmen in bronze. The sentiment of the locality in such close proximity to the Houses of Parliament cannot be mistaken. But the difficulties of modern sculpture are nowhere more apparent, or appeal more pathetically for indulgence. A sense of incongruousness will intrude, as we see a crowd of our friends in costume similar to our own, mounted bareheaded upon pedestals, yet so lifelike that it seems they ought to be still walking about amongst us. The historical series of Parliamentary orators in the vestibule of the Houses is, on the other hand, entirely in harmony with our general associations. Obsolete costume is prevalent here, and with much advantage. For a statue in modern costume to tell with the full effect of its merits, it seems to require isolation; well-expressed sentiment may then have a better chance to get the better of common-place associations. Then the full spirit may be appreciated of the presentation of Mr. Gladstone as he delivered his Midlothian speeches; or of Lord Frederick Cavendish with the pathetic impress, not of his own fate, but of the wickedness that stimulated the ungrateful outrage. A single statue in a conspicuous public place seems to require some justifying ground of preference; it is, to say the least, not very obvious what this may be in the case of Richard Cœur de Lion on his war-horse, in proximity to the Lords' entrance to the Palace at Westminster. And yet true though it be that the Norman never spent half a year altogether during his entire reign in his English kingdom, and was known to his subjects there chiefly by demands upon them for fruitless personal services in remote wars and contributions towards a heavy ransom, there was much in his character and ways that harmonised with what we fondly insist on as the spirit of Englishmen. Shakespeare helped legend or tradition as much as history, by the blunt but mainly and truly patriotic energy which he gave a model of in Richard's representative,—base-born though he were,—the Philip Faulconbridge of "The Life and Death of King John."

The question as to the value to be allowed to the appropriate sentiment of locality becomes

most urgent in the case of sculptured memorials within a church or a cathedral. Such monuments are usually sepulchral, and, when not connected with an actual tomb and thus only memorial, they cannot but be regarded still as having relation to the very largest scope of the character of the commemorated, as erected under a controlling sense of the gravity which attends the audit of a concluded life. It may perhaps, even be said that a monument cannot have a character appropriate to position in a church or a cathedral,—to a cemetery in its original sense of final resting-place,—to a God's acre, which would be in harmony with an exclusively secular situation. Something more than seriousness in an ordinary sense, that is, than concentrated attention to the work of the day, however urgent or important, is demanded here, at least if solemnity is to retain any distinctive meaning, unless the word awful is sufficiently honoured as a trivial intensive for boys and girls and is no longer required as applicable to the sense of man's relation to the material and moral world alike, to the infinity of the starry heavens, and to his intuitive sense of responsibility in moral right or wrong. It would seem that the sentiments of faith and hope, and coloured by a certain humility withal, are most appropriate for a tomb. Self-assertion there is absolutely precluded, and we may say, perhaps, that the most dignified and touching monuments are those which appear as the simple record of such sentiments in the deceased, and do not intrude upon notice even the tenderest affection or most worthy admiration of survivors. Such is the sentiment which is realised by many Medieval tombs, sometimes of the greatest simplicity and sometimes consistently with even sumptuous elaboration. Of the latter class are those in which a degree of seclusion is given to the composed effigy which, extended calm and composed within niche, or it may be chapel, is so framed in by intermediate shafts as to appear rather studiously withdrawn from common observation than set forth for display.

In most absolute contrast to monument where the specifically religious sentiment is predominant are those in which the thought of the self-glorification of the artist has too much escaped from control. A cathedral is then in danger of being turned into a mere exhibition-room. The original conception of a statue is determined by a sculptor's notion of opportunity for effect, and it is set up at last like the statue of Watt in Westminster Abbey without any relation to the axial lines of the architecture, and only to the angle at which the light will agree best with that under which it was designed and executed in the studio. The statue of Mr. Wilberforce near at hand,—if a seated figure can be accurately called a statue,—may be a creditable portrait; but we come upon it in the "long-drawn aisle" with a certain shock, as the philanthropist has much the air of unbending from earnest labours by posing or attempting to guess a conundrum.

A portrait-statue has its place, but it is within range of association with family pictures. It is right and fitting also that men who are a nation's pride from their properly national services in peace or war, or from scientific, artistic, or literary achievements in promotion of benefit to humanity at large, should have appropriately characteristic monuments. But it is more than doubtful whether the true place for such well-earned grateful glorification is precisely a place of worship. That the sentiment which inspires such recognition of merit of the very highest class has an analogy to that which seeks expression in religious celebrations is very true; but true also is the distinction which makes itself felt at the point where even the most enthusiastic hero-worship will do well to draw a line. The Venetians were better advised in declining to erect the statue of Colonna, for all its artistic merit, even in front of the Cathedral of St. Mark, than the Florentines who acknowledged the services of a true military genius,—the English *condottiere*, Sir John Hawkwood (translated as *Aguto*),—by his equestrian portrait in fresco within their cathedral.

At most, then, the becoming place for the gratitude and admiration of a nation to erect statues of its celebrities, which should be designed as fully characteristic of their lives and achievements, would seem to be a forecourt or adjunct of a temple, an ante-chapel, or a precinct for this special appropriation. Poets' Corner has become such a precinct by force of

association, and so long as it can be kept free from intrusion of the celebrities of a single generation, long may it so continue. But even there is requirement for a public site independent of a place of burial, and of associations of burial, where it may not be inappropriate for the soldier or the sailor to be set before posterity, in the very heat of the actions by which he secured rescue or achieved conquest, the statesman may seem uttering the solute words well fitted "the applause of a tening senate to command," and even to enslave those who were not content merely not to listen, the physicist may be exhibiting the initial experiment of processes that have so far ranged the course of history as to cut out one work than one generation of statesmen and warriors will be able to get through by the most strenuous endeavours to reduce the disorganised and the obsolete to the novel conditions of improvement and advance.

It would be too much to hope that the duty of wardenship of such a precinct could be perfectly fulfilled; but in this case, as in others, the world must compound for lapses and imperfections that attend the most honest and earnest endeavours. The world must alter very much indeed, if admission would not sometimes be too easily conceded under the influence of fleeting passion, amiable sympathy, factitious enthusiasm and partisanship; exclusion and repulse might often be, must be expected occasionally to be, as hasty and unjust, and later generations may have had occasion, and will again, not only to revise the positive appreciations made by their forefathers, but to recover reputations from the honest, but grossly ignorant, neglect of contemporaries.

As regards the meritorious themselves, so far as the love of praise from being, "the last firmity of noble minds," it is the very stamp of a truly noble mind to be exempt from it entirely,—

"Marcellus, exiled, more true pleasure feels
Than Cæsar with a senate at his heels."

But there is scope for much nobility of mind intermediate between the standards of Marcellus and of Cæsar, and it is to the honour of the nation as a whole to take the sting from the title,—

"How nations, slowly wise and meanly just,
To buried merit raise the tardy bust."

A HISTORY OF PAINTED GLASS.

MR. WESTLAKE'S admirable and careful work on the History of Stained Glass,* in process of issue, has not proceeded quite as fast as the author seemed to promise, when we noticed parts I. and II. of the first volume more than two years ago (June 17, 1880). We have had the remainder of the first volume in the interim, and we have now the whole of the second volume, dealing with the painted glass of the thirteenth century. But we may first devote a few words to the concluding part of the first volume, which deals with two very interesting subjects of the subject; medallion windows, by which term the author means small illustrative impositions of figures, generally in circular or oval, sometimes referring to incidents in the story of a principal figure which constitutes the main feature of the window; and grisaille or diaper designs, which form in themselves a very important and beautiful class of stained glass work.

The whole subject of stained glass is of double interest, in our day; as regards its past history on the one hand, and its present and future possibilities of development on the other hand. The greater proportion of work done in the modern revival of the art has been too largely tinctured with antiquarianism, even among those who have professedly aimed at doing more than merely imitating Mediaeval glass as closely as possible; and, in fact, the instant and systematic study of this class of art in its Mediaeval remains seems to have a tendency, natural and perhaps almost unavoidable, to run away with the judgment of the modern artist and historian, and lead to a positive admiration of much which, in reality, is only deserving of relative admiration, as displaying the artistic feeling and enthusiasm of generations of artists who were very deficient powers of expression and draughtsmanship. Mr. Winston, who contributed so largely to the

historical study of stained glass, and, in fact, cleared the path for nearly all who have followed him, preserved in this respect a wonderfully true and unbiased judgment, in which Mr. Westlake, who is fully grateful for Winston's labours and quotes largely from him, does not seem able, nevertheless, to have profited by his example. He is frequently in collision with Winston in matters concerning the æsthetic theory or principle of stained-glass design, and in most of such cases the judgment of the elder writer appears to us to be the most sound and correct.

The medallion branch of stained-glass design Mr. Westlake regards as having reached its perfection in the early part of the thirteenth century, after which it continued to be produced with little change for about fifty years. A special point in this class of work is that there is an important element of window design in the arrangement of the medallion panels, as one may call them, their shape and the pattern formed by the tracery bars which sustain them. It is not surprising to find that this element of the design is in best form in the thirteenth century period, when the arrangement of the iron supporting tracery took those regular and simple geometrical forms which characterised the style, and which form lines so satisfactory to the eye as well as so constructively convenient and suitable. This geometrical framework, by which the spaces occupied by the figure-subjects are divided off from the rest of the design, seems to disappear after the close of the thirteenth century, or is at least rarely found, and the medallion subject is defined only by its canopy or other architectural ornament, and is crossed and re-crossed by a network of iron and leading, in a manner far inferior even in general decorative effect to that of the geometrically divided thirteenth-century window, and very injurious to the effectiveness of the subject itself, in which even the faces of the figures are crossed by bars, destroying all their effect and expression, and in harsh straight line in direct opposition to the lines of the pictorial design. In the thirteenth-century examples the leading lines are for the most part contrived so as to fall in with and emphasise the main lines and curves of the drawing; and there can be no doubt that this is the most logical and artistic way of working.

The medallion windows represent the combination which is characteristic of the best decorative design; that of surfaces of purely abstract ornament, with small figure designs as the central points of interest. In a general way Mr. Westlake's history of the thirteenth and fourteenth centuries of glass work is a history of continual downward progression in the art. Colour is excluded, indeed, from the author's scheme of illustration, for the double reason that it would have rendered the book much more costly, and that printed colours can give no true idea of the effect of the original windows with the light shining through them, even the mere tones of the glass being difficult to reproduce exactly. This is no doubt true, and no sensible man would think of judging finally of the effect of a stained-glass window from a chromo-lithograph; but that does not preclude our conviction that the history of a branch of art in which colour is the most essential element would be more complete with some representation of colour. The omission of any attempt at this directs one's attention more exclusively to the element of design in the work illustrated, and, perhaps, therefore presents to us in a more marked manner the contrast between the style of design in the different periods illustrated. In regard to figure-drawing, there is a general advance in freedom and especially in the treatment of drapery, in the fourteenth century, as compared with the previous one; an advance which went further, as we know, in the fifteenth century. But in most other respects the style of design in the fourteenth century, represents a decided descent from that of the thirteenth. Even among the figures of the thirteenth century, Mr. Westlake gives one or two examples, notably that of one of the spies (bringing back the grapes from Canaan) from Canterbury, which are superior in life-like pose and action to most of the fourteenth-century examples which he gives. The diaper and foliage designs of the thirteenth century are in the finest and purest style, little, if at all, inferior to the finest Classic work in feeling and in truth and grace of line. They illustrate the highest qualities of ornamental work, both in feeling and execution. When we compare this with the orna-

mental work of similar class of which examples are given in the fourteenth-century volume, in place of the grand and broadly-conceived conventional foliage of the thirteenth century we find a timid naturalism of style in foliage, executed with uncertain and weak lines; instead of the broad and architectural forms of the thirteenth-century foliage, we meet with thin scraggy scroll-work scratched out on a dark ground, and looking, in Mr. Westlake's colourless illustrations, like hadiello work. The contrast is really extraordinary, and we never before were made so vividly aware of it. Indeed, the more thirteenth-century detail of every kind is studied, the more emphatically this appears as the Augustan age of Mediaeval art.

The grisaille patterns of the thirteenth century Mr. Westlake divides into three types of design:—"First, those founded on the design of interlacing bands, which are most common in France." The second type consists of "a series of flat geometrical forms, filled with foliated ornament painted on whitish glass, and often outlined with bands of colour. Some of these patterns are composed only of simple forms; others, as has been clearly delineated * (sic) by Mr. Winston, though apparently composed of geometrical forms and parts of geometrical forms, on one flat plane, are really composed of simple forms on three or more planes, the more advanced overlapping those behind. In the earliest specimens of both the previously described types, the ornamental panelled foliation is circumscribed by the lead glazing of the geometrical forms; but towards the close of the century the third of these types predominates; in which the foliation overruns this limit, and spreads itself through other portions of the design, thus precluding the introduction of the running designs of the maple, ivy, and other leafage which became common early in the fourteenth-century white pattern glass." A good many sketches are given of excellent examples of the two earlier styles, which may be compared with the fourteenth-century grisaille examples given in volume ii. There is a remarkable elegance about some of these regarded in relation to their total effect, as, for instance, in the example from the chapter-house at York (vol. ii., p. 101), but very weak treatment in many of the foliage details given at large. The English work of this date is, however, for the most part decidedly better than the French; so far, that is to say, as the grisaille patterns are concerned.

In other respects, more especially in regard to figure drawing, the French work of the fourteenth century comes out, in Mr. Westlake's examples, as superior to the English. A comparison of the whole subject, as treated by our author, suggests, though perhaps hardly with his intention, fresh reflections on the curious phenomenon of the apparent incompatibility of the highest class of figure-drawing with the highest class of decorative work. In the examples given in this book the contrast is almost systematically carried out. The English thirteenth-century ornamental glass is the finest, and the figures are the weakest; the fourteenth-century English grisaille is, as observed above, superior to the French of the same date, but the French figure subjects are much the best in drawing and expression; there is one from St. Nazaire at Carcassonne (vol. ii., p. 88), which is exceptionally expressive and free in drawing for Mediaeval work. The Italian stained glass, of which examples of the fourteenth century are given from Santa Maria Novella and Santa Croce, is the poorest of all in its ornamental design, in which it is thin, hard, and wiry; and, if we remember rightly, it is much the poorest and most commonplace in colour; but then, look at the superiority of the figures. The German figures are on the whole better than the English,—at least, more correct; but then they are much more stiff and decorative, and attempt much less. The English and French designers of the thirteenth and fourteenth centuries, the latter epoch especially, crude as their designs seem to us now, were really very ambitious in their intentions; they had not, to our belief, a notion in their minds of producing "decorative figures"; their aim was to produce figures as humanly spirited and forcible in expression and action as they could, and often it would seem that the designers must at least have felt vividly and dramatically what they wished to portray; and hence every now and then we find, along with odd,—and to our

* "A History of Design in Painted Glass." By N. H. Westlake, F.S.A. Vol. I., Part 3; and Vol. II. London: James Parker & Co. 1881-2.

* "Demonstrated," Mr. Westlake probably means.

position, prospects, family connexion, and personal ability promised a successful career. He married early and happily, but he had an unfortunate talent for amusing people in various ways, and he was eternally engaged in theatrical or other entertainments. These were always undertaken with a charitable object. He was always solicited to assist, and he could never bring himself to say no. Business was neglected in consequence, but that was not the worst. The excitement which all his activity caused was met in the usual way, and with the usual result. With shaky step and trembling hand he was to be seen at every uncheon-bar, at all hours, until at length the rain gave way and he dropped out of sight, a victim to a talent and a habit which have been the ruin of multitudes. He has left behind him the memory of countless acts of kindness and charity, and a name with only one blemish, reversing the poet's line, for, with a single crime, he linked a thousand virtues.

Of C.'s decline and fall how shall I trust myself to speak? He had but few of the advantages of birth beyond a handsome person, but he had abilities of the highest order. With friends not rich but "well to do," with education sufficient for his station, and with a personal charm which never failed of its effect, he nevertheless passed half his life, and closed it, as an outcast from society and a common street mendicant. "Drink again!" I hear you exclaim. Not so. He was abstemious to a fault. He was, moreover, economical and prudent in the management of money matters. No one out of Scotland ever made so little go so far. He had but one vice; but it was sufficient to compass its entire degradation. He was persistently and notoriously lazy. If his friends succeeded in getting him employment he would not work, and when discharged, as always quickly happened, he would not trouble himself to seek employment. And he defended his proceedings with infinite ingenuity and humour. He rose at noon, moved about gaily, well-dressed, light-hearted, entertaining, relieving his acquaintances of spare half-sovereigns, half-crowns, billings even, until the patience of all was exhausted, and the supplies were resolutely stopped. Then he subsisted no one knew how. His bits of jewelry disappeared one by one, and those sure indexes to the state of the pocket, the hat and boots, gave out unmistakable warnings. He sank lower and lower, still idle, until he became the consort of homeless vagabonds, the companion of thieves. His language was never lax, nor his life impure, and the habits of his infamous associates must have been torture to him. But so strongly had the demon of idleness got hold of him that he could endure all this rather than free himself by any exertion. His form can be no stranger to many who will read this, as he wandered through the London streets, shoeless, bent, and prematurely old, casting furtive looks as he passed at old companions, and dreading recognition. His features were but little altered with all his privations, and I have heard the bricklayers on the scaffold point him out to me another as Mr. —, the architect! He is to be seen no longer. A life of exposure and want told its tale, and he too has fallen out of the ranks.

Yes! "Cut is the branch which might have crown'd full straight." The dark river has closed over one who might have shone amongst his fellows, and whose abilities would have warranted the highest flights of professional ambition. Many more such stories are ready to hand. But it is not my function to preach, and if I assume the moralist I shall perhaps not find my readers nodding. I would only add that the above instances carry with them warnings which both young and old would do well to heed.

And that they are true.

Stone.—Mr. Arthur Loader, architect, of Brighton, having reported to the Building Committee of Queen-square Church, Brighton, that the process of decay, already set up in the Caen stone with which the exterior of the fabric is encased, is past being arrested, has been commissioned to prepare specifications and plans for entirely re-casing the same with picked Caenish Down stone, and restoring the interior. The estimated cost being about 2,000*l.*, and orders are to be obtained for the work, the fund for which is to be augmented by a grandazaar.

CORFE CASTLE.

No monument of English architecture, it may be safely asserted, is more rich in varied interest, or more impressive in the lessons that it conveys to the mind, than the noble ruins of Corfe Castle. Situated in the peninsula which, forming the southern shore of the sleepy harbour of Poole, is called the Isle of Purbeck, it lies too far from the ordinary track of the holiday-maker and the tourist to catch the attention of any but intentional visitors. Its antiquity is as undoubted as it is remote. Its structural excellence is of the very first order, whether we regard design, material, or workmanship. It presents evidence of the force of early masonry, such as nowhere, within our knowledge, finds a parallel. And the desolate dignity of its picturesque condition proclaims, at the first glance, how great a revolution in the arts of offensive and defensive war has taken place, not only since the date of King Edward the Martyr, but since the time when the great captain of the Ionianides gave stern token that he did not do his work negligently.

Passing from the tertiary sands and clays that give such an untidy appearance to the shores of the beautiful bays of Christchurch and Bournemouth, the tourist who sets sail from the handsome pier of Bournemouth in the direction of Weymouth passes a rocky promontory of hard grey chalk, at the point of which two gigantic pillars, standing up in the sea, bear the names of Old Harry and his wife. It seems incredible to those who are acquainted with the upper chalk downs of England,—as the material is found, for example, in the great Tring Cutting,—to realise the fact that these chimney-like towers are old, and that they are composed of chalk. There, however, they stand, and have long mocked the fury of the waves. The line of the coast beyond them presents a vertical cliff of chalk, and it is only on passing along the shore that these remarkable features of the landscape detach themselves from the outlines of the cliff. Swanage Bay recedes from the chalk headland; and the promontory which forms the western shore of this bay presents a third geological aspect. Lines of limestone slabs, recalling the remembrance of the stepped "Calp limestone" of the Pembrokeshire coast, peer out from the face of the cliff, or run out in greyne below the water. Between the strata of stone the earth is in many places soft and crumbling. It is for this reason that we have made so little use of the finest building stones of the oolitic group. As in the case of slates so much, the back top, hard, or by whatever name this mass of soft material may be called exceeds in cubic quantity the solid and valuable rock, so that it is too expensive to open the quarries in the usual way, with a clean face that carries all before it; and the hill to the west of Swanage is burrowed by the quarrymen like so many rabbits.

A long round swell of hill, very closely resembling that which is called the Hog's Back, between Dorset and Farnham, drops gently in the middle, as the Surrey downs are cloven at Dorset and at Guildford. But at Corfe a low hill detaches itself from the hollow; and though only rising to about half the height of the downs on each side, is so distinct in its outline as to have been capable, nine hundred years ago, of being rendered impregnable by the engineer. Its triangular area, of something over three acres, was girt by massive walls, strengthened by mighty round towers. Ward follows ward, gently rising one above another; and the top of the hill is crowned by the shattered walls of a colossal keep and associated towers.

It was on the site of one of the interior ward-gates, in the year A.D. 978, that King Edward, calling at the castle to see his brother, who was not within, and declining to alight, was served with a cup of wine, and greeted with a kiss of welcome, by his stepmother, Queen Elfrida, and stabbed, either by her hand or by her order, as he stooped to drink. The ruins of the castle betoken the workmanship of many centuries, but in the semicircular vaults of the basement we see the work of the Romans,—or, at all events, work of the same kind as that with which we are familiar in Italy. It may thus very well be the case that portions of the castle are as old as the time of the martyr king.

At various periods of English history Corfe has played an important part in our internal wars. It was often a royal residence. It was a shelter of John, when the barons were gather-

ing to demand the Great Charter. It was the property of Sir Christopher Hutton, or rather of his imperious wife, in the time of Queen Elizabeth; and was held by her beautiful and no less imperious daughter,—the Viscountess Purbeck. Its latest fame is due to its gallant defence against the rebel forces in 1643, by Lady Bankes,—a defence memorable in the annals of the Parliamentary contest. And when, in consequence of treachery, it fell, the efforts that were made by the orders of Cromwell to destroy it, have left such traces as can never be forgotten or mistaken. The appearance of much of the castle is that of a building rent and tossed by earthquake, with the exception that if earthquake had done so much, it would have done more, and swept away the relics. Some of these vast towers, from 6 ft. to 14 ft. in the thickness of the walls, have slidden bodily towards the moat. Some lean at every angle from 45 degrees to the slightest inclination. The great gateway, to which access was given by a drawbridge, has been rent in twain; and one tower, with half the arch, is now some three or four yards lower down the hill than its fellow, the two massive half-arches stretching towards each other, but not looking as if they could ever have been one. Neither pen nor pencil, not even the truthful reflection of the camera, can do justice to the effect produced on the mind by these stupendous ruins,—witnesses as they are of a truth and strength of construction that only partially and with the utmost reluctance gave way to the explosive force of powder. On one side of the great keep, a portion of wall containing some 400 superficial feet is now leaning against an erect part of the tower, from the face of which it is from 6 ft. to 9 ft. distant at the bottom. The question arises, was this portion of the wall overturned, so as to reverse its position in falling, or no? After some care in examination, it becomes clear that such is not the case. The faces of the wall maintain their original parallelism; the under part of the wall must have been thrown horizontally outward and sideways, by the explosion, and the huge mass, falling nearly vertically, was sustained by leaning back against the unfallen portion of the tower. What must have been the strength of the masonry that took such a leap, and remained unshattered, after a fall of 18 ft. or 20 ft. in height?

The structure of the walls becomes manifest in the numerous sections thus violently cut by the force of powder. They are, in fact, built of concrete faced with ashlar, but it is a concrete that has the strength and very much the appearance of a natural conglomerate. It is more truly concrete than rubble work, as there is no appearance of the fitting of the stones. In one or two places there are indications that this core, which is, in some places, 6 ft. or 8 ft. thick, was carried up course by course with the ashlar blocks, of some 12 in. or 14 in. in depth, and rammed to a level bed. The whole mass is composed of the hard Purbeck stone, and it is probable that the mortar is burned from the same. From the perfect integration of the work, which has the strength of the heaviest megalithic building, there can be little doubt that the mortar was mixed in the Italian mode, and not from newly-slaked lime. The faces of many of the ashlar blocks are as sharp and fresh as if newly set,—much more so than is the case with the masonry of the Houses of Parliament. Some of the delicate interior work at Chatsworth may be finer in its finish, but we consider the masonry of many of the towers at Corfe to be absolutely unsurpassed in true masonic excellence. Looking at the condition of the stones, a stranger would pronounce the Palace of the Legislature at Westminster to be of a much anterior date to many parts of Corfe Castle.

The attention of the student may be confidently directed to Corfe, as a very museum of Early English architecture, using the term in the general, rather than in the restricted, sense. An account of this castle has been written by a member of the Bankes family, to which it has long belonged. It is also described at some length in the county histories, and several books are more or less devoted to the subject. But as far as we are justified in forming an opinion from a little library of these works collected in the neighbourhood, there is ample room for an additional volume; for one, that is to say, that should treat the subject architecturally, and point out the respective dates of the various parts of the ruins. It is the

political, not the architectural, history of Corfe Castle that we have found most fully illustrated. But as to the latter, the peculiar excellence of the stone, and either the nature of the climate, or, at all events, the superiority of the resisting to the destructive energy, are such as to add extreme interest to architectural research. The grooves for the portcullis are as clean and smooth as if they were in daily use. Mouldings in the upper portion of the castle, certainly not later in execution than the time of Henry VII., or very probably of Henry VI., are uninjured by time or weather. Round-headed vaults have either been built of dry stones, or have lost the mortar which originally cemented them, without losing their regular form. With this almost Egyptian durability of the sabbler work, the distorted positions of many parts of the edifice, due to the mining and blasting effected in order to destroy the castle, presents a weird and most striking contrast.

One of the most memorable of the effects which a visit to Corfe Castle is calculated to produce on the reflective mind is due to the mode in which it places in evidence the great change in the modes of offensive warfare that has occurred since the hill on which the ruins stand was regarded as impregnable. In Saxon times we may well understand that such should be the case. Whatever be the date of the round towers that strengthen the external wall,—leaving, some of them, at a menacing angle, at which they have stood for 240 years,—there can be little doubt that at a very early period, as far back, if we may judge from the vaulting, as that of the Roman occupation, Corfe must have been safe against any danger but that from treachery. In the time of the Commonwealth, indeed, the possession of no less than four pieces of artillery by the chateaine of Corfe Castle was thought to be a danger to the State. And yet the weight of the heaviest projectile that could be cast by the largest of these guns was three or four pounds. Ordinance of such a calibre would produce little more effect on walls of such massive solidity than the popgun of a child.

The impregnability of the site of Corfe, however, is now so entirely a thing of the past, that there is no chance whatever that the castle can ever again be used for military purposes. It is not a question of the resistance of the walls to battering in breach. Even in their present disturbed condition, they would afford a stout resistance to heavy shot. But the place is absolutely commanded from the hills on each side, as well as from the higher ridge opposite to the castle. What was the range of the cannon of the time of the Civil War may be questioned. It was, evidently, not such as to trouble the defenders of Corfe. Had Lady Bankes been besieged by a foe armed with such a weapon as that made by Mr. Whitworth, which has thrown a projectile for the distance of over 11,000 yards, her shift would have been short. It is wonderfully instructive to have this contrast between the methods of ancient and of modern warfare brought so palpably before the eye. Here is a spot which, 1,000, or even as late as 250 years ago, would have repaid any expenditure in the way of fortification, by affording an impregnable shelter to its possessor, on which no modern general would expend 100l. by way of defence. Once impregnable, it is now dominated on all sides.

There are two roads from Swanage to Corfe, one running along the top of the hill of which we have spoken as affording a point that dominates the castle from the south, and one at the foot of that hill. From either of these roads it is noticeable how the hill itself is pierced for stone. The quarries are of a peculiar kind, and appear to be noticeable for the absence of such facilities as the engineer now supplies to the miner. At various points on the northern slope of this hill are to be seen heaps of rubbish, surrounding a low quadrangular building of dry stone. In the quadrangle is the working-shaft of the quarry, a mere hole, as far as we could see, sinking obliquely beneath the surface, and paved on the lower side, for the purpose of sliding up a corfe, or other appliance for extracting stone. That there may be more efficient modes employed in the island is possible, we can only narrate what we have seen. Two or three men, quietly engaged in dressing stone into troughs, moulded blocks, or other assorted shapes and sizes, we observed in several of these enclosures. And the stone thus painfully raised, and leisurely worked, can only be removed by ordinary carts. On the pier, indeed,

there is a short line of railway, but it seems only used for the conveyance of coal from one wharf to another. A branch of the South-Western Railway is now in course of construction to Swanage, and may be opened, as far as we can judge, in a few months. In may then prove feasible to lay short branches from the quarries to the railway. As it is, no pains whatever seem to have been taken in order to bring into the English market a noble and durable building stone, of the unusual excellence of which the blasted but undestroyed walls of Corfe Castle form an unequalled proof and advertisement.

The idea that it would pay to open more directly a quarry of Purbeck stone to sea carriage is not new. To the south of the upper road that we have described, at the distance of about a mile from Swanage, the veins of stone that appear on the face of the cliff are of a hardness and polish that may entitle the material to the name of marble. Here is a spot,—now chiefly frequented by the picnic maker,—known as Tilly Whim. Three square openings, like those of the rock-tombs of Egypt, are made in the vertical face of the limestone cliff, and run for thirty or forty yards into the hill. They may be about 8 ft. or 10 ft. in height, and twice as much in width. They appear to be the result of a systematic attempt to mine the stone, which is here attainable in very large blocks. Who were the miners? Why, and how long, have the quarries been abandoned? These are questions to which we have obtained no reply. That it would be a highly advantageous operation to set these quarries again at work, with an improved method of stone extraction, we think not improbable; but, meantime, we wish to give a word of warning. Let not the tourist or the holiday maker be seduced by the cool shade of these grottoes to linger beneath their flat ceilings. They are in a distinctly dangerous state. With rock so hard warning is not often given of fall, and an apparently menacing slab may remain unmoved for dozens of years; but, on the contrary, it may come down at any moment. And not only is it the case that a flat unsupported roof of stone is possibly unsafe, there is much more to be said as to danger at Tilly Whim. In the largest cave the roof is so rifted and opened that it has evidently moved, and may at any time move very destructively, for the floor of the westernmost cave is piled with large blocks of stone, of several tons each in weight, that have evidently fallen from the roof since the working of the quarry was abandoned; or such a fall may have been the cause of the abandonment. At all events, we would counsel no one to enter these caves, whether for pleasure or with an eye to business, without previous propping and protection of the ceiling.

A visit to Corfe Castle may thus enrich the portfolio and the note-book of the student with an ample store of new information. Architectural research, lithological study, the secret of the strength of masonry, the development of the laws of fortification and of the art of war, all these things are illustrated in this quaint out-of-the-way nook of England. The great slabs of stone with which the houses are roofed are a peculiar feature of the spot. In one or two cases, as in the projecting gargoyles of the church tower at Corfe village, the mason has been induced by the excellence of the stone to try his skill as a sculptor. But there is not much of the irrepressible exuberance of the art of stone-cutting, such as has been called into life by the existence of the travertine limestones of the Adriatic coast. The spot and the subject will in every way repay investigation. And as the summer evening draws to its close, if the visitor be borne from the little pier at Swanage by one of those white-sailed yachts that seem to walk over the gleaming waters in their sleep, he may kindle his imagination by the tale of how the body of the martyr king, when removed from a hastily-prepared grave two years after his death, was found to emit a celestial perfume; and how the wicked Queen Elfrida endeavoured to atone for her crime by the erection of houses of religious worship, and died as the foundress, if not as the abbess, of Amesbury.

The "Grand," Islington.—We are asked to add to the notice we gave last week of the new theatre, Islington, that the firm of Charles Drake & Co., Limited, were the contractors for the whole of the fireproof stairs, landings, and corridors.

THE ARCHÆOLOGY OF THE SHAPIRA MANUSCRIPT.

ALTHOUGH Dr. Ginsburg's report has finally disposed of the Shapira manuscript as a gross forgery, there is considerable interest expressed in the matter of tracing the source from which the rolls emanated. This tracing of the forgery is, of course, chiefly dependent upon the palæography, which, while clearly based upon the alphabet, exhibits some marked peculiarities which distinguish it from the purely lapidary style. An examination of the original strips and of a tracing which Dr. Ginsburg kindly placed at my disposal enables me to furnish some evidence upon the point at issue which may be of value. There is in the tailed letters, such as the *min*, *nun*, and *resh*, a tendency to curl the tails backward instead of forward, as in the Moabite stone, and in several letters the sharp angles are rounded off as if the writer was used to the curves of cursive Arabic. Another peculiarity is that in the manuscript the letter *aleph* is always written with a bowed cross-bar instead of straight. These peculiarities would call for little comment were it not that they occur in other documents and inscriptions which have an important bearing on the case. It will be remembered that the investigations as to the forgeries of Moabite pottery carried out by M. Clermont Ganneau and Mr. Tyrwhitt Drake on behalf of the Palestine Exploration Fund, showed that the chief agent in this work of deception was one Selem-el-Kuri, an Arab, who has some knowledge of drawing, and who gained his living by painting icons for Greek pilgrims who visited Jerusalem. From the evidence of the potters and others it appeared that the statues were "invested with artistic merit" by Selim, who also engraved upon them the inscriptions which excited so much interest. These inscriptions have been published in the *Journal of the German Oriental Society*, and in the important work by Professor Kautzsch and Socin on the Moabite forgeries. At the time of writing these inscriptions, which were after the style of the alphabet on the Moabite stone, Selim had not got quite rid of his Arab prejudices, so wrote his letters with ligatures joining them together. In 1869 this same Selim made a copy of a portion of the Moabite stone for M. Clermont Ganneau. I have inspected this copy, and the various copies of the Moabite inscriptions on the pottery. It is remarkable to note that the same peculiarities of script are common to the manuscript, the pottery, and Selim's copy of a few lines of the Moabite stone. It would be prudent and creditable to Mr. Shapira to find out the whereabouts of his quondam boom friend Selim, whom he dismissed or parted company with in 1874, and perhaps afford us the means of solving the problem of the forgery.

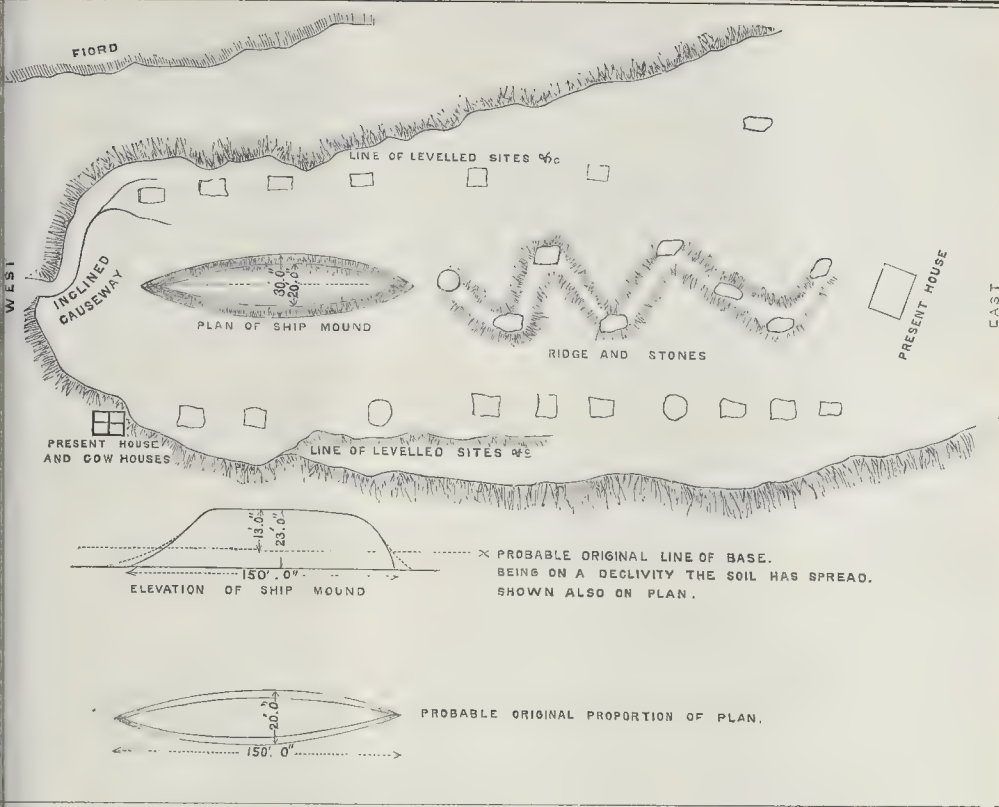
W. S. C. B.

ARCHÆOLOGY IN ICELAND.

I HAVE been prosecuting some researches in this Northern land, which, leading to results on unpublished matters, may interest your readers.

Avoiding the usual roads taken by tourists, I struck out some new routes, and was rewarded by good success. Sailing along the western fiords, I made a landing at a promising spot for an ancient Viking's residence, i.e., one easily defended from piratical attack. Going to the homestead of Huitarvöllur for the purpose of procuring information as to the former residence of Snorri Starlanson, to pay homage to the author of the great Edda, I found in the vicinity a curious tumulus and remains of an ancient settlement. Neither this route, nor that which I subsequently followed, nor the remains, are mentioned in the various books of travel which I have with me; but an ancient hof (temple) and doom ring, and the establishment of a very early Christian church on the western coast, induced me to examine that locality for something more.

I immediately mapped out the old settlement, in the company of a young English surgeon (Mr. Shadbolt) who had come with me. He was no archaeologist, and thought I might find my conclusions unfounded, but I had hardly completed the work when the proprietor, Herr A. Foldvik, who speaks English, came forward and supported my views with many evidences. He said that a Newegian settlement had existed there more than 1,000 years. That in digging he often found



parts with ashes, burnt wood, and sundry articles of bronze. There was reason to think the occupation much earlier, as he had exhumed a bronze celt, now in the museum at Reykjavik. The chief point of interest was a singular tumulus, called the "ship mound," from its form, which was that of a Norse vessel inverted. Attached to this was a legend of treasure said to have been hoarded there in olden time by a powerful person, who, though a woman, maintained corsairs, who went in her name to obtain wealth by plunder. I suggested that a ship might be buried in the mound. He said there was a tradition that a cask beneath had been cut in the form of a ship, and covered with earth. I then excavated, and certainly found a rock that gave some support to the statement. A ridge, perhaps the keel, was first reached; descending suddenly, a surface, at first at right angles, then gradually curved downwards, took the form of a boat's side. Not having time to uncover the whole, and being anxious not to destroy the form, I entered the ground carefully with a pointed rod, and, taking measurements of depth of soil, found that they followed the surface uniformly, so that the rock below assimilated to the external form of earth, except at the base, where the soil spread from age. A rock accidentally shaped by nature to this form may have been covered with earth, and the tradition may have arisen from its accidental outline, but the rocks around have no symmetry; and the selection of the lines of levelled sites of former dwellings on each side, within which also is an equal area on each side of the mound, forming a parallelogram, show that, from whatever cause, the mound was held in reverence. From the west the tumulus is approached by a ridge, and on this are rocks in a zigzag position, which, if *in situ*, must have been so placed studiously, and would subsequently have been very suitable "stations" before the time of Lutheranism. He inverted stone ships of Minorca, which I have carefully examined, show that if the legend is true, it does not stand alone.

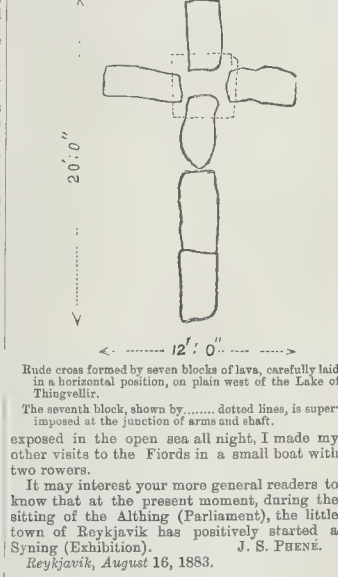
Pursuing a course through a long river valley

to Lundr, I received hospitality at the parsonage. Mr. Shadbolt, who had been out for trout, stated there was another tumulus. The care with which a large mound near the church had been formed made this conclusive, and permission was obtained to dig. Evidences of cremation appeared about 3 ft. from the surface, which, to a depth of 5 ft. more, produced a number of bones of the sheep and ox, in all stages of burning, with the earth and stones completely charred, and in successive layers, as though the mound had been reconstructed at intervals. Burton refers to the belief that secret sacrifices of animals to Baal are still made in the Orkneys, and a place is shown near the old hof I have referred to where the bones were thrown. The clergyman, on inspecting the mound and bones, informed me that a short distance from the church was the site of a hof, or Pagan temple, the plan of which was, I found, at right angles with the church. Standing on this site I observed a second mound in the same position to the S.E. that the first held with regard to the S.W. angle of the hof; they appeared to me to be altars for sacrifice. Some rather general attempts at the well-known tumulus of Snorri at Reykholt led me to think there would be little to excavate for there.

I then turned my course south and east, and after two days' hard riding I reached a locality where a tumulus had contained the bones and weapons of a warrior, and some remarkable Oriental beads. Not far from this I found another mound, which, on excavation, produced similar results. This one, I understand, had been long in the possession of an old Danish family, from whom I was fortunate enough to obtain the accoutrements of an early princely member of the house, as shown by the coronets and heraldic devices wrought in precious metals upon them.

On the plain west of Thingvellir Lake, where all the blocks of lava, *in situ*, lie half buried. I found seven large blocks free from the surface, and arranged in the form of a cross, the seventh lying on the point of junction of the arms and shaft. Finding a large boat, in which I first

sailed, rather expensive, with six rowers, and nothing being gained, the boat lying with us



It may interest your more general readers to know that at the present moment, during the sitting of the Althing (Parliament), the little town of Reykjavik has positively started a Syning (Exhibition). J. S. PHENE.

Reykjavik, August 16, 1883.

The Newcastle City Council on Wednesday last decided to appoint a Committee to confer with the River Tyne Commissioners respecting the practicability of making a ship canal from the Tyne to the Solway Firth.

THE VALLEY OF THE CHESH.

THE holiday-season should in some respects be more welcome to the young architect than to any other of the numerous professional men of the present day. For while he can be enjoying fresh air and a change of scene, he can also be improving not only his technical knowledge, but also his general knowledge, in connexion with buildings, &c. For there are all sorts of ways in which a man with his eyes wide open can during a holiday cultivate his taste and improve his knowledge of his art. To those whose holidays are short, there is no need to go very far from London for perfect quiet, for fine air, and for attractive scenery. And there are few places near London which unite varied attractions in a greater degree than does the valley of the Chess. From its juncture with the Colne at Rickmansworth to its rise above the quaint and quiet little town of Chesham, it is full of natural beauty, and will afford opportunity for studies not only of general landscape but of trees and foliage in a remarkable degree.

The town of Rickmansworth itself has not much to recommend it, but the view from the London-road near Moor Park cannot be excelled in its attractiveness, while the various outlooks from the heights in Moor Park to all quarters of the compass afford a series of wide and, when the atmospheric conditions are favourable, beautiful views. Nor is the house itself unworthy of some notice. As way is made up the valley of the Chess, the first example of domestic architecture, at Loudwater House, is one which, so far as position goes, shows how mistakes should be avoided. For this house has been placed in so low a position that it obtains no view, and must be necessarily less healthy than if it had been placed on the slope of the hills. On the other hand, when the village of Chorleywood is reached, with its breezy common and magnificent outlook over the valley of the Chess, where its slopes and woods imperceptibly unite with the broader valley of the Colne, a good example will be found of a well-situated house in the Cedars, built and inhabited by Mr. Gilliat, the present Governor of the Bank of England. A little distance beyond Chorleywood lies Chesham, the burial-place of the great political family of Russell, and the most unique village in England. Of the general character, and of the monuments in the chapel of the Russells, we gave a short description in the course of last year. Proceeding without further detail up the valley, the eye is at once struck with the red chimneys of Latimer appearing among the beech-woods, which now become so noticeable a feature of the landscape. Elizabethan in its character, no house could be more typical of the stately homes of England, for it combines the two elements of stateliness and homeliness. In its position on the slopes of a well-wooded hillside, in a park where the branching trees show to noticeable advantage, for many reasons, the residence of Lord Chesham is attractive not only to the lover of the picturesque, but equally also to the professional architect.

There are few towns, if town it can be called, which carry one back more years than does that of Chesham. As a whole, it perhaps would not be considered picturesque, but, on the other hand, there is a general appearance of the beginning of the century about it, and it appears now like a good many other towns did years ago, before they were changed by the appearance of the omnipotent locomotive. The small and often pabbled old houses, the quaint market-place, the ancient mill to which the Chess flows through the town, all help to give a distinct character to this place. The situation of the old red brick Rectory-house, or what was once the Rectory-house, beneath the church, which again, standing as it does on an eminence, is sheltered by the trees which rise above it, together make a very effective bit of grouping. In fact, a ramble up this valley in fine weather cannot fail to be a pleasure and an advantage to the architectural student who has a desire to improve his taste. For, moreover, it must never be forgotten that it is by the leisurely but attentive study and consideration of sites of houses and of landscapes, by the observation of the perfect and the imperfect, as well as by the hard work of the office, that an architect can become a real building adviser to his employer. It is through the neglect of this part of the architect's training that men, often industrious and skilful, are not full of sugges-

tions, and have not that quick and artistic eye which is so important in regard to domestic buildings in the country.

THE PRACTICAL UTILITY OF PUBLIC GARDENS.

At all times we are grateful for the efforts of those who, amidst the ever-spreading acres of bricks and mortar, preserve some vestige of the green country; but at the season of the year when the general exodus to mountain, sea, and vale serves only to render more evident the dreariness and dustiness of town existence, the sense of enjoyment in the pleasant green oasis of garden is, perhaps, more keenly felt than at any other time of the year, and this "purest of human pleasures," as Bacon has so justly termed the love of gardens, gains in strength as our huge cities grow larger and their solitude more oppressive.

It partakes of a commonplace to bring forward as among the characteristics of our epoch its love of the practical and the consideration of the commercially successful, and the destruction of beauty which accompanies "progress." It is not alone upon the powder-cart of Hossa Biglow's balled that "civilization does get forrid"; it is upon the ruins of much that might have been preserved,—much that, had it been preserved, would, from the most practical point of view, have served the aims of our modern commercial search for profit. The cultivation of greenery in the midst of our cities is essentially one of those points in which a great deal of short-sighted prejudice will be found to exist, and as a result our speculators will before long discover that, though apparently they may be gainers by their destruction of nature, in the end they are absolute losers. Many of the outlying districts of our metropolis, were they planned with a little less ruthless disregard of that natural craving for greenery which is common to all humanity, would not at this moment be merely neighbourhoods covered with a class of houses which, if they succeed in remunerating the speculators, cannot be called profitable, and we have no hesitation in saying will never be occupied by that sort of tenants who as they advance will endear themselves to the neighbourhood, and thus improve its market value. Planned with a due regard to the beauty of greenery, and the successful collaboration of the architect and the gardener, whole districts which have now fallen a prey to the insatiable appetite of the speculator might have been rendered in truth what they are too often only by a fiction stated to be—"desirable." Why should houses be erected which their tenants can never possibly care to occupy when they have advanced even one step in the social scale? We are building houses in every direction, but what is daily growing rarer is a true home, and the question is serious enough to occupy the attention of the thoughtful. In such a position, it is sad that there should be even a semblance of a variance existing between the craft of the builder and the art of the gardener, two kindred vocations which have till now ever worked in friendly accord. It is fair ground for regret that the short-sighted and unprofitable aims of greedy speculation should have been allowed to exercise their influence over a union which has produced and happily still produces such extraordinary results. The days seem almost past when the collaboration of the arts can be pursued in harmony, the scale of merit appearing to be regulated by the lucrative degree of the pursuit and the means of securing the largest profit on a skilfully-made outlay, carefully calculated on principles more or less sound.

When we recall the noble gardens that have long existed in various parts of Europe, it is impossible not to see how much they have owed to the skilful collaboration of architect and gardener. It seems certainly almost a pity, considering the high level of excellence at which the scientific gardener has arrived, that he should not avail himself more frequently of the aid of the equally scientific and well-informed architect. It is with difficulty that any perfect modern architectural work connected with a great garden can be pointed out, whereas we are constantly called upon to admit the rapidly approaching perfection of a gardener's art. Of course, the time has come when we must give up our almost sentimental admiration for the old, the dear old garden of our youth, the simple, well-kept, well-arranged garden, such as

the old masters of this sweet art have so often described and painted. Such gardens and such examples as Kew will, we suppose, henceforward remain as the models for the emulation of the world, just as there seems to us a happy combination of old and modern science displayed in the familiar Jardin des Plantes at Paris, with its admirable admixture of the useful and the ornamental, its well-arranged beds and greenhouses, lecture-rooms, museum, and zoological garden.

How directly and commercially profitable the ingenious collaboration of architect and gardener may be rendered, the numerous instances that will occur to the minds of most readers are sufficient to prove. Every one who has visited Paris must remember the character of the neighbourhood which surrounds the Parc Monceau, in reality a garden rather than a park,—a which, from the beauty and skill of its arrangement has within the last few years rendered this portion of the French capital one of the most luxurious and expensive to inhabit. In the further end of the city, a neighbourhood which for centuries had enjoyed an unequalled reputation has become, by the laying-out of the Buttes Chaumont, if not exactly fashionable, at least highly respectable. In the arrangement of our more modern London parks it has always seemed to us a singular oversight on the part of those concerned that the new neighbourhoods thus formed have not been rendered more desirable. Why should not the surroundings of Battersea Park have been as choice as those of the Parc Monceau, or, at least, let us say, as respectable as those of Regent's Park have become since the days when the once quail site was occupied by Henderson's old-fashioned nursery-garden?

How successfully the owners of real estate "up town" in New York have been served by the beauty of the Central Park those who have visited the Empire City are aware, though few of the many who are now leaving their shores to return American visits can possibly, in the short stay, realise how successfully in this case the gardener, the architect, the sculptor, &c., the builder have worked together. As a result not alone has the city been adorned with features of more than usual beauty, for the gardens of the whole world have been ransacked, inspected, and many of their effects adapted, but the owners of property have long since realised substantial advantages from the choice nature of the houses erected in the neighbourhood of the park. It is this fact to which we would especially wish to draw the attention of the modern building speculator. In his insatiable desire to "run up" long lines of untenable houses on the site of pretty country land and fields and fine old trees, the aim he has in view is only imperfectly carried out, and it is alone himself whom he should blame if financial disaster follow on what we must persist in terming his short-sighted policy.

We profess to travel greatly in the present day. We admire in France the beautiful gardens of the Tuileries and the tall houses that stand in its neighbourhood, and we are enchanted at Brussels with the Bois de la Cambre and the choice homes in its neighbourhood. Just as in Paris we admire the Bois de Boulogne, and green embowered Passy and Auteuil, and the pleasant surroundings of the Luxembourg gardens, we admire the busy Unter den Linden in Berlin with its avenues of trees; the bustling, sea-washed Chiaia at Naples; cool, green, shaded Beacon-street in cultured Boston; the pleasant park in Brussels; or the outer *boulevards* of the Belgian capital. Each and all of these have affected and continue to affect the value of the real estate in their neighbourhood. Quite of a different stamp are such gardens as the Boboli at Florence, behind the Pitti Palace; the stately Borghese gardens at Rome; the romantic cypress-shaded Giusti gardens in Verona; the deserted charm of the neglected Orto Botanico at Venice, or the lively Giardino Pubblico; the pretty Prater at Vienna, with its noisy *Wurstel* avenue; the famous old botanical gardens at Padua. These, like Versailles and many other gardens of the same monumental stamp, possess, of course, a character they have acquired from the stately days in which they were first planned. They still form the model for study, and can never be surpassed for their charm; and from their traditions the modern horticulturist has skilfully developed his art. He has still, however, in collaboration with the speculator and the gardener, much to do for the benefit both of his partners and the public, not

one in the present, but in the immediate future. We have but to observe the rapidity with which private buildings surround in every city any piece of open greenery to feel how much more interested the builder should be than he is at present in the formation and planting of public gardens.

EDINBURGH.

In our last communication from Edinburgh (page 232, *ante*) reference was made to the proposed transference of the Museum of the Society of Antiquaries to the Museum of Science and Art to make way for the Scottish National Portrait Gallery. Although it is stated in the local press that the plans for the proposed new premises for the Society of Antiquaries are all at last adjusted, we are given to understand that these plans are still in *nubibus*. Objections, it seems, were raised by the Science and Art Department to the proposed transference chiefly on the grounds of divided responsibility regarding precautions against fire, &c., and that the appropriation of a portion of the building in Chambers-street to a different purpose from that for which it was originally intended would destroy its architectural effect both internally and externally. Particular objection seems to have been taken to a proposal that a tower would be required to contain the staircase leading to the rooms which were to be at the disposal of the Society of Antiquaries, on the ground that such an erection would destroy the balance and homogeneity of the original design. To this objection it may be replied that, even should a projection be required to the westward to contain a staircase, it need not of necessity envelope into a tower, but even if it did the defect might, by skillful treatment, add to rather than detract from the interest and general effect of the elevations. So far as the principal elevation towards Chalmers-street is concerned, the original design need not be interfered with in any respect, and the western elevation might, on the nature of the site and its surroundings, be treated somewhat differently from what was originally intended with a happy result. Any rearrangement of the interior must, however, necessarily be of the nature of a temporary expedient, as the whole building will, in the course of time, be required by the Science and Art Department.

The Lyceum Theatre, which is to be opened during the second week of September, is now in such a state as to enable one to judge of the interior arrangement. Mr. Phipps was fortunate in having at his command a site of amply sufficient dimensions and completely isolated, and of this he has availed himself by providing ample means of ingress and egress, light where necessary from external windows, and ventilation upon the most approved principles. Every precaution has been taken against the spread of fire,—the declared enemy of such buildings. The theatre has been apportioned into three divisions,—the auditorium, stage, &c., and dressing-rooms and workshops. The partitions of these divisions are, as far as practicable, of fireproof construction, the iron curtain being formed of two distinct screens of boiler-plate metal placed 8 in. apart. The stage has a width of 78 ft., including the dock, and is 44 ft. in depth, with a height of 60 ft. for the framework for supporting the scenery. Underneath is a space, 20 ft. high, available for the stowage of scenery and stage appliances, &c. The orchestra is placed in the usual position, and kept well down. There are five rows of stalls containing 121 seats constructed on the swing principle, which are reached by corridors carried round the pit from the main entrance. The pit is constructed to accommodate 600, each person being provided with an armed seat; it rises sufficiently to enable all the occupants to obtain a good view of the stage. The entrance is from the south by a corridor, 6 ft. broad, and there is a corresponding exit passage by the refreshment bar, the principal front at the west. There are three private boxes on each side of the proscenium, and the dress-circle accommodates 109 persons; it is embraced by a wide corridor, which is entered by four doors, and a gentleman's cloak-room abuts upon it. The foyer is 8 ft. by 18 ft. 6 in., and at each end there is communication with a refreshment-room and ladies' cloak-room, while three windows open upon a balcony. The room is tastefully decorated and fitted up as a drawing-room. The vestibule is also decorated and fitted with an

oak mantelpiece, the floor being laid in mosaic. The amphitheatre recedes to the extent of about 4 ft. from the central line of the dress-circle, and the two foremost rows of seats, 120 in number, are set apart as stalls, the remaining space being fitted up for 500 persons. The upper gallery recedes still further, and is fitted up to accommodate 1,000 persons. The staircases are all fireproof, being mostly composed of Stuart's cement concrete, which material has also been used as a facing for the exterior. The decoration of the interior has been entrusted to Mr. Hall, one of the city magistrates. In a lunette over the proscenium opening there is a painting of Apollo and the Muses, by Ballard; and the drop-scene is a reproduction in monochrome of Alma Tadema's picture of "Sappho and Alcaeus." The lighting is to be by incandescent electric lamps, in ground-glass globes, but gas, is also introduced in case of any hitch occurring in the electric machinery.

A motion has been carried in the Town Council for the acquisition of a site in South Gray's-close, whereon it is proposed to erect wash-houses for twenty-four tubs, at a probable cost of 1,500*l.*, and twelve plunge-baths at an additional probable cost of 250*l.* It was suggested that information should be obtained from the trustees of the late Mr. Robert Hume, who had spent a considerable sum in providing wash-houses which were not taken advantage of. If Mr. Hume went into this in the idea that it would prove a profitable investment (which does not appear) there could be little doubt that he would be disappointed. There are exceptions to the laws of political economy, and the cause of promoting that "cleanliness which is next to godliness" may be fairly reckoned as one of these.

Mr. Andrew Carnegie, of New York, at present in Scotland, has given a subscription of 1,000*l.* towards the fund for the completion of the new medical class-rooms connected with the University, remarking that the more he has seen of Edinburgh the greater reason he finds for Scotchmen to be proud of their capital, but that, after all, its chief merit lies in its educational institutions, as to which he expresses his satisfaction in having the opportunity of testifying that he shares the pride with which they are regarded by his countrymen in all parts of the world.

EXHIBITION OF COLOURED PLASTIC WORKS.

AN exhibition of coloured plastic works, which was foreshadowed a few weeks back in these columns, has at length been opened in the city of Dresden, and has aroused much interest among artistic circles in that capital. The collection, as our former remarks will have prepared our readers to learn, is mainly attributable to the efforts of a German sculptor, Herr Carl Cauer, of Kreuznach, who professes to have discovered that the frieze of the Parthenon of Athens was originally gilt, and then painted in such a way that the gold ground was more or less apparent. Herr Cauer has executed several works in which he has attempted to revive this style of decoration, and amongst them is a copy in plaster of Paris of a portion of the Parthenon frieze itself. Along with these works of Herr Cauer, the Exhibition at Dresden includes a number of objects carried out on the same principles by one or two Dresden sculptors, including several painted portrait busts in the terra-cotta and majolica style by Herr Diez, together with a number of antique painted statuettes from Tanagra, and chromo-lithographic copies of works of this class belonging to the Royal Museum of Plaster-casts at Dresden. Interesting as the collection is, as a whole, it has failed to secure for the views of Herr Cauer any large amount of support amongst the best judges. This result is in part due to the fact that the artists have executed the painting upon these works in too realistic a fashion. The ancient Greeks in their polychromatic decoration of plastic works employed colour in so uniform and delicate a manner that the plastic character of the objects was not detracted from. The criticisms called forth by the present Exhibition go to show that it is not likely to upset the principles hitherto generally accepted in regard to the true functions and sphere of colour.

The prevailing view is that colour is not a plastic element at all, but something specifically different. The Greeks, in their polychromatic

treatment of plastic works, were satisfied with simple colouring, and the result is much more incongruous when light and shade effects are added. The incongruity, however, is not so perceptible in the case of reliefs as in statuary proper, since the former approach nearer to the character of pictures. It is, therefore, chiefly the plastic decorations of coloured architecture and certain branches of fine-art industry which may offer a field for polychromatic plastic work. The aesthetic value of the latter, however, still remains in several respects an open question. Another question is the admissibility of oil colours in order to protect plastic works from atmospheric influences. As employed in the works exhibited at Dresden, where they combine coloristic effects with those of light and shade, they introduce a picturesque element, which, according to the judgment of German critics, is more or less out of harmony with the character of plastic works. This is stated to be remarkably apparent in the busts which are contributed by Herr Diez, and which are admitted to be otherwise very spirited and lifelike. In the effort to give a complete representation of nature, these busts are declared to be like so many pieces of waxwork. The works of Herr Cauer, on the other hand, are far less objectionable in this respect. The metallic gold ground in various parts stands out in such a way as to give the impression of brass or bronze partially painted over. But the contrast existing between the entirely nude portions that are without any of the realistic colouring on the one hand, and the realistically-coloured hair, lips, eyes, teeth, and drapery on the other, is felt to be unnatural and paradoxical. The spectator is involuntarily led to believe he is looking at Red Indians or Malays. After all, however, whatever objections the works in this Exhibition may be open to, it cannot be said that they settle the question as to the extent to which polychromy may be applicable to plastic works of art; and even the fact that the Greeks employed colour in such works, is, in the absence of adequate examples, no conclusive proof of the aesthetic propriety of this style of decoration. The solution of the problem is accordingly but little advanced by the latest experiments, the results of which are now on view in the Saxon capital.

CONGRESS OF THE SOCIAL SCIENCE ASSOCIATION.

THE programme of the forthcoming congress, to be held at Huddersfield from the 3rd to the 10th October, is now complete as regards the "special questions." The following are those that more particularly interest our readers, with the names of the writers of the papers thereon:—

Health Department.

1. Is the modern system of education exerting any deleterious influence upon the health of the country? Papers by Dr. Clifford Allbutt and Mr. J. Hepburn Hume.
2. Is it desirable to take any, and what further, measures to prevent the spread of zymotic diseases through the milk-supply of our towns? Papers by Mr. Francis Vacher, F.R.C.S., Dr. Britton, and Mr. Ernest Hart, M.R.C.S.
3. Is it desirable to amend or extend the Habitual Drunkards Act, and, if so, in what direction? Papers by Dr. Norman Kerr and Mr. Samuel Knaggs, M.R.C.S.

Art Department.

1. Ought our museums and art galleries to be open on Sundays, and, if so, under what conditions? Papers by Mr. Mark Judge and the Rev. John Gritton, D.D.
2. How can a school of art, as applied to textile and other manufactures, be best supported and utilised with a view to meeting foreign competition? Papers by Mr. R. W. Edis, F.S.A., and Mr. G. Marchetti.
3. What constitutes a "School of Music," and how far can the formation of an English School be encouraged? Paper by the Rev. H. G. B. Hunt, Mus.B., Warden of Trinity College, London.

Norfolk and Norwich New Hospitals.—

Messrs. G. & F. Davis, of the Brosley Brick and Tile Works, are the sole makers of all the roofing tiles used for these buildings, which are very extensive.

THE TESTING OF BRICKS.

The brickmaking industry has of late been making special efforts to meet the requirements of modern building, and the exact definition of what those requirements are is evidently an important point in such a matter. The introduction upon an augmented scale of machinery into the process of brickmaking, and the employment of various new materials, render difficult the definite appreciation of the qualities of bricks. As in these busy times no one would like to wait long enough to arrive by actual experience at the results in question, a reliable method of determining the quality and durability of bricks would naturally be of advantage to the building industry.

It has been attempted to draw conclusions of this kind from an examination of the raw material used, and of the process of manufacture; but the considerable differences between the various systems in use would seem to indicate that a way of arriving at the wished-for result without reference to the method of production would be the most acceptable to all concerned. Such a test must be carried out with special reference to the purposes for which the bricks would be employed, and the following classification is given by Herr Rühne in the *Deutsche Bauzeitung*, as comprising the various uses to which bricks are put:—

1. *Facing Bricks*.—First class for monumental buildings; second class for dwelling-houses, &c.; third class for buildings along rivers, &c.; fourth class for factories, &c.

2. *Bricks which bear Weight*.—Classified according to heavy, medium, and light burdens.

3. *Roofing Tiles*.—For special requirements and for ordinary uses.

4. *Paving Tiles*.—For use in the open air, and in the interior of buildings.

With respect to these various modes of employment it would be necessary to establish minimum requirements, and it is remarked that the definition of them and the drawing-up of rules founded on these investigations are matters in which technical authorities as to building and brickmaking would require to take joint action.

The points for elucidation are as follow:—

1. For what requirements are the bricks to be tested? 2. What mode of testing should be adopted? 3. How are the results obtained to be utilised? There would, as to the first point, be a more or less elevated degree of resistance to pressure to be fixed with respect to each description. In addition to this it would be necessary to establish a test for the resistance of bricks to frost and other influences of the weather. Their resistance against internal saline crystallisation would also have to be considered, and, finally, it would be necessary to establish a rule that bricks should be free from soluble salts, or should, at the very most, only contain a small fixed proportion of them. For many articles a test of porosity would be necessary, and one with regard to weight would have to be carried out in all cases. The methods now in use of determining resistance to pressure and of arriving at the degree of porosity which bricks possess, seem to call, according to Herr Rühne's opinion, for no special alteration, but the mode in which the recognised analytic establishment at Berlin carries out tests for resistance to frost does not meet his approval. It consists in placing the bricks in water, which is gradually heated up to boiling point, when they are cooled by being suddenly thrown into cold water. In place of this method he recommends the production of a low temperature by the usual process employed in ice manufacture. This is arrived at without much expense, and the natural action of frost is said to be reproduced in this way much more closely than by any alternative methods. It is suggested that after the freezing test the resistance to pressure should again be tried in order to find to what extent the low temperature had really affected the strength of the bricks. After a certain number of experiments of this description have been carried out the results obtained would indicate with approximate exactness the loss in resisting power resulting from the repeated application of the freezing process, and thus there would be a definite basis on which to frame rules. Rain-water, air, light, carbonic acid, ozone, and other natural influences may also be considered as affecting the condition of bricks, but their effects are practically of so limited

a character that tests with respect to them are not considered necessary.

Special importance is, however, attached to the discovery of the presence in bricks of those soluble salts the appearance of which, in the form of a white exudation, is a source of annoyance, and which, under some circumstances, can more or less seriously affect the question of durability. As the complete absence of these salts is hardly to be looked for, a certain number of experiments would define a limit which should not be exceeded. This limit would necessarily be fixed after a due consideration of the relative effects of different salts in various quantitative proportions. The question of saline crystallisation is, however, less easily treated, as in this instance the active cause does not only form an integral part of the brick, but may, to some extent, be composed of salts which are introduced while the brick is in position. This condition is usually found in connexion with embankments, sewers, &c., in which cases the brickwork is exposed to various influences especially calculated to produce the effects in question. Herr Rühne considers that a particular test in connexion with saline crystallisation can hardly be established at present, and remarks that in any case its effects would be less forcible than those of frost.

As to the application of these tests, it is maintained that, to be of practical value, they should be applied to samples impartially drawn from the bricks actually to be employed, as the fact that on one occasion a brick-manufacturer delivers a good quality is no assurance that he always does so, inasmuch as any change in the materials used, or in the process of manufacture, would naturally affect the bricks. It is argued that the adoption of the tests, it is said, be an advantage to all concerned, even if the price of bricks were thereby to be increased, as the improvement in quality would fully compensate for any such augmentation. Besides, the cost of production would only have to be raised in direct proportion to the percentage of bricks which would fail to correspond with the requirements of the accepted standards.

PRIZE DESIGN, ARCHITECTURAL ASSOCIATION.

The design we publish was submitted by Mr. George W. Ward in competition for the Architectural Association Medal and prize of books. The subject given was a block of shops and offices, with streets at back and front, the building to be lighted only from these two streets. The principal elevation was to be all of stone, facing the principal street (60 ft. wide), the back elevation of brick in street 30 ft. wide. The ground and basement floors were devoted to shops, buffet, staircase, lift, &c., the upper floors to offices, &c.; on the first floor a committee-room was to be provided, which was made two stories in height (see three large windows in the front elevation). The top floors were to have kitchens, caretaker's rooms, porter's room, &c. The whole to be executed in accordance with the requirements of the Metropolitan Building Act.

THE SUNDERLAND AND DURHAM COUNTY INSTITUTE FOR THE BLIND.

This home is now nearly completed, and will, it is expected, be opened on the 26th inst., that being the fifth anniversary of the Institute. The buildings have a frontage of 72 ft., and depth of 73 ft., and are built of red bricks from Sherburn with freestone dressings from Prudham Quarry. The staircases are all of freestone, from Heworth Burn Quarries. The basement, ground, and first floors are of concrete; the second and third floors being of wood. The whole of the rooms will be heated by steam-pipes, fixed by Messrs. Mather & Armstrong, Newcastle. The sale-room on the ground-floor is laid with encaustic tiles, by Messrs. Minton Hollins & Co. The lift is by Messrs. Thomas & Co., Cardiff, and will work from the basement to the top floor. Every care has been taken for the protection of the blind people. Hydrants and hose-pipes are placed on every landing as a protection against fire. The site and buildings will cost about 5,000*l.* The contractors for the whole of the works are Messrs. John Thompson & Sons, of Sunderland. The architects are Messrs. J. & T. Tillman.

The Institute was founded in September, 1877, by Miss Ada M. Byars, of Sunderland, and it is mainly owing to her exertions that the funds for building the new Institute, upwards of 5,000*l.*, have been collected.

SEVILLE CATHEDRAL.

THE cathedral of Seville, of the transept of which we give a view in our present number, is one of the largest and finest in Spain. It has been said that, as elegance distinguishes Leon Cathedral, strength that of Santiago, while wealth is the characteristic feature of Toledo Cathedral, so Seville impresses us by its solemnity. The building which served as a cathedral until 1401 was originally a mosque, the erection of which was commenced in 1172, by Abu Yusuf Yakub-al-Mansur. In the former year, the chapter, owing to the dangerous state of the building, determined to pull it down. The new cathedral, which is built on the peculiar oblong quadrilateral form of the original mosque, was begun in 1403. It was finished in 1506, but the cupola fell down the following year, and the works were not completed until 1519. It is said that the chapter, in deliberating upon the pulling down of the old cathedral, and the erection of the new one, determined to make the new building "a church such and so good that it never should have its equal" ("una iglesia tal y tan buena, que no haya otra su igual"). The name of the architect is not known; whoever he was, however, he worked with no thought of self, but for the "sole love and glory of God." The edifice is inside and outside a museum of fine art in spite of foreign and native church spoliation. As already observed, it preserves the form of the original mosque, and is an oblong square, some 414 ft. long by 271 ft. wide. It has five aisles, the two lateral ones being railed off into chapels. The centre nave is magnificent, its height being 150 ft., whilst the transept dome rises 171 ft. The offices connected with the cathedral and chapter are built outside, to the south. The pavement, in black and white chequered marble, was finished in 1793, and cost the then enormous sum of 155,304 dollars. Seville Cathedral has justly been praised by both native and foreign critics as a good illustration of the rise, progress, and decline of Spanish church architecture. It is now in course of restoration, under the superintendence of Señor Casanova.

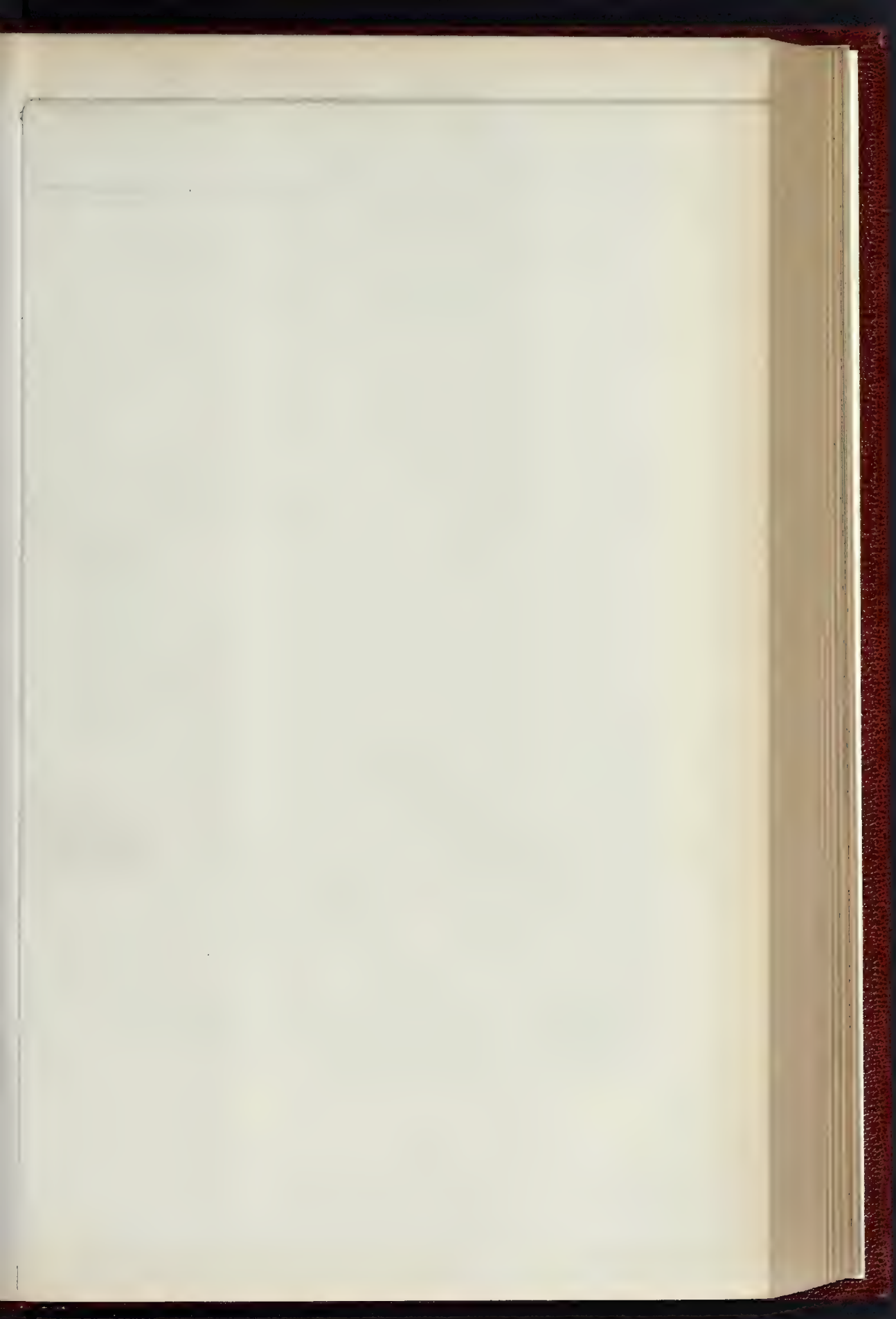
CHELWOOD BEACON, NUTLEY, SUSSEX.

THE house faces south, and is built for a shooting-lodge for Mr. E. Wormsley. It is of red brick, with hollow walls as high as the first floor; then 14-inch solid walls, covered with plain and ornamental weather tiles. The main roof is in one span of 42 ft., boarded, felted, and covered with tiles. The house stands on high ground, and is much exposed to the weather. Mr. Longley, of Crawley, Sussex, was the builder. The plans were designed by Mrs. Wormsley, and the works were carried out under the superintendence of Mr. C. N. Beazley, architect, of 8, Delahay-street, Westminster.

HOUSE NEAR STOKES-ON-TRENT.

This house is proposed to be built of red local bricks and roofed with Broseley tiles. Mr. R. S. Topham is the architect.

New Reredos, Salford.—The Roman Catholic Bishop of Salford (Dr. Vaughan) consecrated, on the 2nd inst., a new reredos and altar, which has been erected in St. Peter's Church, Greengate, Salford, to the memory of the late Rev. Canon Beawick. The rev. canon, who died in February, 1880, was for some years the rector of this church, and the memorial is erected as a tribute to his labours. The cost of this structure, which is of Caen stone, from designs by Mr. Kirby, architect, of Liverpool, is about 200*l.* On a brass plate, which is the work and gift of Mr. Norris, is an inscription containing a suitable reference to the deceased canon. The tabernacle door and safe, which have been furnished by Messrs. Hardman, Powell, & Co., of Birmingham, were also presented by a member of the congregation. The erection of the altar was entrusted to Messrs. Sherratt & Owens, of Preston.



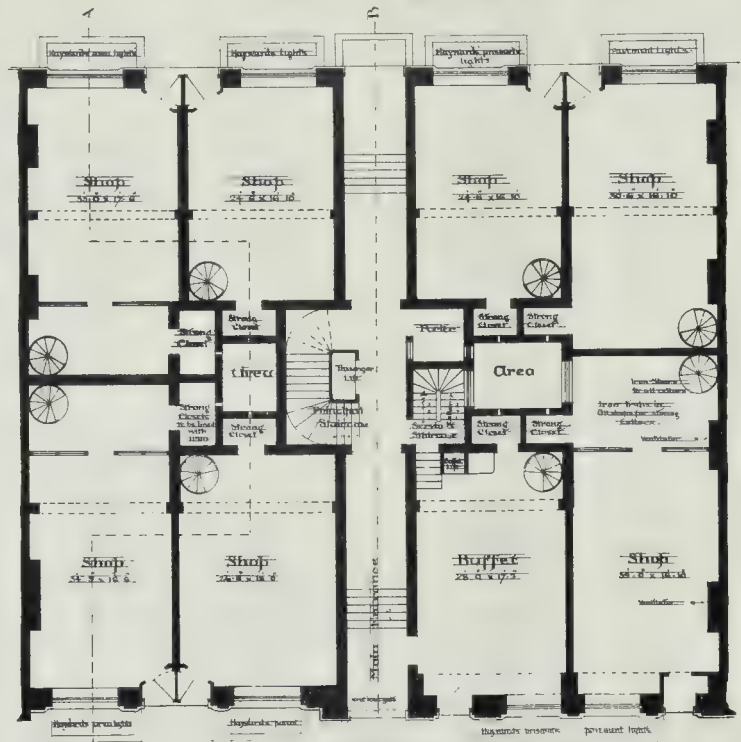


SEVILLE CATHEDRAL





Main Elevation

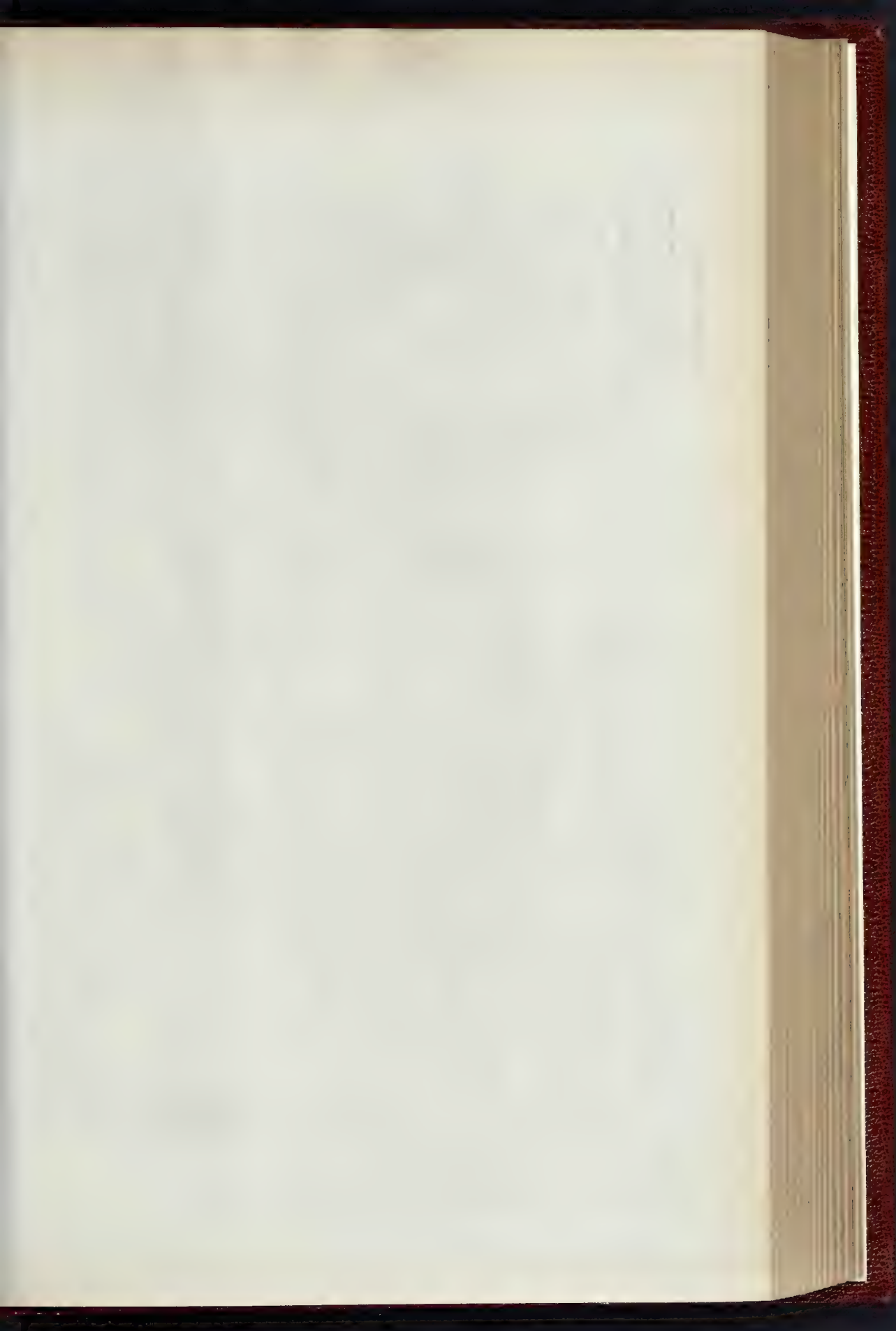


Ground Plan

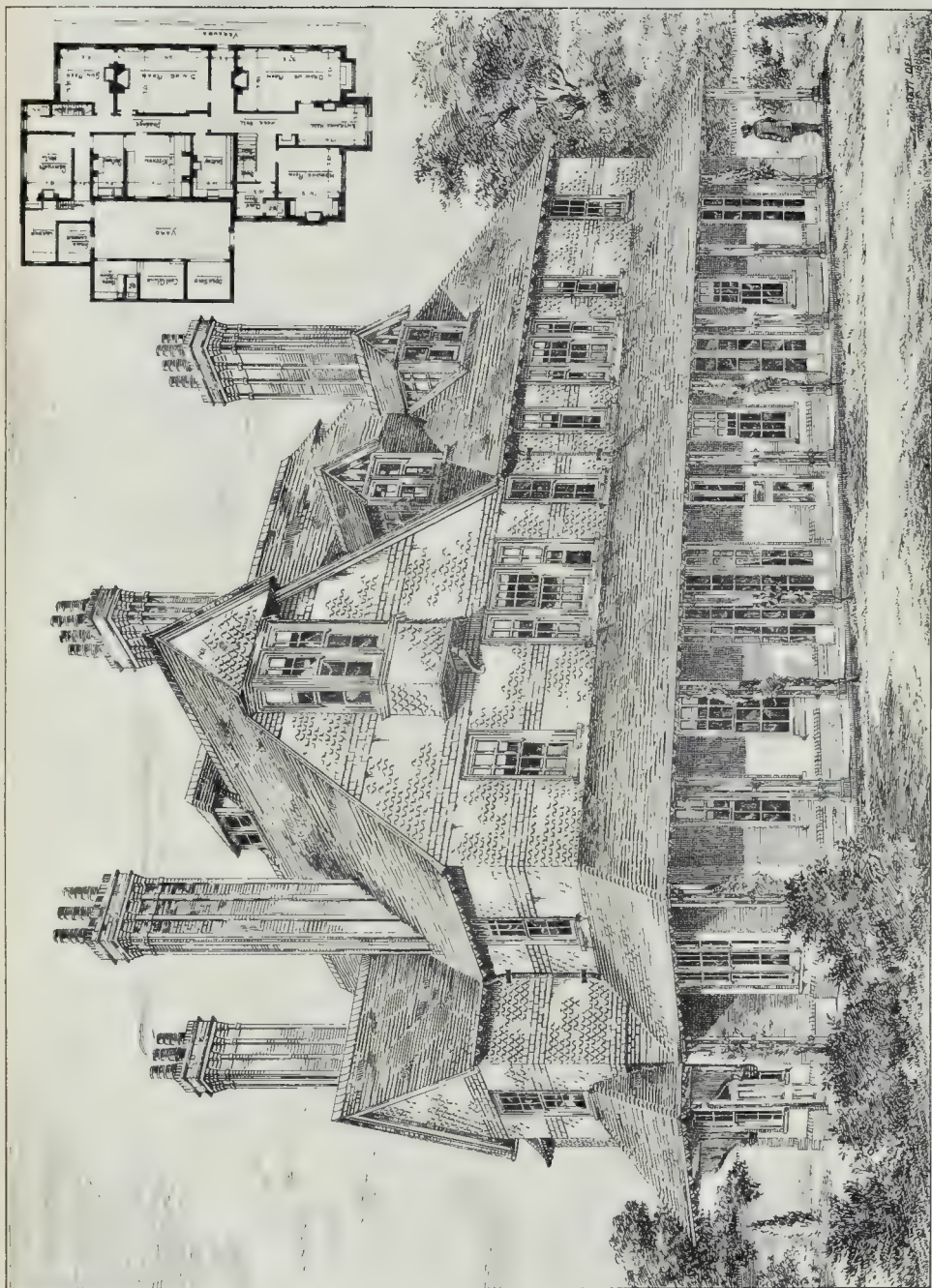
W. G. Toman & Sons Photo Litho

Wyman & Sons Printers Chiswick

PRIZE DESIGN. ARCHITECTURAL ASSOCIATION.—BY MR. GEO. W. WARD.



THE BUILDER, SEPTEMBER 8, 1893.



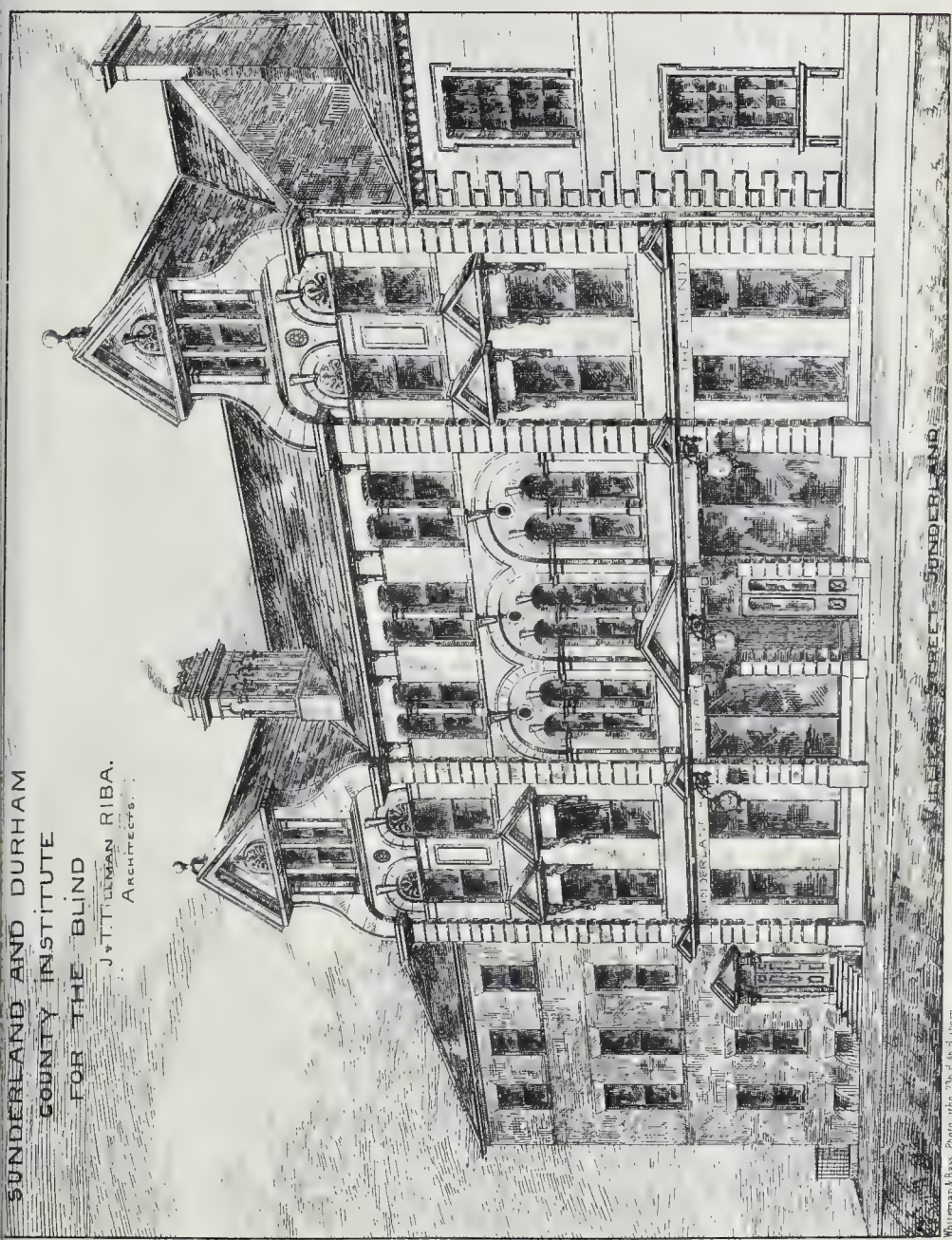
See "The Builder" for details of the building.

CHELWOOD BEACON, NUTLEY, SUSSEX.—MR. C. N. BEAZLEY, ARCHITECT.

Printed by the Publishers.

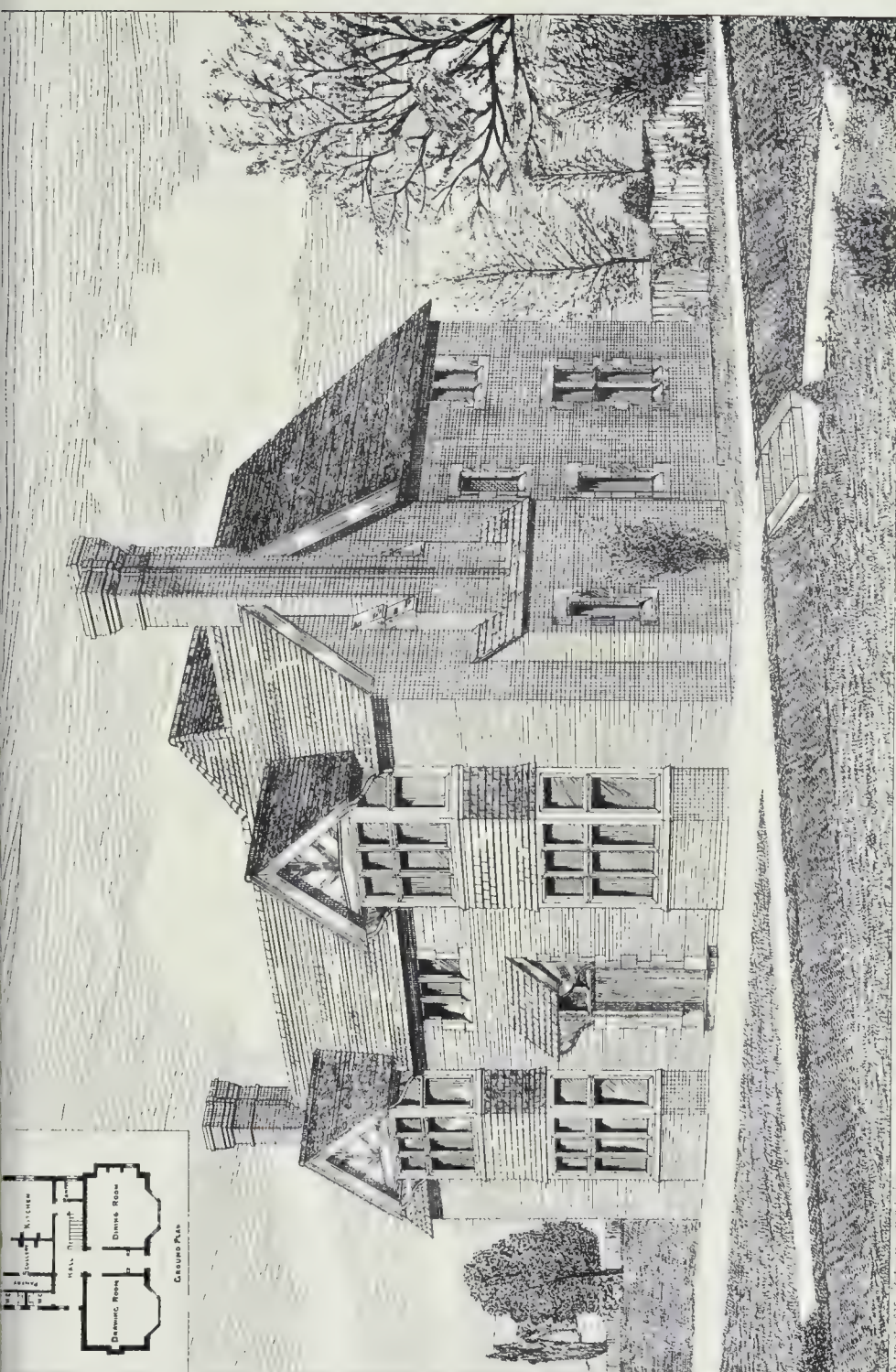
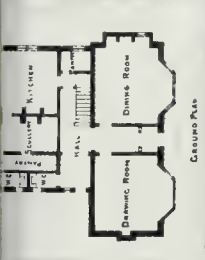
SUNDERLAND AND DURHAM
COUNTY INSTITUTE
FOR THE BLIND

J. T. TULLMAN RIBA,
ARCHITECTS.



Whitman & Bass Photographs No. 10 of 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100

Whitman & Bass Photographs No. 10 of 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100



VILLA NEAR STOKE UPON TRENT.
R. S. TOPHAM ARCHITECT

Wm. L. & Co. Engrs. & Liths. 25, Abchurch Lane, E.C. 4, LONDON.

NEW PUBLIC HALL AT KINGSTON.

A new public hall has just been erected at Kingston. The building, which is faced with red pressed brick and Box-ground stone dressings, is in the Classic style of architecture. A prominent feature in the elevation is a handsome portico, which extends out to the line of footway, and contains three arches. The principal entrance is under this portico, opening into a spacious vestibule, from which the hall is reached. The hall itself is 56 ft. in length, 46 ft. in width, and 35 ft. in height from the floor to the ceiling. In addition to the body of the hall there are three galleries, the hall providing accommodation for an audience of between 700 and 800 persons. The galleries will be approached by flights of stone staircases, in towers or projections on each side of the portico. The galleries will be fitted with fixed seats, whilst the body of the hall will be furnished with chairs. The roof of the hall is supported on iron columns, which are carried up to the full height of the building, and which also support the gallery fronts by means of ornamental iron brackets. The hall will have a coved and panelled ceiling, the panels, trusses, and cornice being richly decorated. The walls and pilasters around the hall will be similarly decorated. At the rear of the hall, at the north end, there are committee and retiring rooms, from which a spacious platform is approached. The means of entrance and exit are ample. On the ground-floor, besides the portico already named, exits are provided at the back of the hall in each flank wall, while exit from the galleries has been provided at each end. The building will be heated by Remington's patent hot-air apparatus, whilst ventilation will be provided by means of two of Boyle's patent ventilators. The windows will all be glazed with stained glass.

Mr. Alfred C. de Boinville, of Victoria Mansions, Westminster, and Ilfracombe, is the architect; and Messrs. G. Oldridge & Sons, of Kingston, are the contractors.

It may be added that the name which has been given to the building is the Albany Hall.

NEW INFIRMARY AT BOLTON.

On the 25th ult. the new Bolton Infirmary building was opened by the Mayor. It has been erected from plans submitted in competition by Mr. R. Knill Freeman, architect, Bolton and Derby, the contractors being Messrs. Marsden Bros., of Bridge-street, Bolton. The cornerstone of the children's hospital, forming one wing, was laid by Mr. F. Ferguson, J.P., on the 30th of August, 1878, and the cornerstone of the infirmary proper was placed in position by Alderman Musgrave, J.P., on May 1st, 1880. The building was completed in the autumn of 1881, and might soon have been ready for occupation, but the necessary funds to pay off the debt, and to ensure a good endowment, were not forthcoming to the extent looked for. The infirmary consists of four distinct buildings, viz., an administrative block (which is placed in the centre), also right and left pavilions, and the children's hospital (at the back of the left pavilion). The corridors connecting them are one story only in height, so as not to interfere with the free circulation of air. The administrative block contains, on the ground-floor, the principal entrance-hall, board-room, secretary's office, matron's and surgeon's day-rooms, operating-room, and small occasional ward, also the kitchens, larders, servants' hall, lavatories, &c. The upper floors are appropriated for surgeon's, matron's, nurses', and servants' bedrooms, with requisite bathrooms, &c., the plan being so arranged that each department is kept thoroughly distinct. In the centre of the front, over the entrance-hall, a tower is carried up to a total height above the ground of 103 ft. The upper portion of this will be utilised for water-tanks. The right pavilion (that nearest the tower) contains the entrance for patients, with its accident receiving rooms, &c., also the dispensary and out-patients' departments. The latter consists of a large waiting-room, also medical and surgical consulting and examination rooms, lavatories, &c. The house-porter's apartment is placed here, and in such a position as to command both entrances. A small ward, capable of taking three beds, is also placed on the ground-floor. On the upper floor are a large ward for fourteen beds, and a smaller one for three beds, also nurses'

day and night rooms. The left pavilion has on the ground-floor a large ward for fourteen beds, and two occasional wards for three beds each, also nurses' day and night rooms. The upper floor is similar, but with only one small ward. Both the pavilions have balconies at the end for the use of convalescents. The children's hospital, which has been placed so as to overlook the park, is a one-story building, containing two wards for eight beds each, a recreation ward or play-room, lavatories, &c.; also nurses' day and night rooms. A terrace is provided communicating with the wards, for the use of convalescents. This hospital is so arranged that it can be completely isolated from the main building. The sizes of the wards are as follow:—Large pavilions, 59 ft. by 27 ft., cubic space for bed 1,820 ft.; small wards, 22 ft. by 16 ft. 9 in., cubic space for bed 1,877 ft.; children's wards, 35 ft. by 6 ft., cubic space for bed 1,700 ft. The total number of beds is as follows:—Men's wards, forty-two beds; occasional wards, seventeen beds; children's hospital, sixteen beds; total, seventy-five. The principal corridor extends from end to end of the building, with a total length of about 300 ft. The pavilions are provided with hydraulic lifts for patients, and hoists for raising dinners and coals to the upper stories. Shoots are also provided for dirty linen, dust, &c. Fireproof construction has been adopted throughout. The heating of the wards is by the Haden system of central fireplaces, which combine open grates with hot air and ventilation. The materials employed are brick, with Yorkshire stone dressings, and the roofs are covered with green slates from Elterwater.

The total cost of the buildings has been nearly 29,000*l.*, exclusive of the cost of the site.

THE LEEDS AND YORKSHIRE ARCHITECTURAL SOCIETY.

This society has lately moved its headquarters into premises over the offices of the Liverpool and London and Globe Insurance Company in Albion-street, Leeds, where they have established, in connexion with their lecture-hall and other rooms, a museum of building appliances, and a library of trade catalogues, &c. This is to be perfectly free to the public, who are welcome to make use of it, or to consult the catalogue to any extent within office hours, and is intended to become a centre for information in all matters pertaining to building. All the exhibits are not yet in position, but there is already much of interest to be seen. In ornamental work Messrs. Trollope & Co. show some fine specimens of *agrafite* work. Messrs. Jones & Willis, church-fitting makers, have a stand. The Papier Mâché Company send some samples of their ornamental work of various kinds. The Linorusta-Walton Company has a case well representing the material which is their speciality. Fireplaces are shown by Messrs. Barrett & Russell, of Leeds, and Messrs. Chas. Smith & Sons, of Birmingham. Messrs. Powell Bros., of Leeds, have an example of their glass in the form of a painted church window. Messrs. Warrington & Co., of London, also show a window. Paper-hangings are exhibited by Messrs. Woollams & Co., who guarantee their colours free from arsenic, and by Messrs. Shuffrey & Co. Messrs. Arrowsmith & Co. have a stand with a variety of specimens of their solid parquetry flooring. A collection of delicate foreign tiles comes from Messrs. Durlacher & Co. A large proportion of the exhibits is of a purely utilitarian character. Attention may be drawn to a few of them. Messrs. Hayward Bros. & Eckstein have a model showing the use of their prism lights for the illumination of basements. Samples of the application of asphalt are shown by Messrs. Claridge & Co., and by Messrs. Engert & Rolfe. The North of England School Furnishing Company have some excellent examples of the latest application of the laws of hygiene to school-desks, &c. Heating is represented by samples from Messrs. Gibbs & Co., and Messrs. Bacon & Co., who have different examples of their patent methods of warming buildings. Zinc work of various kinds is shown by the firm of Braby & Co. The Selenitic Cement Company show examples of their patent mortar; and the Hygeian Rock-Building Composition Company have a specimen of their material, which they claim makes a wall, by its use, half as strong again as an ordinary one. Ventilation has its exponents in Boyle & Co., J. Ellison, and

Messrs. Kite & Co., who exhibit samples of their appliances for attaining this desirable end. Bath stone is shown by Messrs. Pictor & Sons, and Messrs. Stones Bros., whose quarries have earned a good name. The Hopton Wood Stone Company have cubes of their material, which takes a fine polish, and is really a marble rather than a stone. Some of the best means of glazing roofs, &c., are shown in the samples sent by Messrs. Braby & Co., Messrs. Rendle & Co., and Mr. F. A. Lawrence. A working model of an hydraulic lift by Messrs. Whitley, Holden, & Co., admirably shows their system. Messrs. Sizer & Co. show a lock wherein the substitution of a weight for the old spring makes it proof against all but inevitable wear. The Sanitary Paint Company have examples of their material. The excellent joint for drain-pipes, known as Stanford's, is shown by Mr. Ongh. Messrs. Meakin & Co. have a case of oilable sash-pulleys and window-fasteners. Lightning-conductors are exhibited by Mr. J. Blackburn, and by Messrs. Dixon, Corbett, & Spencer. Slates are shown by the Butternere Company, the Elterwater Company, and the Oakley Slate Quarry Company. A model of revolving-shutters is sent by Messrs. Salmon, Barnes, & Co.; and Messrs. Westwood & Co., show samples of Hawksley's patent treads. One of the most interesting features of the exhibition is a set of water-closets, with water laid on so that their working may be tested at any time. The valve-closet has two excellent samples by Messrs. Tyler & Co.; and the wash-out system is represented by Messrs. Braithwaite & Co., Messrs. Bostel & Co., and Mr. Thos. Twyford. Many examples of different classes of building appliances are promised, and accessions are being made daily. The Library of Trade Catalogues is a very good one, and it is hoped to make this almost completely representative of every firm in the kingdom issuing one referring to the building trade. All these, as everything else in the museum, are at the service of the public, the aim of the society not being that making profits for themselves, but that of spreading a knowledge of the best appliances of construction, sanitary appliances, and decorative materials to buildings.

THE NEW PATENT LAW.

Mr. J. H. JOHNSON, patent agent, of Lincoln's Inn-fields, has prepared a summary of the recently-passed Act to amend and consolidate the law relating to Patents for Inventions, Registration of Designs and Trade Marks, which will come into operation on the 1st of January, 1884. The Act repeals wholly or in part no less than twenty-three statutes, and by simplification of procedure and reduction of fees, effects great changes.

Although the Act provides for certain alterations in the existing laws of trade marks and designs, the following remarks are confined to the one subject of patents for inventions.

There has been no substantial alteration in the Patent Laws since the Act of 1852, although numerous Bills have been introduced into Parliament by various Governments and private members. The amendments now effected are to a very considerable extent those recommended by the Committee of the House of Commons in 1871.

The main alterations effected as regards the Law of Patents are as follow:—

The Government fees on application for provisional protection are reduced from 5*l.* to 1*l.*, and the Government fees for completing the patent for the first term (four years in place of three, as at present) are reduced from 20*l.* to 3*l.*, so that the patent will be granted for a term of four years for a sum of 4*l.*

There is no alteration in the amount of the subsequent payments for the extension of patents from four to fourteen years, but in place of paying the 50*l.* and 100*l.* duties in lump sums at the end of the third and the seventh year, these sums are now payable at the option of the patentee either in one sum of 50*l.* at the end of the fourth year, and one sum of 100*l.* at the end of the eighth year, or by annual payments of 10*l.* before the end of the fourth, fifth, sixth, and seventh years; 15*l.* before the end of the eighth and ninth years; and 20*l.* before the end of the tenth, eleventh, twelfth, and thirteenth years.

Patents will be granted to the inventor jointly with others, but the inventor must in every case make a declaration that he is the true and first inventor.

Applicants for patents may, if they so think fit, transact all their business with the Patent Office by post, and the various post-offices throughout the country are to keep on sale the stamped papers required in applications for patents. Each application for a patent is to be confined to one invention only.

The procedure on application is as follows:—

The inventor must lodge at the Patent Office a declaration and provisional specification. These documents, in place of being referred to the law officers for examination, are to be referred to an examiner. This examiner's duties are to see that the provisional specification fairly describes the invention, and to see that the title of the invention sufficiently indicates the object of the invention. The examiner has also to report to the Comptroller (the officer at the head of the Patent Office) whether the application conflicts with any other unsealed application in the office.

The provisional specification having been approved, the applicant must then prepare his final specification, and lodge it at the Patent Office within nine months from the date of application. This specification is again referred to an examiner, who has to ascertain that the specification is properly prepared, and is consistent with the provisional specification. The examiner, in the cases of both provisional and complete specifications, is to report to the Comptroller. If the applicant is dissatisfied with the decision in either case, he can appeal to the law officers. If the complete specification is not accepted within twelve months from the date of application, the application is to become void.

The patent is sealed after the final specification has been passed by the Comptroller.

The provisional specification remains secret until the complete specification is filed, but after that both provisional and complete specifications are to be open to public inspection.

Specifications may be amended by way of disclaimer, correction, or explanation. The Comptroller is to decide upon all applications of this nature, there being an appeal from his decision to the law officers. A very important provision is also introduced for the purpose of enabling the patentee to disclaim, by leave of the judge, during the progress of an action, and without stay of proceedings. The Board of Trade has power to grant compulsory licences in default of the patentee granting licences on reasonable terms, and on proof that—

(a) The patent is not being worked in the United Kingdom.

(b) The reasonable requirements of the public are not supplied.

(c) Any person is prevented from working or using to the best advantage an invention of which he is possessed.

The jurisdiction of the Privy Council in cases of prolongations of patents is retained, but the almost obsolete power given to the Privy Council to confirm patents is not re-enacted.

The action of *scire facias* is abolished, but revocations of patents may be obtained on application to the Court.

The right of the Crown to the free use of patented inventions is abolished, but the Crown is to be at liberty to use patented inventions on terms to be settled by the Treasury.

In all legal proceedings with respect to patents the Court may, and at the request of either party shall, call in the aid of an assessor.

Letters patent may be granted to the personal representatives of deceased inventors.

The clause of the Patent Law Amendment Act, 1852, by which the British patent lapsed with the expiry of any foreign patent of anterior date, is not re-enacted.

The provisions as to the registration of documents at the Patent Office, the printing and publication of specifications, and the preparation of indexes and abridgments, are not substantially altered.

The Comptroller is to issue an illustrated journal of patent inventions as well as reports of patent cases, and is to keep this journal, and complete specifications of all patents in force, on sale.

Power is taken to join the International Union for the reciprocal protection of patents, and when this is done the anterior publication of a foreign specification will not (for a limited time) affect the British application.

ARTISANS' DWELLINGS FOR PROVINCIAL TOWNS.

Liverpool.—At the meeting of the Liverpool City Council on Wednesday last, the 5th inst., the Tramways, &c., Committee, which has charge of the Nash-grove site, presented a report recommending,—"That the Town Clerk be instructed to inform the Local Government Board that the Council assent to the conditions stated in their letter, subject to which they agreed to the erection of labourers' dwellings,—viz., that the Town Council will offer the intended buildings for sale at such times as the Board think fit, on the understanding that they are not to be compelled to sell at a loss. Also that the tenders of Messrs. Hughes & Stirling for the erection of artisans' dwellings on the Nash-grove site be accepted as follows:—Tender No. 1, for the completion of thirteen blocks of dwellings with slated roof and including York stone steps and landings, for the sum of 51,735*l*. Tender No. 3, for the completion of the fire-proof floors, landings, and floors of corridors throughout in accordance with design

B, exclusive of staircase steps, for the sum of 1,987*l*., making a total amount of 53,722*l*.; and that an application be made to the Local Government Board for their sanction to the borrowing by the Corporation as Urban Sanitary Authority of the sum of 80,000*l*. for the completion of the purchase of the Nash-grove site, and for the erection of artisans' dwellings on such site under the Artisans' and Labourers' Dwellings Improvement Act, 1875, and that such sum be raised by the issue of stock under the Liverpool Corporation Loans Act, 1880." **Birmingham.**—The prospectus is published of the Birmingham Artisans' Dwellings Company (Limited), with a proposed capital of 100,000*l*., divided into 20,000 shares of 5*l*. each, 5,000 of which will constitute the first issue. The company proposes to purchase plots of land in healthy localities in Birmingham and the adjoining counties, easily accessible from the centre of the town, and to build thereon cottages and dwellings suitable for working men, and also to erect blocks of buildings on the "flat" system in suitable situations in the town if it be found that the working classes favoured the system to such an extent as they have in other large centres of industry. The directorate is composed of a number of gentlemen of local repute and influence, and the prospectus states that "two or three well-known architects will be employed."

NEW CONVALESCENT HOME AT SOUTHPORT.

THE first portion of the new convalescent home on the Southport Promenade Extension, which is nearly completed, will, it is expected, be formally opened by the Earl of Derby in October next. The new building presents a striking contrast to the low, plain, and unattractive structure which adjoins it, and which has been used as a hospital since the year 1806. The new home will not only add another to the number of fine public buildings which adorn the town, but will be a lasting monument of the charity and benevolence of a large-hearted and sympathising people. It marks a period in the history of Lancashire that can never be effaced, inasmuch as it is the outcome of a powerful appeal made to the country in one of its direst distresses,—the cotton famine of 1860. It will be remembered (says the *Liverpool Daily Post*) that such was the generous response to that appeal that not only were the immediate wants of a suffering class of the community supplied, but that a surplus of over 100,000*l*. was handed over to the Charity Commissioners to dispose of as they might think fit for the benefit of the operative classes, for whom it was originally subscribed. Lord Derby, as the chairman of the charity trustees with whom the money was lodged, consulted with his colleagues as to the best method of disposing of the money to public advantage, and it was eventually decided that the best endowment funds for public charities should be established up and down the country, where it was deemed they would be most valuable, and a sum of 40,000*l*. was set aside for the erection and endowment of a new convalescent home at Southport. A portion only of the building for which plans have been prepared has been proceeded with. For the present the structure is limited to the three-storied front facing the sea, the two-storied return on the south side, and the baths facing one of the quadrangles. When the building is completed, the three-storied main portion will be continued from the present sea front along Leicester-street up to a lofty tower 28 ft. square, to be built in Adelaide-street, and it will then contain 350 beds, and have a dining-hall and administrative apartments for 500 occupants. The present erection will contain 160 beds, and great care has been taken to ensure ample ventilation, the bedrooms affording 1,000 cubic feet of air per bed. Besides this, they are all connected with the extraction ventilating-shafts, which are arranged in the centre of each staircase turret. Each room has its window and door on opposite sides. The dormitories on the first floor are 12 ft. high, and those on the second floor 17 ft.

On the ground-floor right and left of the main entrance in Leicester-street are rooms for the reception and examination of new patients, accommodation of visitors, a surgeon's room, a dispensary, nurse's dressing-room, a committee or board room, an office for the master, and rooms for the porter. Beyond these are

spacious day-rooms for the patients to sit in, which, like the bedrooms, in every case have ventilated outlets into the extraction-shafts. The north side of the ground-floor is utilised for a temporary dining-hall. The laundry apartments, ground-floor dormitories, baths, &c., occupy the remainder of the ground-floor.

The salt and fresh water baths are provided with hot and cold supplies, and fitted up in the most approved manner. In winter the building will be heated by a system of radiating surfaces warmed by steam at low pressure.

The walls of the structure are of brick, faced externally with red pressed bricks, the architectural features being executed in terra-cotta. The buff terra-cotta used is supplied from the works of Messrs. Wilcock & Co., Burntaston, Leeds; and the red terra-cotta, as well as the facing bricks, from the works of Mr. J. C. Edwards, of Ruabon.

The architects are Messrs. Paul & Bonella, of Chancery-lane, London, and St. Peter's-square, Manchester; and the general contractors are Messrs. Robert Neill & Sons, Manchester. Mr. Peter Hodgkinson, of Manchester, had charge of the brickwork; and the heating and ventilating arrangements, together with the laundry and culinary department, are being carried out by Messrs. Longden & Co., of Sheffield, as sub-contractors.

LARGE SALE OF CITY PROPERTY.

RECENTLY Messrs. Debenham, Tewson, & Co. submitted for sale at the Auction Mart several lots of valuable property in Wood-street. The sale took place under the failure of the London Warehouse Company, now in liquidation, and consisted of eight recently-erected warehouses, in three lots. The first lot offered consisted of Nos. 108, 109, and 110, Wood-street, containing an area of 1,780 superficial feet. The property was described as partly freehold and partly leasehold, the leasehold portion being held at a ground-rent of 210*l*. per annum, on a lease of sixty-three years from Christmas, 1852. The present rentals were stated to be 2,000*l*. a year. The property was sold for 16,000*l*. The next lot consisted of Nos. 105, 106, and 107, Wood-street, containing an area of 3,130 ft., and entirely freehold, the present estimated rentals of the premises being 2,600*l*. per annum. It was sold for 31,000*l*. The concluding lot consisted of Nos. 103 and 104, Wood-street, containing an area of 2,740 ft., held on a lease direct from the Grocers' Company for eighty years from 1862, at a ground-rent of 375*l*. per annum. The present estimated annual rental was stated to be 2,100*l*. per annum. It was sold for 14,100*l*., the entire proceeds of the sale amounting to 61,100*l*. It was stated at the sale that the property was sold subject to a mortgage of 11,500*l*. on the first lot, 18,000*l*. on the second lot, and 9,500*l*. on the third lot.

THE GAS LIGHT AND COKE COMPANY'S CAPITAL.

At the half-yearly meeting of the Gas Light and Coke Company, which has just been held, the chairman stated that few people outside the gas world had any idea of what an undertaking the Gas Light and Coke Company was. He observed that their revenue at the present moment was equal to twice the revenue of the kingdom of Greece. It was more than the revenue of Denmark, and it was equal to the revenue of Chili, Saxony, Roumania, Mexico, and Persia. Their capital was about one-eighth that of the London and North-Western Railway Company, which was the largest undertaking in the world, and it was one-sixth that of the Great Western Company. It would be seen, therefore, that they stood very high in the scale of industrial enterprises in this country.

Swinstead Church.—A handsome mural monument, of Gothic design, from the studio of Mr. J. Forsyth, has just been placed in the chancel of Swinstead Church, Lincolnshire. The inscription commences, "Here rest the mortal remains of Priscilla Barbara Elizabeth Bertie, Baroness Willoughby De Eresby in her own right, and joint Hereditary Great Chamberlain of England, eldest daughter of Peregrine, third Duke of Ancaster and Kesteven, sister and senior co-heir of Robert, fourth Duke of Ancaster and Kesteven."

OBITUARY.

Mr. Capel N. Tripp.—We regret to have to announce the death, after a tedious illness, of Mr. Capel Nankivell Tripp, Fellow of the Royal Institute of British Architects, of Eldon Chambers, Gloucester, at the early age of thirty-eight. He was a pupil of Messrs. Medland & Son, of Gloucester, and while in their office he obtained the National Medallion for success in an art competition. He commenced business on his own account eleven years ago, and was the architect of many public and private buildings in and around Gloucester. Amongst them may be mentioned the Raikes Memorial Church, Gloucester (St. Paul's), which he obtained in a public competition. A perspective drawing of this work, now approaching its completion, was exhibited in the Royal Academy in 1881. He was the architect for the restoration of the ancient church of Hinton, Hants, and additions to the rectory; the Board Schools, Cirencester; the extensive works at Edgworth Manor, Cirencester; the corn and malt warehouses at Gloucester Docks; the Pier New Hotel, Sharpness; the premises of the Gloucester Club; and many other public and private buildings. The deceased gentleman led an energetic life, and was deservedly popular, and his loss will be greatly regretted by all who knew him. His ability as draughtsman was the more remarkable from the fact that he only had the use of his left hand.

BUILDING PATENT RECORD.*

APPLICATIONS FOR LETTERS PATENT.

- 4,094. W. Thompson, Wexford. Walls. Aug. 24, 1883.
 4,109. J. C. Kent, Bedford. Apparatus for supplying disinfectants to water-closets, &c. Aug. 24, 1883.
 4,127. G. M. Edwards, London. Construction of metal laths for ceilings, &c. Aug. 27, 1883.
 4,150. G. Connell, Newcastle-upon-Tyne. Window ventilators. Aug. 28, 1883.

NOTICE TO PROCEED

has been given by the following applicants on the dates named:—

August 28, 1883.

- 2,099. J. Haigh and I. Haigh, West Bromwich. Apparatus for flushing water-closets, &c. April 25, 1883.
 2,336. H. Parkin and C. J. Reynolds, London. Locks for doors, &c. May 8, 1883.
 2,352. E. S. Shepherd, London, and J. L. Aspinwall, Nantlle-vale. Manufacture of artificial stone. May 9, 1883.

August 31, 1883.

- 3,573. L. A. Groth, London. Manufacturing slabs, blocks, &c., in hydraulic mosaic marble. (Com. by S. Paul, Bilbao, Spain.) July 20, 1883.

ABRIDGMENTS OF SPECIFICATIONS,

Published during the week ending September 1, 1883.

- 6,078. L. A. Groth, London. Window-blinds. (Com. by H. Olansen, Christiania.) Dec. 20, 1882. Price 6d.

The material of which the blind is composed is formed in plates in a plaiting machine, and the cords are so passed through that the blind can be drawn up after the manner of a Venetian blind.

- 6,162. J. Rider, Bristol. Water-closet apparatus. Dec. 23, 1882. Price 2d.

The container is of stoneware, and is urn-shaped. The handle is so connected with the water-supply valve, &c., that when it is lifted the water fills the basin, and, as the handle is lifted higher, the bottom valve opens and the flush is effected. (Pro. Pro.)

- 6,227. J. Moore, London. Fire-grates. Dec. 30, 1882. Price 2d.

The smoke, &c., passes from the fire through openings in the back to a chamber behind the grate, where it is consumed. (Pro. Pro.)

30. J. Williams, Liverpool. Refractory or fire-brick tile blocks, &c. Jan. 2, 1883. Price 2d.

Granular or pulverulent silica is mixed with thick liquid hydrocarbon to form these tiles, &c.

41. J. Butler, Birkenhead. Window-sash and other fastenings. Jan. 3, 1883. Price 2d.

This is a metal bolt in a guide, which has a lip at its point. When it is pushed into the catch on the other sash it is turned, and the lip engages the oblique outer side of the catch, drawing the sashes together. (Pro. Pro.)

* Compiled by Hart & Co., Patent Agents, 136, Fleet-street.

PROVINCIAL NEWS.

Widnes.—An improvement scheme, sanctioned at a special meeting of the Widnes Local Board on the 21st ult., to be carried out in conjunction with the trustees of the late Mr. John Bibby, is regarded as a very important one for the town. It will open out about 150 acres of land, which it is proposed to let as sites for alkali, copper, and other works. Already one of the plots has been let, and extensive works are in course of erection, which, it is expected, will employ about 300 men. A line of rails is to be laid down which will communicate with the two existing railways. It is intended that this line shall commence by a junction with the St. Helen's line, at a point about 165 yards to the north of Lugsdale level crossing. Turning off in an easterly direction, the line will cross Page-lane where it is joined by the Bradley footpath; it will then be carried under the road near to Green Oaks Farm, thence across Lover's Walk and Tanhouse-lane. A connexion will be made with the old Warrington and Garston line (London and North-Western) at a point east of the Widnes Alkali Works. Five bridges will have to be made by the trustees. The first one will be under Page-lane, the second under Warrington-road. Each bridge will be 42 ft. wide. At Moss Bank it is proposed to construct either a bridge or subway, as may be deemed most practicable when the works are carried out. The Local Board will receive from the trustees a total of 7,560 square yards of land for the privilege of crossing the various roads.

Canterbury.—On the 50th ult. the new Union Infirmary building, which has just been erected by Mr. J. C. Gaskin, from plans prepared by Mr. John Cowell, in connexion with the Canterbury union, was opened. Mr. T. Cross (chairman) made a statement, showing roughly the expenditure on the new structure, at the meeting of the Guardians on the following day. He said the amount of the contract with the builder was 3,146l., but extra work in fittings, &c., had been done amounting to 92l., after deductions had been made for certain things omitted in the contract. There would also be the architect's commission on that amount at the rate of five per cent., and the purchase of the land, 676l. 8s. Fencing would cost 88l. 14s. The new infirmary would accommodate about sixty-two patients.

Exeter.—The many serious fires which have taken place in Exeter of late years have led to much rebuilding of business premises, and some of these were briefly referred to a fortnight ago (p. 243, ante). The new premises here noticed have all been erected (or are in course of erection) from the designs of Messrs. Best & Commin, architects, of Exeter. Commencing at the higher end of the city, it may be mentioned that the fire which destroyed Messrs. Stanfield & Co.'s carriage-factory also wrecked the upper portion and rear of Mr. R. Lodge's wine and spirit stores, together with some cottages at the back. These latter premises are the property of the Mayor, Mr. S. Jones, who took prompt measures to make good the damage done, and at the same time to improve the property. Plans for the reconstruction and rebuilding of the premises were prepared by Messrs. Best & Commin, and the execution of the work was entrusted to Mr. W. R. Comings, of Longbrook-street, who completed his contract a short time since. A Queen Anne front has been substituted for the very plain one heretofore existing; the interior of the premises has been re-arranged and made more convenient; and on the site of the cottages at the rear a bowling-alley, with billiard-room over, has been erected. The alley is 55 ft. in length by 17 ft. in width; while the billiard-room, the roof of which is open, with semi-circular principals, is about 28 ft. 6 in. by 18 ft. 6 in. Mr. Lodge's premises are now completed, but the re-erection of Messrs. Stanfield & Co.'s carriage factory and show-rooms is as yet in the earlier stages. The site has a frontage on St. Sidwell's-street of about 76 ft., and it extends back about 110 ft. The old front was of a plain business-like character, and the new one will be in the Queen Anne style. On the ground-floor front there will be three shops. The two lower ones will be occupied by the firm. The one on the side adjoining the White Lion Hotel will constitute the carriage department, and will be about 100 ft. long by 26 ft. in width. Between this and the next shop, which will form the harness department, there will be a wide car-

riage-way leading to the workshops in the rear. The harness department will be about 50 ft. by 17 ft. 9 in. The contract for the erection of Messrs. Stanfield's premises has been entrusted to Mr. W. R. Comings. Passing from St. Sidwell's to High-street, one comes to a building almost completed, viz., the semi-ecclesiastical-looking structure which has been erected opposite the Cathedral for Messrs. Wippell & Son, tailors and church furnishers. These premises have a frontage in High-street of 28 ft. 2 in., and they extend back to the Cathedral-yard, where they have a frontage of 50 ft. 9 in., occupying the whole of the site between the National Provincial Bank and Messrs. Wilson's cabinet-warehouse. Both fronts are composed of Box-ground Bath stone, relieved, in some instances, with a background of bright red brick. The High-street frontage is of Gothic design, but the other front is not so pronounced in character. The whole of the ground-floor will be devoted to the shops and offices. The length of the premises from High-street to the Cathedral-yard is about 120 ft. The first-floor is divided into two showrooms,—one 85 ft. in length by 25 ft., while the other, which faces the yard, is 48 ft. by 25 ft. The second-floor will be devoted to workshops, and the whole of the premises will be used entirely for business purposes. The contract for the work was taken by Messrs. Howell & Son, of Bristol, who will have completed it in the course of a few weeks. Messrs. Wippell subsequently became the purchasers of the spot of land in High-street between their new premises and the National Provincial Bank, and on this Messrs. Howell are erecting for them a shop and offices to be known as Guildhall Chambers. This site has a frontage of 22 ft., and extends back to a depth of 40 ft. The building will be in the Queen Anne style, in red brick, with the exception of the bay-windows on the first and second floors, which will be of Bath stone. But a short distance further down, and Messrs. Brock & Co.'s new premises, now well advanced, are in view. The site of Messrs. Brock's premises has a frontage in High-street of 46 ft., and in North-street one of 87 ft. The cubic contents of the whole building will be close on 500,000 ft., and the superficial area is rather over 7,000 ft. This building, too, will be in the Queen Anne style, of red brick, with Douling stone dressings. It will be divided into three departments, separated by substantial party-walls. Access will be obtained from one department to another by means of double iron doors. Messrs. Howell & Son are the contractors, and the contract will expire about April next. Mr. Wheaton's new premises will be virtually a continuation of the same design as the last-mentioned. The corner building, as set back to admit of the widening of North-street, will give a frontage in Fore-street of about 19 ft., while the other front will be about 40 ft. There will be four floors to the premises instead of three, as is the case with Messrs. Brock's structure.

Liverpool.—Sir James A. Pictou has given notice of his intention to make the following motion at the next meeting of the City Council, viz.,—"That the Town Clerk prepare a Bill, give the necessary notices, and take all other requisite steps to carry into effect the resolution of the Council of the 4th of April, 1883, directing an application to Parliament for a Bill to authorise the transfer and exchange of lands for the rebuilding of the Royal Infirmary, and that the matter be referred to the Parliamentary Committee." Alderman A. B. Forwood will, on this subject, move "That the Council having, on the 4th of April, 1883, ordered an application to Parliament for power to provide funds to assist in the erection of, or the acquisition of a site for, the Royal Infirmary, it be recommended to include in such application power to meet the requests which have been made for aiding the enlargement or reconstruction of the Northern Hospital, and the enlargement of the Stanley Hospital, so that in the aggregate a sum of not exceeding 125,000l. be so expended; that the amount be appropriated to the several objects in such manner as the Council in their discretion may determine; that the resolution of the Council of the 4th of April, 1883, be varied accordingly; that the necessary steps be taken by the Parliamentary Committee to promote a Bill for the carrying into effect of these objects; and that the requirements of the Borough Funds Act, 1872, be complied with."

Willenhall.—Willenhall (says the *Staffordshire Advertiser*) is just now placed in a peculiar and unpleasant dilemma by the stoppage of the various pumping-engines belonging to the neighbouring collieries. These engines have been accustomed to pour into the river Tame immense volumes of water, and thus the little stream, which does duty as a common sewer, has been kept comparatively harmless and inoffensive. Now, however, the stream presents in the sultry days of early autumn a spectacle of black liquid filth the odour of which in the lower part of the town is well-nigh intolerable. The local authorities are doing all in their power to mitigate the nuisance so far as the lavish distribution of powerful disinfectants can do it, but this is at best a sorry attempt, and its results show the folly of depending, in a matter of such importance, for so many years, upon the adventures of the local collieries. A comprehensive scheme for sewerage the town is in progress, and the works will be pushed forward with all speed.

FOREIGN HOTELS.

Sir,—Seeing that you devote so much time and space to sanitary matters, it has occurred to me that there is a branch of the subject which, if followed up, might greatly benefit that large portion of the public who travel on the Continent. I allude to the sources of fever developed in hotels abroad by the mismanagement of water-closets. The old system of privies was bad enough, but the improvement, as it was at first deemed, has proved a source of greater danger, owing, in most cases, to the want of water supply and of proper care. The consequence is that fevers are contracted and deaths multiply every year, our countrymen and women being the chief victims.

Would it not answer to commission some trustworthy correspondent travelling abroad to report on the evil, and give a list of hotels where it does not exist?

M.
* * If this could be done much advantage would follow; but, the changes that take place in the management of hotels would place difficulties in the way. The illness and deaths that have been caused by want of proper management in foreign hotels during the last two years, within our own knowledge, have been distressingly numerous.

FIREPROOF PAINT FOR LARGE BUILDINGS.

Sir,—We have had a good many large fires lately, and may I suggest that it would be worthy of the consideration of the Board of Works whether a regulation for the using of some fireproof paint or composition in theatres and other public (and also in large private) buildings could not be made? It might be compulsory in new buildings, and also on repainting old ones, and the kind of paint or composition proposed to be used should be specified and a certificate afterwards given by the architect (or if none, the contractor) that it had been used.

The plan might be applied to iron girders also, not to prevent them burning, but to prevent them getting hot and collapsing, and bringing down the walls.

Life might be saved, and property certainly would be, if fireproof paint or composition were used. There are several kinds, which have been tried and found effectual. It might interfere with some of the rights of the British insurer, but this might possibly be an advantage to the rest of the community. It should be borne in mind that a fire will not always stop in the building where it commences, but sometimes goes several doors off. R.

THE OBELISK ON PUTNEY-HEATH.

Sir,—In a work entitled "Factories and Workshops," by B. H. Thwaite, C.E., mention is made of an obelisk having been erected on Putney Heath in 1776 to celebrate the successful results of experiments with the arrangement, the invention of David Hartley, M.P., for making buildings fireproof. As a native of Hartley's birthplace I should be obliged if any of your London readers would say if the obelisk still exists, or, if not, when was it removed? Any other information on the subject would oblige.

G. W. ROBINSON.

STAINING WOOD.

Sir,—Can any of your readers inform me the way to stain light wood black as ebony, so that the stain goes through? Wood only about 1-inch thick; must be black through. J. GIBBS.

FALL OF BUILDINGS, MINORIES.

Sir,—The notice in your journal of the 1st inst., "On Thursday, the 23rd ult., at about 10.30 p.m., the front walls of the houses, 36 and 37, Haydon-street, Minories, fell with a tremendous crash. The buildings belonged to the Metropolitan Railway Company," is slightly inaccurate and highly coloured.

Nos. 34 and 35, Haydon-street, a double two-story house, with east and west party walls and a common central staircase to the first floor, with coupled staircases, partitions, and well-hole of lath and plaster above, were condemned, and shored up by me about Midsummer last, and were in course of demolition, and hoarded in, arising from decay and crushing of the basement piers of the massive chimneys. These houses were the property of the Railway Company.

No. 36, a freehold house belonging to Mr. John Owen, the packing-case manufacturer of the Minories, had an upper story which overhung about 9 in., from decay and partial collapse of a heavily-tiled roof. This had subsequently been condemned by me early last month.

The demolition of the upper part of No. 35, without concerted action, deprived No. 36 of some lateral support, resulting in the settlement of the roof of the latter and the tilting over of the parapet and the fall of a small quantity of brickwork on to the foot-pavement.

No. 37, the property of the Metropolitan Railway Company, is not dangerous and has not fallen, nor any part thereof.

The site is interesting as the boundary of the parish of the Holy Trinity, Minories, is identical with that of the nunnery of Lady Minories, founded by Blanche of Navarre, who married the King of Navarre in 1289, and Edmund Duke of Lancaster, brother of Edward I., in 1274, to whom the king granted the licence for the monastery in 1293.

A warehouse in Shepp's Yard, the property of the Metropolitan Railway Company, and occupied by Mr. Owen, is erected on a crypt-like basement, a portion of the conventual buildings, and the north wall of the church is said to have been the north wall of Blanche of Navarre's church.

The present sacred edifice contains many Elizabethan monuments of interest, and in the churchyard, now a paved thoroughfare, lie many of those who fell at Calton. The "Three Lords," a neighbouring tavern, in its name is also suggestive.

This historic area, about, doubtless, to be absorbed in modern railway extension, is referred to by Stow, who, of Goodman's Fields to the southwards, says:—"Near adjoining to this abbey, on the south side thereof, was some time a farm belonging to the said nunnery. I myself in my youth have fetched many a pail worth of milk," &c.

Noorthouck refers to the "Abbey of Nuns of the order of St. Clare, called Minories, who have left their name to the neighbourhood," and he says,—

On the spot where the Minories' Convent stood in the 'Little Minories,' a number of houses were built; and a small church was provided for the inhabitants, which was dedicated to the 'Holy Trinity.' It is a curacy of inconsiderable value, in the gift of the Crown; and the building has a *neat turret*, but no tower.

This "*neat turret*" is now overshadowed by the lofty walls of the houses of the London and North-Western Railway Company, formerly belonging to the East India Company, certain windows of which, overlooking the churchyard, formerly paid rent to the incumbent, but have recently been bricked up to avoid such an obligation.

On the Ordnance Survey the site is distinguished by the words, "St. Clare Minorenses"; i.e., "Sorores Minores."

J. B. REDMAN,

District Surveyor to the Liberties of H. M. Tower of London from March, 1843.

THE LAMBETH VESTRY AND HOUSE DRAINAGE.

Sir,—My experience tells me that this Vestry is entirely wrong in insisting on a trap in the main drain of each house [see p. 267, ante]. Far better is it to have a free outlet into the sewer, and carry up a 4-in. ventilating-pipe from the drain to the highest point of the house; this can often be used as the soil-pipe.

I am no theorist, but I have carried out the above system in a street of Industrial Dwellings at Shadwell with the greatest success. The new City Carlton Club, which was designed by Mr. Richard Roberts, is drained on this principle, and all the soil-pipes are carried up to the highest points of the building. The water-closets go direct into the soil-pipes without any traps. This is also a success.

W. S. HORNER.

New Church, St. Saviour's, Westgate-on-Sea.—The foundation-stone of this church was laid on the 28th ult. by Sir Erasmus Wilson, F.R.S., in the presence of a large assemblage. The church is being built from the amended plans of Mr. Beazley, by Messrs. Naylor & Son, at a cost of upwards of 6,000l.

VENTILATING COWLS.

Sir,—What has become of the Committee of the Sanitary Institute of Great Britain upon experiments on cowls and other automatic modes of ventilation?

Upon the conclusion of the experiments at Kew, in May, 1873, they issued a report to the effect that none of the exhaust-cowls tested caused a more rapid current of air than an open pipe under similar conditions. This led to a deal of controversy, and in the following year the Committee issued a circular as to the necessity of further investigating the whole subject, appealing for subscriptions, and promising subscribers of a guinea a copy of the experiments. In answer to this appeal a large sum of money was raised, but though it is four years ago nothing more has been heard of their proceedings.

A SUBSCRIBER.

P.S.—Further, what has become of the money that was received from the public by the Smoke Abatement Society at their Exhibition? I cannot learn that a balance-sheet even was ever published.

SHEPTON MALET SEWERAGE.

Sir,—The state of affairs as revealed by the report of Captain Hildyard, the Local Government Board Inspector, and published in your last issue [p. 303], is, to say the least, instructive. It forms a sequel to circumstances touched upon in a letter, headed "Engineer and Contractor," that appeared in your issue of November 5th, 1881. Should you in this connexion think that letter worth reprinting, the chain of events so completed will be amusing, if not edifying, and few will be surprised that Capt. Hildyard found the then contractor to be using sewer-pipes of most indifferent quality, and carrying out the work to match. He concludes, "I believe this land, as laid out now, would, in two years at the latest, be a scene of utter ruin."

ONLY A CONTRACTOR.

SCAFFOLDING.

Sir,—Will any of your readers assist me by naming a good book on scaffolding for towers and spires?

AN OLD SUBSCRIBER.

WHAT HE HAD FAILED IN.

FINCLEY LOCAL BOARD.

At the Highgate Police-court, Frederick Corrick, builder, of 1, Cornwall-villas, Chester-road, Highgate New Town, was charged upon eight different summonses for breaches of the by-laws of the Finchley Local Board, respecting a house erected by him at Bedford-road, Finchley.

The complaints were that Corrick failed to provide a suitable trap as near as practicable to the point at which the drain of such house was connected with the cesspool; that he failed to provide a shaft in connexion with the house in such a manner as to effectually prevent any escape of foul air from the shaft; that he failed to cause the space under the floor to be sufficiently ventilated; that he failed to provide special and adequate means of ventilation to one of the rooms of the house; that he failed to construct the cesspool with adequate means of ventilation; that he failed to construct the whole of the drainage with glazed stoneware pipes, and the drains inside the house to be embedded in concrete; that he failed to provide two untrapped openings to the drains; and, finally, that he allowed such house to be occupied before completion, and without allowing a period of twenty-eight days to elapse after sending notice of completion to the surveyor of the Board.

Mr. Roberts, on behalf of the Local Board, said the defendant would plead Guilty to all the offences, and as he had undertaken to amend the matters so complained of to the satisfaction of the Board's Surveyor, he would only ask for nominal penalty.

The defendant said the reason of his having failed to carry out the by-laws was because he did not understand them.

Mr. Lermite said, under all the circumstances, the Bench would only impose a fine of 1s. on each summons, but defendant must pay all the costs.

WOODEN STRUCTURES.

THE METROPOLIS MANAGEMENT AND BUILDING ACT (AMENDMENT) ACT 1882.

On August 30, at the Thames Police Court, Mr. John Sheen was summoned by the District Surveyor of St. Leonard, Bromley, E., for having "Erected or set up a wooden structure or erection of a movable or temporary character without having first obtained a licence in writing from the Metropolitan Board of Works for the erection or setting-up of such structure or erection," as required by section 15 of the above act.

A solicitor from the Metropolitan Board of Works appeared for the prosecution, and the defendant was represented by Mr. Young (a solicitor).

The District Surveyor (Mr. Foulsham) stated in his evidence that the structure complained of was 50 ft. long, 27 ft. wide, and 10 ft. high to plate of roof, and was used as a theatre or show. The structure was supported on wood posts, and was enclosed, to height of 8 ft. 6 in. above ground, with boards (technically called "shutters"); the roof had a ridge, supported by poles, also rafters and plates, all of

wood, and was covered with canvas, which hung over the sides down to the "shutters," and was secured to the wood posts by cords. The interior was fitted up with a raised platform or stage, supplied with scenes, and there were twelve rows of raised seats for the audience. The structure had been erected without the necessary written licence from the Metropolitan Board of Works, and he had, therefore, given the defendant notice to take it down, and these proceedings had been instituted because the defendant had failed to comply with that notice. Several witnesses were called for the defence, but their evidence in the main merely corroborated that given by the District Surveyor. Mr. Young then addressed the Court and contents, and as this was the first case that had come before him, he should only inflict a penalty of 10s. and the costs of the summons, and order the structure to be taken down, as required by the notice given by the District Surveyor.

The Magistrate (Mr. F. Lushington) said the evidence satisfied him that the structure erected by the defendant was a temporary or movable wooden erection, and required a licence for its erection from the Metropolitan Board of Works. Such licence had not been obtained, and the defendant was, therefore, liable under the statute to a penalty of 6l. and 2s. for every day it had been erected without such licence; but as the statute was not intended to be so strictly construed as to punish a man before him, he should only inflict a penalty of 10s. and the costs of the summons, and order the structure to be taken down, as required by the notice given by the District Surveyor.

MEMORIAL WINDOW TO LORD FREDERICK CAVENTISH.

NEXT week will be erected in the parish church, Edensor, near the palace of Chatsworth, a beautiful stained-glass window, as a memorial of the death of Lord Frederick Cavendish. The cost will be defrayed by subscriptions from the tenants of the Devonshire family living on the Derbyshire estates. The subject is the Commandment, "Thou shalt do no murder"; and it is illustrated in various parts of the design by scenes from Scripture. The central figure, that of the Divine "Man of Sorrows," occupies the whole of the middle light of the window. Our Lord is represented standing clothed in the regal robe placed on Him in mockery by the Roman soldiers, with the reed in His hand, with the crown of thorns on His brow, and with the wounds in His hands and feet visible. The expression of the face is most benign, and the object of the artist is carried out with great success. The death of Christ is typified by an enlarged cross, which extends behind him the whole length and breadth of the window, and forms the main divisions of the picture. On the head, arms, and foot of the cross are represented angels bearing implements of torture, suggesting that even pain and suffering are the ministers of God. Over the cross the divine law, "Thou shalt not kill," is typified by Moses bearing the tables of stone; while in the side-lights, in the four divisions formed by the angles of the cross, are the illustrations of disobedience to the command. In the upper division is represented the first death by violence recorded in the Scripture,—the murder of Abel by Cain; while on the right, Stephen, the proto-martyr of the New Testament, is shown being stoned to death by the Jews. The groups in the lower part of the window illustrate the parable of the wicked husbandmen. On the dexter side is the householder sending his servants to claim his just share of the fruits of the vineyard, and in the opposite light are the husbandmen maltreating and murdering the messengers. The main window and the Decorated tracery above are filled in with figures of angels, immortelles, laurel and palm branches, and other appropriate emblems. Across the picture are the words, "As ye are partakers of the sufferings, so shall ye be also of the consolation" (2 Corinthians i. 7); and above, "By Thy cross and passion, good Lord, deliver us." At the bottom is the inscription, "An offering from Derbyshire tenants, in sorrowful memory of Lord Fred. Chas. Cavendish. Anno Domini 1883." The window has been completed by Messrs. Hardman & Co., of Newhall-hill, Birmingham.

Fall of a House.—On the 2nd inst. the side wall of the house, No. 249, Oxford-street, Stepney, in the occupation of Mr. Kissner, a baker, fell with a great crash into the street, carrying with it about 18 ft. of the roof. The house is a corner one, and the debris fell into Pole-street, a very narrow thoroughfare leading out of Oxford-street, completely blocking it up. Fortunately no one was passing at the moment of the fall, and Mr. Kissner and his family were out.

GOSSIP WITH THE EDITOR.

I.

Can you give reference to the former article on Chaldean art? *

Referring to the figure of Gudea: Was he a king? An inscription (*Builder*, p. 274, col. 3) reads, "Gudea, Viceroy of Sergulla"; if Sergulla was a divinity, right enough, Gudea might then be a ruling monarch; but, if Sergulla was only a mortal, Gudea would be only the viceroy he calls himself. We need light.

As to the orientation, which appears to have travelled to China, was that shifting of the cardinal points an accident, a miscalculation, a prejudice, or the result of migration, thus preserving the due aspect of a former location?

II.

Stratford-on-Avon.—I cordially endorse your verdict on the unattractive aspect of the Birth-place as now arranged; I advocate a removal of the literary relics to the house at New Place, so as to increase the attractiveness thereof; the birth-place should be preserved as a cottage-residence, with furniture appropriate to each room, and recalling the conditions of Elizabethan middle life.

Have you noticed the project to open his tomb, and measure the skull? It seems a bad precedent.†

III.

In the reference to Bath, p. 304, let me point out that Popsy did more than look in. He reached Bath on a Friday at dusk, and paid a short visit of inspection to the bathing-place, went to bed superfluous, and rose at 4 a.m. The party of five in all, males and females, were carried in their bed-clothes (in a sedan chair?) by turns to the bath-room, hoping by this early visit to escape intrusion, but "much company come; very fine ladies; and the manner pretty enough, only methinks it cannot be clean to go so many bodies together in the same water. Good conversation among them that are acquainted here, and stay together. Strange to see how hot the water is; and in some places, though this [the cross bath] is the most temperate bath, the springs so hot as the feet not able to endure. But strange to see, when women and men here, that live all the season in these waters, cannot but be parboiled and look like the creatures of the bath. Carried away in a sheet, and by a chair home; and there one after another thus carried (I staying above two hours in the water) home to bed, sweating for an hour. And by-and-by comes music to play to me, extraordinary good as ever I heard at London, almost anywhere." He was staying at an hotel; paying 5s. for this music, 10s. to the sergeant of the bath-room, 3s. 6d. for the use of the chair; then off to Bristol. A. H.

CHURCH-BUILDING NEWS.

Ashburton.—The parish church of Ashburton, Devonshire, is now in course of restoration. The late Mr. Street, R.A., was consulted, and at his death the work was placed in the hands of his son, Mr. Arthur Edmund Street, and the contract for the restoration was taken by Mr. E. Abley, builder, of Salisbury. The exterior works are drawing to a close. The fine tower, whose total altitude is 96 ft., and whose walls at the base are 4 ft. 9 in. thick, has been stripped of its rough-cast, and the walls repaired and pointed. This tower at the beginning of the century was surmounted by a spire. It is strongly buttressed (two buttresses on each face), the buttresses running over, above the embattled parapets, into pinnacles. Upon the southern cant is a picturesque octagonal turret. All the windows are new. The east and west windows are five-lights, and the latter is to be filled with painted glass at the cost of Dr. Gervis, of Ashburton. The windows in the north and south transepts are five-lights. All the rest have four lights each. They are surmounted by Perpendicular tracery, and are all worked in Douling stone, which is the material used in the external masonry generally. The windows at the west end of each aisle, which were blocked, have now been opened out. The lean-to-roofs of the aisles are covered by 8 lb. lead; whilst the nave and chancel roofs generally are of the celebrated permanent green

slates ("Ladies," 16 in. by 8 in.), which are used at the New Law Courts. They are supplied by Messrs. Ashton & Green.

The apices of the various gables are crowned by new ornamental crosses in Douling stone. The glazing will be with cathedral-tinted glass, by Mr. Houghton, of Princes-street, Edgware-road. The edifice will be warmed by Grundy's system of heating, the apparatus for which is outside the church, at the east end of the south aisle. A new vestry is also to be built at the east end of the south chancel aisle, and a new roof is being built over the parvise. The continuous wagon-roof of the nave and chancel is 108 ft. in the clear from the inner side of the east wall to the line of the tower arch. This is an exceptional length for a Devonshire church. The plan of the building is cruciform; indeed, before the removal of the south porch, some years ago, it was originally of double cruciform shape. The nave and chancel roofs have had the timbers cleaned, new purlins and ridge-pieces put right through, and have had the various intersections stopped by flat bosses. All the rafters in the chancel are also new, and there are new embattled wall-plates running the entire length from east to west. The roofs of the aisles and transepts have had their rich carvings cleaned and new panelling placed behind. A beautiful chancel screen formerly existed. It was erected in A.D. 1525, and was removed in 1718. The handsome stone pulpit and brass eagle lectern were sold some sixty years afterwards to the neighbouring church at Bigbury. The restoration work, however, provides for remedying the loss of the old roof-screen. A very handsome new one, grained to carry a roof-loft, is now being made in wainscot oak. This will be panelled in its lower parts, and pierced above with open tracery work, the coved work above being embattled and richly carved with running ornament. The extreme height of this chancel screen is 12 ft. The bays on each side are also to be filled by parclose screens in the same material. They are 10 ft. high, and are of equally elaborate design. These screens are now in course of making by Mr. Harry Hems, of Exeter. The chancel floors will be laid with Godwin's encaustic tiles, and the various steps of approach to the altar will be of polished Ashburton marble. The avenues in the church will be paved with tiles and Portland stone slabs intermixed, and under the seating the floor will be formed of wood blocks. The seats are all open oak benches of massive construction. The stalls are of ornamental character, each chorister having a separate elbowed seat,—their standards are poppy-heads and foliated. Mr. Hems is also making these stalls. The doors, like the rest of the woodwork, are of oak, covered by wrought-iron work by Mr. Joseph Hedges Barford, of Maidenhead. The works are being carried out under the personal supervision of Mr. Alfred E. Abley, the contractor's son, and Mr. Burt is the foreman. Mr. Street, the architect, is represented on the spot by Mr. W. H. Williams, of London, as clerk of works. According to the terms of the contract the church is to be handed over complete to the Rev. W. M. Birch, the vicar, and his Building Committee, upon November 28th next.

Northampton.—A new reredos is being erected in the parish church of St. Giles's. Messrs. E. F. Law & Son, architects, of Abington-street, are the architects, and the execution of the work has been entrusted to Mr. H. Hems, of Exeter. The reredos proper will consist of five panels, with three more on each side, upon which the Commandments will be engraved. Caen stone will form the base of the work, with some of the details composed of Devonshire marble, alabaster, "Emperor's red," and Pyrenean green marble. The centre panel of all will be the most ornate, having in the centre the sacred monogram "I.H.S.," and a crown worked in Devonshire marble. All the panels in the principal series,—there being a correspondingly numerous series of quatrefoil panels below,—will have trefoil heads, but in the case of the centre one the ornamentation will be more profuse, a passion-flower being carved on the termination of each cusped, while extra cusplings will serve to form a double row of spandrels. The centre panel will also differ from the others in having a crocketed gable, terminating in a graceful finial. The groundwork of this panel will be very elaborately carved. The two adjoining panels right and left are each to be of "Emperor's red," with alabaster vesica. Upon

* Vol. xliii. (1882), p. 546.

† It is strongly to be condemned, and, it is to be hoped, will not be persisted in.—[Ed.]

the one will be a representation of the vine, with the words "I am the true vine," and upon the other some ears of wheat, and the text, "I am the bread of life." The two outer panels of the reredos proper will bear the monograms, "A.O." and "X.P." The six side panels upon which the Commandments are to be carved will be of alabaster, and with trefoil heads to correspond with the others. The five centre panels will have on each side columns of Pyrenees green marble, with capitals delicately carved, while the panels will be divided by buttresses bearing pinnacles of exquisite workmanship. The mural tablets on each side of the east window have had to be moved higher, so as to provide a clear space for the outer panels, but the upper part of the centre panels has been so arranged as not to interfere with the inscription at the base of the window itself. The whole of the carving was executed in Mr. Hem's workshops, and the numerous pieces have been brought from Exeter for fixing. The north and south walls of the chancels are being covered to a height of several feet from the floor with tiling of majolica and enamelled tiles, made by Maw, of Broseley. On the north wall there will be ten panels, and on the south nine, each filled with tiles, from a design by Messrs. Law.

Manchester.—The foundation-stone of the new church of St. Mark, Holland-street, Manchester, was laid on the 1st inst., by the Hon. Miss Egerton. The church, which has been designed in the Early English style, to seat over 500 persons, comprises nave, 70 ft. by 30 ft., with narrow aisles used simply as passages; chancel, 33 ft. long by 23 ft. wide, with apsidal end; north and south transepts, clergy and choir vestries, and organ-chamber at the north-east corner. The baptistery will be an octagonal extension at the west end in combination with the two main entrances. There is to be a third porch at the south-east end. The church will be lighted by a large window at the west end over the baptistery arch; in the chancel by five two-light tracery windows, and an extra light near the ceiling to throw light on to the pulpit. The aisles will have four double windows on each side; and the transepts, besides the west and south windows, which are to be somewhat similar to those last named, will have in the gables four large circular traceried windows. Externally the church will have one wide roof spanning both nave and aisles and continued on in one line to apsidal termination, broken only by an oak bell-cot placed over the chancel arch. The transepts will have their roofs running parallel with the nave, and at the west end the lean-to roofs of the porches will the octagonal baptistery between will break the great height of the main gable. The nave arcade is to be in six bays, the piers of which are to be of stock brickwork with the spires carried round arches. The materials used will be bricks, white ends inside and out, with stock and terra-cotta dressings, supplied by Mr. Jabez Thompson, of Northwich; blue slates, and principal and other timber work in red deal. The foundations have been already put in by Mr. Robert Carlyle at a cost of £164., a sum considerably over the contract, owing to the great extra depth it was necessary to go in order to obtain a solid bed. The contract for the superstructure, excluding the seating, has been let to Messrs. Cordingley & Stopford for 2,776l., and Messrs. Tate & Popplewell, of Mosley-street, are the architects.

Stourbridge.—St. Thomas's Church, Stourbridge, was opened on the 22nd ult., after re-decoration and repairs. The painting and decorating have been carried out by Mr. F. Allsop, under the direction of Mr. Ingledon, jun., architect. The total cost has been about 350l.

Miscellaneous.

Exhibition of Architecture in Brussels. What is described in a telegram to the *Times* as a National Exhibition of Architecture was opened in Brussels on Sunday last, at the Palais des Beaux Arts. The section which contains drawings dating back more than three centuries is stated to be especially remarkable. Some of the exhibits, as, for instance, the drawings by Rubens, are almost priceless. The modern section comprises plans and drawings of the most noteworthy buildings and monuments erected in Belgium since 1830. The Exhibition has been organised by the Belgian Central Society of Architecture.

Highway Boards v. Highway Surveyors. Mr. Job Hodson, of Edial, Lichfield, writes to a Staffordshire paper:—"A circular from the Clerk of the Peace for the county of Stafford has been issued to the various highway surveyors, informing them that a proposal will be made at a meeting of justices in Quarter Sessions assembled, at the Shire-hall, Stafford, on the 15th day of October next, to divide the county into highway districts. Now I would ask every ratepayer in the county, before listening to such a proposal, to compare the roads now under the management of Boards with those under the management of highway surveyors,—to look at the condition and cost of each, and decide which they consider the most advantageous method to adopt. You will find the Boards cost at least 1s. in the pound, whereas the parish surveyors give you equally as good a road for considerably less than 6d. If the roads were repaired by those who wear them out, then a Board would be all very well; it would ease the tenant-farmer from the unpleasant burden of filling the office of surveyor, a rigid audit, and repairing the roads into the bargain."

Clock, East Meon Church, Petersfield.—A turret clock, made by Mr. J. W. Benson, of Ludgate-hill, has been placed in the tower of this interesting church. The clock strikes on the fourth bell of 10 cwt., and is fitted with plunger-blocks, maintaining-power, and all the latest improvements. It is made of hard brass throughout, and has a Graham's dead-beat escapement, like most clocks by this firm. It may, therefore, be expected to keep excellent time. Although, in a direct line, the position of the clock is but 12 ft. below the dial, yet, on account of the peculiar construction of the bell-frames, Mr. Benson has to use no less than six pairs of bevel wheels, twelve universal joints, and 40 ft. of rod, to make the connexion. It is stated that no part of the fine old Norman work of the tower has suffered, as, in order to preserve it intact, the dials (three in number) were reduced in size to 3 ft. 6 in. diameter each.

Photographers' Memorial of Daguerre. A bust of Daguerre, subscribed for by photographers all over the world, was unveiled on the 26th ult. at Corneilles (Seine-et-Oise), where an inscription marks the house in which he was born in 1787. The ceremony was presided over by the municipal authorities. The statue of Daguerre, chiselled by the sculptor Capellard, has been erected in a little public place almost opposite the house where the artist was born. The grand-nephew of Niepce, by way of protest, has published the agreement between Niepce and Daguerre. This document establishes a partnership "for co-operating in perfecting the said discovery, invented by Niepce, and improved by Daguerre." What about the claims of Fox Talbot?

Autumn Exhibition of Pictures, Liverpool.—The private view in connection with the Autumn Exhibition of Pictures of the Liverpool Corporation took place on Saturday last, when a very large company assembled in the rooms of the Walker Art Gallery. There was considerable competition for some of the more popular pictures, and amongst those sold immediately were "Relics of the Brave" (488), by Mr. A. Hacker, 210l.; "The Story-Teller" (882), Mr. C. Robertson, 100l.; "The Bathers" (466), John Finnie, 70l.; "Motherless" (47), Arthur Stocks, 210l.; and "Daily Bread" (80), T. B. Kennington, 80l., the last two being bought by the Corporation.

Banner's Manhole Covers.—The difficulty found in removing stone flags over places which require periodical inspection, and which often causes them to be neglected, resulting in the drains becoming choked, has led to the production of several air-tight manhole covers easy of removal, and they are found very useful. Messrs. Banner & Co. offer one to the public in which the joint is made with a little scouring-sand, so that, as they claim, the joint is never set fast by rust.

"Bartolozzi Decoration."—This is the title given by Messrs. Morant, Boyd, & Blanford, of Bond-street, to effects gained by the application of impressions taken from some original stippled copper-plates, the work of a pupil of Bartolozzi, which they succeeded some time ago in purchasing. Various delicate tints are used, and the impressions can be arranged with comparative facility. The firm maintain the old traditions which have long belonged to the house of Morant & Co.

Falling-in of a New Bridge.—A telegram from Zurich says that the Swiss valley of Westthal has been the scene of a terrible disaster. A bridge crossing the Wess had just been built at Zell-Rybon, and the first vehicles,—wagons with bales of cotton, that being a cotton-mill district,—were on the 31st ult. being taken across the water by means of this new structure. The occasion was a grand one for the quiet locality, and the local magnates were present. Owing to some mismanagement, a very heavy weight of wagons was allowed to remain stationary for a minute or two in the very centre of the bridge, and the structure, unable to support this excessive stationary weight, gave way. The horses and wagons were precipitated into the rapidly-flowing river. Amongst others who were accompanying the wagons on this first passage over the bridge were the Mayor of the township of Zell, who was killed; a French sub-contractor named Goninelle, who received injuries which must prove fatal; and a number of workmen, many of whom lost their lives.

New Station at Brighton.—At the visit of the Society of Engineers to the Brighton Carriage Works, a few days since, the attention of the visitors was directed to the new station now building there for the London, Brighton, and South-Coast Railway, from the designs of Mr. H. E. Wallis, of 9, Bridge-street-chambers, Westminster, and also to the new system of patent glazing without putty adopted for the roof-light, about 100,000 ft., which is executed by the patentee, Mr. T. W. Helliwell, of Brighton. It is estimated that by the adoption of this system of glazing the railway company will save 500l. per annum in painting and repairs. The system is extensively used, amongst other places, at the Institute of Water-Colours in Piccadilly, and gives great satisfaction.

Proposed Successors to the Fisheries Exhibition.—It was decided last week by the General Committee of the Fisheries Exhibition to hand over the buildings to the Executive of those successive exhibitions to be held in 1884, 1885, and 1886. An exhibition of the silk industry is talked of for the first. The next will be devoted to music, and it is hoped that in the last year a general colonial exhibition may be held. Each of these will probably pay one-fourth the cost of the buildings, and thus, with such a large deduction from their expenditure, the executive of the present Exhibition ought to have a very large surplus. It was also decided to postpone *sine die* the closing of the Exhibition, originally fixed for the end of October.

Illegal Occupation of Uncertificated Houses.—At the West Bromwich Police-court, a few days ago, the Hamstead Building Company, Limited, of Perry Barr, were summoned by the West Bromwich Rural Sanitary Authority for causing fifty-six houses to be occupied without having obtained a certificate from the inspector of nuisances or medical officer that there was a sufficient supply of wholesome water. It was agreed that the summonses should be adjourned to afford the defendants an opportunity of providing a proper supply of water, which they intimated their willingness to do. More than 250 people are inhabiting the houses in question. The summonses were adjourned till the 20th of October.

Value of Building Land in Wiltshire.—Messrs. Waters & Rawlence have recently sold by auction, at the Arundell Arms Hotel, Tisbury, fourteen plots of freehold building land, forming portion of a pasture field known as Gaston. The competition for most of the lots, especially those facing the main street, was very keen, the five lots so situated, having frontages of 40 ft., and depths varying from 100 ft. to 140 ft., fetching respectively 145l., 155l., 160l., 155l., and 240l. The remaining nine lots, all having frontage to the new road of 90 ft. (excepting the triangular plot, lot 14, which has a larger frontage), and depths varying from 240 ft. to 300 ft., realised respectively, 160l., 195l., 155l., five plots 150l. each, and lot 14, 170l.

The Amsterdam Exhibition.—Mr. Joseph Hamblet, of the Piercy Blue Brick and Tile Works, West Bromwich, has been awarded a diploma of honour and gold medal at this Exhibition, now being held, for superior quality of terra-metallic pavings, blue and brindled bricks, copings, cornices, ridges, and other goods of the kind.

The New Bankruptcy Act.—This Act, with several other measures, received the royal assent and became law on the 25th ult. With the exception of section 170 the provisions of the new Act do not take effect until January 1, 1884. This section, however, about which there seems to have been some slight misunderstanding, came into force upon the passing of the measure. It provides that, after the passing of the Act, no composition or liquidation proceedings under the 126th and 126th sections of the Act of 1869 "shall be entered into or allowed without the sanction of the court or a registrar having a jurisdiction in the matter"; and the section further provides that "such sanction shall not be granted unless the composition or liquidation appears to the court or registrar to be reasonable and calculated to benefit the general body of the creditors." The object of this provision is obvious. It does not in any way preclude the presentation to the court of petitions for liquidation or composition between now and the 1st of January next, which some people seem to have supposed; but the section is directed simply to the prevention of those irregular and one-sided arrangements over which the court has had hitherto, practically, no control. Composition and liquidation proceedings are to be allowed to be entered into until the end of the present year, exactly as they have hitherto done, with the proviso that they must be approved by the court. The whole policy of the Act is directed at the suppression of the scandals resulting from compositions which have hitherto been entirely uncontrolled by the Court. After the 1st of January, 1884, they are to be abolished altogether, and the object of section 170 of the new measure is to prevent the rush which might ensue to get in under the present law.—*Law Times.*

Cleanliness of Sinks.—One of the most prolific causes of defilement and offensive odours in kitchen sinks and their outlets is the presence of decaying grease. This comes from the emptyings of kettles in which meat has been cooked, in the dish water, and in the soap. The grease lodges in every crevice and catches at every obstruction. A remedy may be found in the use of the common alkalis instead of soap, aqua ammonia in washing clothes, and borax in washing lawns and laces, and washing-soda in cleaning dishes. These alkalis prevent a solid soap from forming in the sink and its pipes, and neutralise all effects of decomposing fat.—*Scientific American.*

The Exhibition at Caen.—We are informed that Messrs. Lebonche & James, the proprietors of the well-known Caen stone quarries in Normandy (of which Mr. Emile Foucard, 16, Stoney-street, Borough, is the agent), have been awarded the highest award at the Regional Exhibition at Caen, consisting of a Diploma of Honour, for their immense blocks of stone, measuring 12 ft. long by 4 ft. wide, and weighing over 10½ tons.

TENDERS.

For the demolition and rebuilding of Nos. 2 and 4, Camden-passages, Islington, for the devices of the wall of the late Mr. J. H. Taylor. Mr. J. S. Hanson, architect, 27, Alfred-place West, South Kensington. Quantities by Mr. Henry Smith:—

R. Henderson.....	21,590 0 0
W. Dean.....	1,650 0 0
T. Andrew.....	1,496 0 0
W. J. Hack.....	1,496 0 0
E. Stafford.....	1,479 0 0
C. Deering & Son.....	1,455 0 0
J. Boulton.....	1,448 0 0
F. Taylor.....	1,352 0 0
J. Sharnan.....	1,350 0 0
Scharien & Williams.....	1,315 0 0
R. & E. Evans.....	1,298 0 0
R. G. Batley.....	1,287 0 0
Parish & Hawke.....	1,270 0 0
G. Parker.....	1,240 0 0
J. Hunt.....	1,239 0 0
F. Warr.....	1,229 0 0
W. Bullock.....	1,198 0 0

For roads, drains, &c., at Beech Hill Park, Hadley, for Mr. Charles Jack, Mr. Edwin T. Hall, 57, Moorgate-street, London, architect and surveyor to the estate:—
Marriott Bros. £26,438 0 0
Dunmore..... 6,080 0 0
Wilson..... 5,986 0 0
Hizay..... 5,890 0 0
Harris..... 5,320 0 0
Lloyd, Kilburn (accepted)..... 4,798 0 0

For decorations at "Cotsmandene," Gipsy Hill. Mr. Edwin T. Hall, architect:—
Fleming..... £345 0 0
Dobey..... 311 0 0
Poole, Norwood (accepted)..... 299 0 0

For house at Beech Hill Park, Hadley. Mr. Edwin T. Hall, architect:—
Marriott Bros. (accepted)..... £2,800 0 0

For the erection of new chapel and school, Cambridge-road, Kilburn, for the Methodist Free Church. Mr. Edward Speed, architect. Quantities by Messrs. Evans & Deacon:—
Chafon..... £3,800 0 0
Oldrey..... 3,094 0 0
Sorey..... 3,045 0 0
Crake..... 3,510 0 0
Thomas & Butland..... 3,450 0 0
Jervis Smith..... 3,280 0 0
Holloway..... 3,185 0 0
Allen & Sons..... 2,980 0 0

For the erection of a villa residence, Ealing, for Mr. Samuel Collier. Mr. Edward Speed, architect:—
Jervis Smith (accepted)..... £1,930 0 0

For proposed paragon-house at St. Paul's, Old Charlton, for the Rev. W. H. Pritchett, Mr. F. Chancellor, architect. Quantities supplied by Messrs. Currie & Sons:—
Patman & Fotheringham..... £2,584 0 0
Morter..... 2,424 0 0
Tammert..... 2,395 0 0
Jerrard..... 2,372 0 0

For building model dwellings at 219, High-street, Shadwell, for Mr. J. H. Aldred. Mr. A. E. King, architect. Quantities by Messrs. King & Saunders:—
Eldridge & Gee..... £2,390 0 0
Boye..... 2,230 0 0
Nightingale..... 2,077 0 0
Jackson & Todd..... 1,875 0 0
Thompson & Son..... 1,855 0 0
J. & H. Cooke..... 1,827 0 0
Watson..... 1,787 0 0

For Presbyterian Church and Hall, in Grove-crescent-road, Kingston-on-Thames. Messrs. Robbins & De Bonville Bros., architects, 2, Victoria Mansions, S.W. Quantities supplied:—
Oldridge & Sons (accepted)..... £3,085 0 0

For the construction of about 1,000 yards of sewers, with manholes, &c., in the village of Duffield, for the Belper Rural Sanitary Authority. Mr. R. Argile, engineer, Ripley and Derby. Quantities supplied:—
Hilton, Duffield..... £404 0 0
Walker, Wirksworth..... 390 0 0
Roberts, Oakenshaw..... 389 19 6
Biggs, Handsworth..... 353 0 0
Watefield, Wicksforth..... 348 19 0
Tomlinson, Derby..... 322 0 0
Coupe, Ripley..... 311 0 0
Deane, Sowerby Bridge..... 308 11 0
Wain, Ripley..... 295 8 3
Hingley, Duffield (accepted)..... 290 0 0

For completing seven houses in Grandson-road, Baseline Park, for Mr. B. Fortescue. Mr. N. Kempthorne, architect, Acton:—
John Bradford (accepted)..... £390 0 0

For the erection of an entrance lodge, Branksome Wood-road, Bournemouth, for Mr. Oakes. Messrs. Kemp. Welch & Pinder, architects:—
J. R. Mansell (accepted)..... £530 0 0

For new front to 99, King's-road, Brighton. Mr. Arthur Loder, architect, Brighton:—
H. Parsons, Brighton..... £118 0 0
G. R. Lockyer, Brighton..... 108 0 0
J. Barnes, Brighton (accepted)..... 104 0 0

For the erection of lodges and entrance-gates at the Chingford Mount Cemetery, Chingford, for the Abney Park Cemetery Company. Messrs. England & Brown, architects:—

	South Lodge and Gates.	North Lodge.
Goodall.....	£2,158 0 0	£290 0 0
Helson.....	1,890 0 0	460 0 0
Coldwells.....	1,383 11 0	564 0 0
Fuller.....	1,610 0 0	318 0 0
Good Bros.....	1,470 0 0	310 0 0
Heed.....	1,398 0 0	318 0 0
Wells.....	1,240 0 0	338 0 0
* Accepted.		

For additions and alterations to Bromsleigh, Seal Chart, near Sevenoaks. Mr. Robert Willey, architect, No. 68, Ludgate-hill:—
Walls, Maidstone..... £1,124 0 0
Constable, Faversham..... 1,073 0 0
Naylor & Son, Rochester..... 978 8 0
Semark, Sevenoaks..... 962 10 0

For alterations and repairs to Chapel, Collier's-rents Long-lane, Brompton, for the London Congregational Church Extension Union. Mr. W. D. Church, architect, 12, South-place, Finsbury. No quantities:—
Woodward..... £285 0 0
Tison..... 495 0 0
Steel Bros. (accepted)..... 493 0 0

For additions to "Oaklands," Honor Oak. Mr. W. H. Jervis, architect:—
M. Redman, Brockley (accepted).

For the erection of shops, &c., Albany-road, Camberwell. Mr. R. Cruwys, architect, Bank-chambers, 451, Brixton-road:—
Downs..... £2,377 0 0
Rice..... 2,717 0 0
Candler..... 2,600 0 0
Holloway..... 2,387 0 0
Tyerman..... 2,310 0 0
Taylor..... 2,270 0 0
Burch & Moor..... 1,871 0 0
Johnson..... 1,850 0 0

For alterations and additions to a house in Acre-lane, Brixton. Mr. R. Cruwys, architect:—
Taylor..... £1,175 0 0
Candler..... 1,155 0 0
Rice..... 1,069 0 0

For the erection of stables, Hartfield-road, Wimbledon. Mr. R. Cruwys, architect:—
Robinson..... £450 0 0
Mundy..... 425 0 0
Johnson..... 380 0 0
St. John..... 298 0 0

For re-building No. 7, Old Burlington-street, for Mr. Edward Green. Mr. J. T. Wimpey, architect:—
Lang & Son..... £2,967 0 0
Brass..... 2,978 0 0
Boyes..... 2,978 0 0
Halford & Son..... 2,950 0 0
Bywaters..... 2,850 0 0
H. & E. Lees..... 2,829 0 0
Fish, Prestige, & Co..... 2,793 0 0
Scrivenor..... 2,678 0 0

For rebuilding Nos. 24 and 25, King-street, Westminster, for Mr. G. Kelly. Mr. F. W. Watts, architect:—
Stimpson & Co..... £2,768 0 0
Lovatt..... 2,700 0 0
Scrivenor & Co..... 2,490 0 0
Fish, Prestige, & Co..... 2,488 0 0
Boyes..... 2,480 0 0

For erecting steam laundry and cottage, Beaumont College, Old Windsor. Messrs. Byrne & Wilmet, architects, 303, Strand, and Windsor:—
Langmead & Way..... £2,545 0 0
W. & H. Salmon..... 2,480 0 0
Patman & Fotheringham..... 2,388 0 0
Lang..... 2,197 0 0
Barnes..... 1,489 0 0

For roofs, &c., for covering-in bullock yards at Coppin's Hall, Great Clacton, for the Governors of Christ's Hospital:—
W. & H. Salmon (accepted).

For alterations at 51, Weymouth-street, Portland-place, for Messrs. Craddock & Druce. Mr. George Treacher, architect:—
W. & H. Salmon (accepted).

For rebuilding the Duchess of York public-house, Battersea Park-road, for Messrs. Watney & Co. Mr. C. W. Bovis, architect. Quantities by Mr. J. N. Hawkins:—

Bywaters.....	£4,420 0 0
Patman & Fotheringham.....	4,373 0 0
Clark & Bracey.....	3,973 0 0
Adamson & Son.....	3,760 0 0
Pickering.....	3,758 0 0
Hall, Boddall, & Co.....	3,739 0 0
Anley.....	3,670 0 0

For alterations, &c., to the Duchess of York public-house, 170, Kingsland-road, for Mr. G. Whitehead. Messrs. Bird & Walters, architect:—
Wood..... £255 0 0
Williams & Son..... 477 0 0
Jackson & Todd..... 458 0 0
Walker..... 440 0 0
Anley..... 425 0 0

For bar fittings and sundry other works at the Crown public-house, Essex-street, Strand, for Messrs. Whitbread & Co. Mr. R. E. Worsley, architect:—

Cox.....	£395 0 0
Beale.....	375 0 0
Cook.....	371 0 0
Anley.....	350 0 0

For rebuilding warehouse, 270, Pentonville-road, for Mr. Houfe. Mr. North, architect:—
Anley..... £1,014 0 0

For the completion of the premises, No. 175 & 176, New Bond-street, for the Executors of Mr. Peter Robinson. Messrs. Allen & Mackland, architects, 14, Argyl-street:—

McLachlan & Sons.....	£1,197 0 0
Saunders.....	962 0 0
Colley.....	888 0 0
Colwell.....	850 0 0
Clarke & Mannoch.....	810 0 0
Sharpe.....	667 0 0

For decorations, &c., at 13, Cleveland-gardens, Hyde Park. Messrs. Glasier & Sons, surveyors, 41, Charing-cross:—
Kinnimont & Sons..... £215 0 0
Havard Bros..... 215 0 0
Clarke & Mannoch (accepted)..... 177 0 0

For alterations and decorations to Devonshire-place House, Marylebone-road, for Mr. J. Fyke. Mr. J. T. Wimpey, 25, Sackville-street, architect:—
S. Bird..... £1,711 0 0
Bywaters..... 1,533 0 0
Scrivenor & Co..... 1,320 0 0
Fish & Co..... 1,254 0 0
Hattield..... 1,245 0 0
Newall & Griffiths..... 1,203 5 0
Clarke & Mannoch (accepted)..... 1,169 0 0

For taking down and rebuilding No. 137, Oxford-street. Mr. Richard Creed, architect, 45, Great Marlborough-street:—
Mortor..... £1,883 0 0
Bangs & Co..... 1,880 0 0
Wall Bros..... 1,819 0 0
Patman & Fotheringham..... 1,773 0 0
Nightingale..... 1,669 0 0
Clark & Bracey..... 1,620 0 0
Langmead & Way..... 1,595 0 0
Lawrence & Sons..... 1,579 0 0

For the erection of a pair of cottages in High-street, Leyton, for Mr. S. C. Bosanquet, Mr. Richard Creed, architect:—
Arber..... £503 0 0
Sayer (accepted)..... 590 0 0

For alterations and additions to No. 154, Connaught-square, Hyde Park, for Mr. Edward Bamister. Mr. T. S. Archer, architect:—
Nuthall..... £215 0 0
White..... 191 10 0
Haines..... 168 5 0

For the erection of a semi-detached house at Cowley St. John's, Oxford, for Mr. H. Blagrove. Mr. C. B. Young, architect. Quantities by Messrs. Beesley & Williams, 5, Westminster-chambers, Victoria-street:—
Capel (accepted).

Chief Office : 360, EUSTON ROAD, LONDON.

The Builder.

Vol. XLV. No. 2319.

SATURDAY, SEPTEMBER 15, 1883.

ILLUSTRATIONS.

Churches visited from Yeovil by the Architectural Association: Yeovil, Bradford Abbas, South Petherton, Trent, Corne Abbas, Langport...	362
Design submitted for Town Hall, Jersey—Mr. J. M. Bignell, Architect	368
Board Room, Epsom Union.—Mr. Herbert D. Appleton, Architect	358
Designs for Brass-work.—By G. C. Haid	357
Life-Boat Houses: Tralee Bay, Ireland; Clacton-on-Sea, Essex.—Mr. Charles H. Cooke, F.S.A., Architect	359

CONTENTS.

Protection from Lightning.....	341	Progress of Railway and Public Works Construction.....	363	Building Land at Bow, and Overhead Telephone Wires: A	368
The Prehistoric Architecture of Scotland.....	342	Notes from Birmingham.....	364	Question of Companies' Rights.....	368
Architectural Style and Criticism in the States.....	344	Progress at Southbourne.....	365	Manchester Cathedral Church.....	368
Professional Portraits: An Architectural Bayard.....	345	Railway Movements of 1882.....	365	Le Corbusier's Castle.....	368
From Vienna.....	346	Penthouse, Parian, and Carrara Marble.....	365	The Paddington Vestry and Sewer Contradictions.....	369
A Day in Danfearnville.....	347	New System of Drying Walls, Damp-ties, &c.....	365	The New Trades House Buildings, Glasgow.....	369
The Collections at the Tower of London.....	348	The Architectural Exhibition at Brussels.....	365	The Iron Curtain at the Royal Lyceum Theatre, Edinburgh.....	369
Fox Court, Gray's Inn-road.....	348	The Trade Union Congress at Nottingham.....	366	Chapel Facades.....	369
The Roman Villa, Morton, near Brading, Isle of Wight.....	349	Obituary.....	367	Provincial News.....	369
Electric Tramcar Trial in Paris.....	349	"High Art" in Sugar.....	367	Church Building News.....	369
At Yeovil and Round About.....	349	Building Talent Record.....	367	School Board Schools.....	370
Design for Town-hall, Jersey.....	350	Competitions.....	367	Leyton Local Board: Branch of the Building By-laws.....	370
Board-Room, Epsom Union.....	353	Westminster Hall and the Law Courts.....	368	Books: Pullan's Studies in Architectural Styles.....	370
Life-boat Houses: Royal National Lifeboat Institution.....	353	On Special Preparations to render Wood and other Theatre C.....	368	Variations.....	370
Brass Work.....	353	Structural Materials Uninflamable.....	368	Miscellaneous.....	370

Protection from Lightning.



HE question of the protection of buildings from lightning, which has attracted the notice of four correspondents in our numbers for Aug. 25 and Sep. 1 (pp. 247, 269, and 302, *ante*), is one of so much importance that we may do some service to the public by bringing forward, not so much by way of discovery as by way of memorandum, some of the more important points on which experts are agreed.

It may be well, however, to premise, that notwithstanding the great advance made in the past half-century in our knowledge of electric phenomena,—an advance due, in the first instance, to the genius of the immortal Faraday,—that knowledge is phenomenal only. What electricity is we know not, and it is possible, if not probable, that we never shall know, however much we may learn of its origin and its effects. We do not forget, in so saying, the doctrine of the co-relation of the physical forces, or the expression, so familiar in the mouths of men of science of late years, that "Heat is a mode of motion." Without pausing to inquire how much has to be added to that phrase in order to make it really intelligible (as, for instance, motion of, or in, what?), we may point out that there is so essential and fundamental a difference between the phenomena of heat and those of electricity, intimately as they are connected, that the mere convertibility of result is not enough to justify us in assuming an identity of nature. It is true that a given expenditure of one sort of power,—say, for example, that of human force,—will produce certain equivalents of heat, of work done, or of electric current. But in those forms of dynamo-machines in which an electric current is produced by the motion of a machine, it must not be forgotten that there is an element on which to work, in itself but imperfectly understood, and in the absence of which we have no reason for expecting that motion could produce, or be converted into, electricity. We refer to the magnetism of the earth; which is the true source of the electric current in all the dynamo-machines that are not driven either by batteries or by permanent magnets, and which is caught and condensed by the rapidly-revolving coils of the dynamo-motor. All that we positively know is, that by the exertion of a definite force, under

given circumstances, a certain amount of magneto electricity is gathered from the terrestrial store, and yoked to the service of man. But this is a totally different thing from saying that electricity is converted heat or converted motion. The dynamic values of two elements may be equal, without its being a necessary consequence that the elements are identical, or absolutely and mutually convertible.

If we compare heat with electricity, we are at once confronted with the two characteristic phenomena of the latter,—polarity and induction. Heat affords no parallel to either of these modes of action. And the relation of magnetism to electricity, which we are better able to measure than to understand, is another peculiarity of electric, as distinguished from thermal or physical phenomena. We insist on these points, at the risk of being thought somewhat too technical, from the belief that it is of the first importance in the interest of safety from lightning to confine our researches to what is to some extent known,—that is, to the sequence of phenomena. If we try to go further, and assume a theory to account for those phenomena, we shall go wrong if our theory happen to be wrong. And we apprehend that it is solely on this ground, viz., that of assuming an unproved theory, and arguing from it, instead of dealing with known facts alone, that some men of great scientific knowledge have been led to take up positions, with reference to this particular subject, that are directly in the teeth of all our best experience.

In the year 1752, on the 10th of May at Marly, and on the 4th of July at Philadelphia, the electric fluid was drawn from the clouds; in the first instance by the watchman of M. D'Alibard, and in the second by Benjamin Franklin. In each case it betrayed its presence and its nature by the splendour of the electric spark. The identification thus obtained, a discovery of the same nature as the identification by Newton of terrestrial and celestial gravitation, is the basis of all our knowledge of celestial electricity; for it has enabled us to study the leading phenomena at our convenience, as we can produce them at will.

The first fruits of this study was the classification of all substances with regard to their electric conductivity, or as conductors and non-conductors or insulators. The former have been classified by Sir W. S. Harris (to whom we owe the introduction of lightning-conductors into Her Majesty's navy) as most perfect, less perfect, and imperfect. The most perfect conductors are the metals (of which copper is the best); charcoal, plumbago, flame, and smoke. The less perfect are living animals and living vegetables. The imperfect are wood, snow and ice, aqueous vapours, common brick and stone, dry chalk and lime, marble and porcelain, and paper. Between metallic ores and living animals ranks, as a conductor, pure water. Ice at 0°, dried vegetable and animal substances,

bituminous matter, and silk, are the less perfect insulators; and dry gases, pure steam of high elasticity, glass and all vitrefactions, and all resins and resinous bodies, are the most perfect insulators. Arriving at this classification may be taken as the first step in the inquiry into the safety of buildings from the stroke of lightning.

The cause of the phenomenon called a thunder-storm, as far as we at present understand it, is the accumulation of electricity in a certain portion of the earth's surface, and the corresponding accumulation of electricity of the opposite character in the clouds above. During fair weather the electricity of the earth is usually of what is called the negative polarity, and it is thus inferred that in thunder-storms the electricity of the clouds is positive. But it is not clear that this is always the case. Whatever be the cause that originates and increases the electric tension of these two opposed conducting surfaces, the earth and the clouds, in a thunder-storm the tension increases until it becomes sufficient to cause a discharge, or explosion, in which the fluid, as it is called, leaps from sky to earth, or from earth to sky, through the resisting and badly-conducting atmosphere, in the form of a flash of lightning. The striking distance of lightning varies, according to Dr. Mann, from 650 ft. to 6,500 ft., and flashes of from 3·7 to 9·6 miles in length, are stated by M. Arago to have been observed. Lightning, in any case, follows the path of least resistance, and thus will always take a circuitous path through a good conductor in preference to a shorter path through a bad conductor. The discovery of this law may be regarded as the second step towards protection from the danger of the thunder-storm. The principle is, in its essence, one with which the mechanic is familiar. All that is necessary specially to bear in mind with reference to the electric current is, that it will certainly follow the line of least electric resistance.

The third point, or law, to consider is one that was at one time very hotly debated, although it may now be regarded as having passed out of the field of controversy or of doubt. It is to the effect that points prevent the accumulation of electric charge. The truth of this law may be easily tested by the common electrical machine. On the approach of a metal ball, or of the bent knuckle, to the conductor of the machine, a spark leaps to meet it for a distance proportionate to the tension of the fluid in the conductor. But if a needle-point be made to approach, instead of a ball or knob, the withdrawal of electricity is more gentle and continuous, and a spark is rarely obtained, except at the moment of making or breaking actual contact.

It is consistent with what we know of the laws of induction to suppose that an invisible electric point, forming the counterpart of the conducting metallic point, forms on the surface

of the inductive mass of electricity, opposite to the conducting surface; and that as the tension increases, a capillary current establishes itself between these two minute points or poles. However that may be, the gradual escape of electricity from points is a known fact. Such cases are spoken of by some writers as instances of electric "leaks," or "taps"; an analogy taken from hydraulics, but which, if not run to death, may be of use in enabling the student to grasp the idea of potential, or electric tension.

The electric current is of two kinds. One is the ordinary current which is established by means of a battery, or other source of electricity, and which is known as the primary, or sometimes as the chemical, current. The phenomena of electric light are supposed to be due to this current, as sparks appear whenever it is first formed or interrupted. And when the conductor through which it passes is reduced in electric conductivity,—as by the insertion of a portion of very fine iron or platinum wire in a circuit formed by a stout copper wire,—so much heat is generated as to make the smaller wire red hot, or even to fuse it, and thus destroy the circuit. This fact is taken advantage of by the mining electrician for the firing of mines or torpedoes by the electric current.

Around this primary current, however, is produced an electric disturbance known as the secondary current, which may be caught in and carried by a wire wound round the axis of the primary current. With this secondary current are connected the physical phenomena known as shocks; and in general it may be said that dynamic or mechanical force characterises the secondary, as chemical force, or the production of heat, characterises the primary, current.

Through an uninterrupted conductor, such as an insulated copper wire, a current of electricity may be made to flow with great regularity. If the conductor be reduced in size, or increased in its resisting power, heat, as before said, becomes developed. And if the conductor be interrupted, the current will, if the tension is adequate, leap over a certain space, becoming visible in such leaps as a spark. It is the leap of the current which, in the thunderstorm, is visible as lightning. And as the phenomena which are at times displayed by the leaping current are of a physical nature, it may be suggested that, on the occasion of interruption, the primary current avails itself of the service of the secondary current to aid it in its leap, so that thus the phenomena appropriate to the latter are manifestly, and often destructively, displayed.

We have now before us the primary conditions and the general laws on which all measures for the protection of life and property from lightning, or celestial electricity, must be based. This part of the subject may be divided into two branches. With the first of these, namely, that which may attempt to diminish the energy of a thunderstorm by drawing its electricity to the earth, or by projecting towards it a jet of terrestrial electricity, we are not now concerned. We think that the second branch, viz., that which concerns the protection of buildings, is not only enough for us at present to study, but that the more we confine our research to that one object of definite protection, the more are we sure of success. We need only say, in passing, that, with reference to any wider range, the original experiment of Franklin still indicates the path to pursue. A powerful kite, if manageable, or a captive balloon, might carry a conducting wire which should gradually disperse the electricity of a thundercloud. But any such attempt should be carefully dissociated from any buildings.

In the case of a thunderstorm, then, where the "potential," or tension, of the opposed terrestrial and celestial electricity has reached a certain degree, the current makes those leaps through the badly-conducting air which are visible to us as lightning flashes. And if there be a point on the earth which, taking into consideration both distance and conductivity, or conducting power, gives the shortest path for the fluid, to or from that point will it leap. Thus the Cathedral of Siena, in Tuscany, placed on the highest of the three hills on which that ancient city has been built, attracted every passing thunderstorm, and was repeatedly struck by lightning, between the thirteenth century, when it was erected by Pisanò, and its protection by a lightning-conductor, surreptitiously erected by the Abbé Toaldo, and proved to be efficient in a terrific storm on the 18th of April, 1777. Again, the church at

Rosenberg, in the Province of Carinthia, although not standing on a very elevated position, was repeatedly struck by lightning, and much damaged, during the seventeenth and eighteenth centuries. It attracted a flash as often, it is said, as five or six times a year; so that it had to be taken down, owing to its ruinous condition, in 1778. St. Saviour's Church, Southwark, has been repeatedly struck within our own memory. St. Paul's Cathedral was struck on March, 1772; St. Bride's, Fleet-street, in June, 1764; and Mr. Anderson, in his work on "Lightning Conductors," gives particulars of 305 churches and 23 powder magazines that are known to have been struck by lightning within the last 220 years. (Many of these instances are cited from the *Builder*.)

In these cases the law of the least resistance has been variously illustrated; buildings containing much metal attracting the flash in preference to those built of less conducting materials, and height being one, although only one, of the elements of attractive force.

In coming to that practical counsel as to the steps proper to be taken to ensure the safety of buildings, the request for which, by our correspondent, Mr. Lindsay, has led us to make the foregoing remarks, we wish altogether to lay aside those considerations as to the selection of site and of method of building to which so much importance has been attached by some writers on the subject. Not that we are disposed, it may be, to differ from them in theory; but because the theory of electrical selection of site and method of building is one which is not likely to be reduced to practice. For one person who would avoid a picturesque site from the fear that it might prove attractive to lightning, nine, or more likely ninety-nine, persons would select the spot for its other advantages. And for one person whose design for a house would be dominated by electric considerations, there would be an incalculably larger number who would regard economy, fashion, convenience, custom, or other motives, as determining the style of architecture that they would adopt. Our present aim, therefore, is to take houses as they exist, and as they are likely to be built; and to point out what measures are proper for protecting them from injury by lightning.

A house built entirely of metal, if in a lofty or exposed site, would be likely to attract electric discharges that might not fall on a building in which metal was absent; but it would, according to the common consent of electricians, be uninjured by such strokes. This is on the assumption not only that the metal is continuous, but that it is connected with the earth in such a manner as to allow of the free passage of the electric charge into that immense magnetic reservoir. And this is only insured by making the metal continuous until it reaches water, metallic ore *in situ*, or permanently damp earth.

For an ordinary house, then, it is necessary to ensure the same conditions that would be necessary in the case of metal houses. Nor is it safe, under almost any conditions, to treat a building as if it were non-metallic. Metal enters, more or less, into almost all buildings, and it must be remembered that it is rather the extent of metallic surface, as, for instance, in the backs of looking-glasses, gilt mouldings, water-pipes, and the like, than the actual bulk of metal, that forms the conducting surface likely to attract a discharge of opposed or inductive electricity. M. Arago, in his meteorological essays, mentions the case of a palace in Naples which was struck by lightning on March 15, 1773. A reception was going on, and 500 persons were present in a suite of rooms. No one was injured, but it was found that the gilding of the cornices, mouldings, rods, sofas, chairs, and door-posts, was affected, and some of the bell-wires were partially fused. It is thus necessary at once to dismiss the idea of providing protection for houses on the hypothesis that they will be built without metal. Indeed, were such the case, it is evident that living human beings, or other animals, in a house erected of "less perfect conducting materials," might be exposed to fatal injury in case of a flash of lightning descending on the house. Again, the conductivity of smoke, which is placed by Sir W. S. Harris as next above that of living animals, might prove a serious cause of danger in a house built of non-conducting materials. A flash of lightning might readily follow the flue of a chimney, and leap from the open fire-place on the persons who might be near it.

The first point, therefore, to insure safety in a dwelling-house is to complete the metallic connexion of all metallic surfaces of any extent on or within the building, the necessary connexion being not only with each other, but with electrically-absorbent earth. At the same time it is desirable to protect the salient points of the house, such as pinnacles, gable-ridges, and, above all, lofty chimneys, with metallic points, somewhat elevated above the rest of the building, and in perfect metallic connexion with the earth.

There has been some difference of opinion among electricians as to the arrangement of these points, rods, or lightning-conductors. Franklin only required the points of the rods to rise a little above the chimneys. Cavendish, Priestley, and other electricians recommend a height of 10 ft. above the house. In France a height of 30 ft. has been adopted, under the idea that a rod affords protection to a conical space, of which the axis is determined by the height, and the radius of the base is 1/75 times the height above the ridge or most prominent part of the building. In all these cases, however, the idea of attracting the fluid, and thus dispersing the storm, appears to be more dominant than that of simply preventing damage in the event of a flash of lightning striking the house. Adopting what we regard to be the true rule, that of attending to the house, rather than to the storm, small projections will be ample, and the only question will be, in the case of a large house, how many points will be proper. If there are lofty towers, chimneys, or pinnacles, each will demand its own rod, or point, to be metallically connected with the system of electric discharge. In the case of a building of uniform height, the recommendation of the War Office Instructions (1875-79) is, that there should be a pointed rod 5 ft. high at intervals of 45 ft. along its length. A metallic ridge roll might easily be provided with more numerous, though less prominent, points, which would at the same time be ornamental and protective.

It will be observed that in the foregoing recommendation we have reversed the ordinary routine, and pointed out first the need of attention to earth connexion, and secondly that of external points. And this we have done of set purpose. As far as investigation has been pursued, every case in which damage has been caused to a building provided with a lightning-conductor has arisen from a failure in metallic connexion with proper "earth." In any case this connexion is of primary and indispensable importance. It demands, moreover, the care of the expert. As to the height of a conductor, on the other hand, above the building, the cases are comparatively rare where it can be supposed to exert much influence on a passing thunder-cloud. In cases where the clouds are 1,000 ft. and upwards distant from the earth the projection of a rod for 2 ft. or 3 ft. more or less towards them may be taken to be of inappreciable effect. If, as is sometimes the case, the clouds approach very close, every foot will tell; but we think that the main importance of the projecting rod is due to its effect as a silent discharger of terrestrial electricity, lowering the potential of the metallic conducting mass within the house, and thus, in fact, tending to avert rather than to attract the celestial electricity; although in the case of high potential, or tension, in the latter, the course of the least which is to establish the equilibrium will be determined by the point.

We may mention that there is a partial difference of opinion among electricians as to the propriety of connecting a metal lightning-rod with the building which it is designed to protect. Some, though the minority of the authorities on the subject, recommend the insulation of the rod. It is partly with a view of harmonising these two opinions that we have approached the subject, so to speak, from the root. The insulated metal rod is rather an attractor of flash, or a means of diminishing aerial electricity, than a house protector proper. The superfluities of metal on or in a house is an electrical fact with which it is unsafe to tamper. In a storm, such a surface is sure to become charged with a high tension of terrestrial electricity; and if no means be taken to draw off this charge by points, the danger of explosion is present. It is not certain that this danger would be dissipated by the presence of an external lightning-rod isolated from the house. The question of the capacity of the rod as compared with the potential accumulated during the storm may arise, and unless

the "earth" of the rod were of the very best order, metal, or even living beings, in a house might afford a tempting route for explosive action. Bearing in mind, then, as it is necessary to do, the manner in which all conductors in connection with the earth become charged in a thunderstorm, we think that there can be no doubt of the propriety of metallic connexions throughout. And of one thing there can be no shadow of a doubt, and that is that for every exposed, and every important building, the inspection and advice of an expert is matter of primary necessity.

THE PREHISTORIC ARCHITECTURE OF SCOTLAND.

Two important works have just recently issued from the press in Scotland, which it is well that the archaeologist should study with more than a passing glance. To Dr. Joseph Anderson, whose labours in the fertile fields of Scottish antiquities are so well known to all, we owe much for having produced a handbook upon the Iron Age of Pagan Scotland.* The author promises to put his investigations of the remains of the Bronze and Stone Ages before us hereafter, and we shall look forward to their publication with interest. The opening chapter of the work, devoted to investigations into the various forms of Christian and pagan burial, the survival of pagan customs in Christian burial, and the peculiarities of the Norse burials of the heathen Viking time, is of great interest to those who study the manners and customs of the oldest races of this island, and the relics by which we may predicate them to-day. In the same way, the lecture upon Northern burials and hoards, and the partly Celtic, partly Scandinavian art of certain brooches and other ornaments found in several instances, from which the author argues that they are the product of a mixed race of people, and manufactured in the area in which they are found, shows very clearly at how early and remote a period in the history of our land the fusion of various races, religions, and modes of progress was actively going forward. Of the Celtic art of the pagan period Dr. Anderson has much to say, and his remarks carry with them a strong conviction into the minds of his readers. Of the relics of this class, none are more attractive than the bronze mirrors, of which the author gives several illustrations. Those found at Mount Batten, Plymouth, and Birdlip, near Gloucester, are very typical of their class. They all differ in form and constituent parts of their metal from Roman mirrors, which they resemble in use alone, for in certain characteristics of their ornament they depart still more widely from the Roman style.

Passing over a great many points of interest, we arrive at the lecture devoted to the architecture of the "Brochs," or prehistoric towers, the product, we are told, of a school of architecture, Celtic in its character, and absolutely peculiar to the Scottish area. The "broch" is found at Mousa, off the east coast of the mainland of Shetland; in the valley of Glenbeg, on the west of Invernesshire; Loch Duich, a few miles from Glenelg, in the same county; Burrane in Yell, Shetland; Cole's Castle, and Dun Dornadilla in Strathmore, Sutherlandshire; Cockburn Law, Berwickshire; Torwood, Stirlingshire; Coldoch, Perthshire; and many other sites in Scotland, more than three hundred in the five northern counties significantly attesting that in these remarkable buildings we have the remains of a period of architectural activity which has no parallel in the early history of our country. The principal area of the type lies within the region to the north of the Caledonian valley; within that area they are known to exist abundantly, beyond it, sparsely. It is a type possessing features so distinct and peculiar, so numerous and well marked, and so pronounced in their absolute individuality, that if it exists anywhere it is capable of being recognised immediately. Of the first, and perhaps finest, of these Pagan fortresses, that of Mousa, Dr. Anderson gives a very elaborate notice. From it we gather that the material of which the circular tower is built is the fissile flag of the island, the stones flat, varying from 2 ft. in thickness, and somewhat diminishing in size towards the summit of the tower. They show no tool-marks, and are not laid in courses,

but compactly fitted together like the ancient walls found in classical countries in the South of Europe. The outline of the wall bends inward with a curve like that used in our modern lighthouses, and its appearance is suggestive of great solidity and strength, which is increased by the fact that there are no external openings except the doorway on a level with the ground, 5 ft. 3 in. high and 2 ft. 11 in. wide, with flat lintel, giving entrance by a tunnel-like passage, which widens, towards the interior, to a circular and well-like court, open to the air above, but completely surrounded by the wall 15 ft. 6 in. in thickness, and rising to the height of 45 ft. From the inner circumference of the wall there open various doorways leading to the three oval chambers constructed in the thickness of the wall, and nearly on a level with the ground. Their doorways are a few inches over 3 ft. in height, and about 2 ft., or a little more, in width. They are roofed or closed in by a peculiar method of bringing the walls inward by projecting each stone slightly beyond the face of the stone below it, and when by these means the opposite walls have approached sufficiently near to each other, a row of single stones is laid across the space between wall and wall, and thus forms a ceiling. This manner of causing walls to converge inwards to obtain support for a roof of single stones has been observed in the beehive houses of the early Christian monasteries, and in the inverted boat-shaped roofs of churches, built of uncemented stones upon a more or less true rectangular ground-plan. It is the style of roof common, and almost necessarily so, to all dry-built edifices that are furnished with a covering, whether they be of Pagan or of Christian eras, because, as the author points out, it is the style that is best suited to the material and to the exigencies of the architecture. Here the builder had no stones long enough to span chambers of from 5 ft. 6 in. to 6 ft. 10 in. wide, and, even if he had, he must have known that they would have been too weak to bear the superincumbent weight of a massive wall rising 40 ft. in height above them. These chambers are lighted and ventilated by window openings rising one over another above the doorway, a situation, no doubt, ingeniously selected not only as admirably serving the purposes of admitting air and light, but as distributing and minimising the weight of the directly downward thrust upon the flat lintels. Each chamber is furnished with small recesses, like the ambury of a Mediaeval church, but the fireplace or chimney is absent. They are, they are hardly more primitive in these respects than many apartments in the grander castles of the nobles of the feudal ages. Besides these chambers there is a door, nearly opposite the entrance portal, leading to a stair constructed, like the chambers, in the thickness of the wall, and, at the foot of the stair, an oval chamber, from the foot of which the stair rises in a steep slope, following the curve of the wall to the top. The steps are single flat stones, undressed, and having a rise and tread of about 5 in. in each case. The upper part of this tower, which is solid to the height of about 11 ft. above the ground, with the exception of the chambers already described, has the wall carried up with an interstitial space in its heart, so as to form a series of six galleries, placed one immediately above another and crossed successively, from the lowest to the highest, by the rise of the stair which gives access to them. Entrance and exit to these galleries, which are about 5 ft. 6 in. high and 3 ft. 2 in. wide or less, can only be gained by stepping across the space intervening between the end of the gallery floor and the stair step. Each of the three lower galleries is lighted by vertical ranges of windows looking into the interior court, placed close to each other, with merely a flat stone between each opening, and diminishing in size from 2 ft. 9 in. long by 1 ft. high, as they rise towards the top of the building.

The author here correctly remarks that of the peculiar architectural features of this building, each, taken by itself, is specially remarkable, and the presence in the one building of such a group of features that are wholly unfamiliar to us invests it with character distinctly peculiar. Obviously it is incapable, for all that the construction and arrangements are those of a fortress or place of strength, of association by way of relationship with any variety of "castle" known in historic times. But a wider survey of the remains of ancient strongholds of the people who have occupied

the land in times beyond the reach of historical record shows that it has relationship so close as to amount to almost actual identity with many similar structures in different parts of Scotland. At Glenbeg the remains of the "broch," as indicated by a drawing made by Mr. J. Romilly Allen, to whom the author admits his indebtedness for assistance in this respect, show a thickness of wall amounting to 11 ft., a single doorway of the width of 3 ft. 5 in. at the head, a widening passage, galleries lighted by vertical ranges of windows looking into the courtyard, and a total recorded height very little inferior to that of Mousa Broch, which it so closely resembles. Not far from this ruined stronghold is another presenting similar characteristics. That on Cockburn Law, on a natural platform projecting from the shoulder of the hill over the valley of the Whitadder Water, about 250 ft. above the bed of the stream, is another very typical instance of this highly-developed class of prehistoric architecture in Scotland. This "broch" is circular, with a wall 17 ft. thick, carrying two rudely-vaulted chambers, 7 ft. wide by 33 ft., and 23 ft. long respectively, and having a sole outer doorway to an entrance-passage passing straight through the wall and flanked by a guard-chamber constructed in the thickness of the wall on each side. The massive masonry forms the subject of an impressive illustration in the book before us; but the "broch" is also remarkable for its great size, being three times the width of Mousa, and twice that of the Glenbeg "brochs." Other structures of similar and corresponding details might be mentioned, but we have said enough to draw the attention of the student of ancient and prehistoric architecture to this interesting series of lectures on Pagan Scotland and the vestiges which it has left behind for us to examine and be instructed by to-day. As for the various relics, of which a goodly number were found on turning over the soil of these "brochs," it is difficult to associate them exclusively with the earliest occupiers; but the general character of the relics obtained by systematic excavation is not that of a primitive group, but of a group which is the product of a comparatively advanced stage of culture, civilisation, and social organisation. There is, according to Dr. Anderson, less ground for ascribing a low state of culture to those who constructed and occupied these massive towers than there is for ascribing such a condition to the builders of the beehive huts and dry-built churches of early Christian times. These occupiers of gigantic laboriously-constructed strongholds, specially devised with the evident intention of providing security for the tillers, and storing the produce of their toil, cultivated grain, kept flocks and herds, hunted and fished, practised arts, industries and technical occupations involving social and commercial relations with distant sources of the raw material. They probably manufactured the weapons and tools they used, swords, spears, knives, axes, chisels, of iron, and pincers, rings, bracelets, pins, and other similar objects of bronze or brass; they utilised the bones and horns of animals in the fabrication of domestic articles such as combs, buttons, and so forth; and they made pottery, plain and ornamental of various kinds, chiefly round-bottomed globular vessels with bulging sides and everted rims. That these people, thus occupying these peculiar edifices, were the indigenous people of the soil, and not foreigners effecting a lodgment in a hostile territory, is obvious from the fact that, although the "brochs," taken in the totality of characteristics, stand apart from all other types of archaic, or, indeed, modern, construction, yet their essential features are those which are characteristic of early Celtic constructions, in so far as the "broch" is circular, dry-built, and furnished with doorways having inclined instead of perpendicular lines, the roofs of its chambers formed of beehive vaulting of overlapping stones, and its galleries comparable to a series of "earth houses" placed one over another. In a word, they are forms which are characteristic of the Celtic area and of post-Roman times, illustrating a peculiar phase of the early Celtic or Iron Age culture and civilisation of Scotland, which until recently was absolutely unknown.

The concluding lecture treats of another and equally ancient class of pre-historic architecture in Scotland, that namely, of lake dwellings, hill forts, and "earth houses." Dr. Anderson has recorded important facts, measurements,

* Scotland in Pagan Times: the Iron Age. (The Rhind Lectures in Archaeology for 1881.) By Joseph Anderson, LL.D. Edinburgh: D. Douglas, 1883.

and deductions concerning these ancient edifices, of many of which he gives illustrations, but we may not here devote any portion of our columns to describe them, and we may fitly draw our notice of the work to a close by giving a summary of the author's results. Like the Scottish examples, the "earth houses" of Cornwall are long narrow galleries of dry-built masonry, not so strongly marked by the curvatures of plan which distinguish the northern group. They are comparatively few in number, and any indications of the period of their occupation points to an epoch not far distant from the close of the Roman occupation of the country. No other group of such underground structures is known in Europe, or the world at large. They are peculiar to the Celtic area, and the specially typical form with strongly marked curvatures is found only in Scotland. "Of the culture," says the author, "and civilization of the people who constructed these strange subterranean cells, it may be impossible in the present condition of our knowledge to form an adequate estimate. But we can say this of them with certainty, that whatever may have been the special notions and circumstances that induced them to give this peculiar expression to their architectural efforts, they exhibit in other respects evidences of culture, which, though it may be held to be inferior in range and quality to the culture of the Christian time, compares not unfavourably (so far as it goes) with that which is exhibited in connexion with the superior architecture of the 'brochs.' These early forms touch, but are not merged into, Roman comparative forms of culture; they are still distinctively and exclusively Celtic. The forms, the art, and the architecture are those of Scotland's Iron Age,—the Pagan period of her Celtic people.

Dr. Munro's work* on Ancient Scottish lake dwellings may be taken as a companion volume to the foregoing, in respect of its handling closely cognate and equally important subjects. The volume aims at comprising all that is actually known of British lake dwellings, and this comprehensive scope the author has illustrated by copious descriptions derived from the original narrations of explorations of these ancient sites. Indications of Crannog remains abound in Scotland in the various lochs which are so common a natural feature of that region. The artificial islands of Mull, the Crannogs of Wigtonshire, at Tolsta, Loch Lotus, Loch of Forfar, and other places, being pointed out, the author devotes a chapter to the description of the discovery and examination of a Crannog at Lochlee, Tarbolton, Ayrshire, with its log pavement, its gangway, and surrounding wooden structures, its relics, comprising among many objects stone, bone, horn, wood, and metal, an iron saw and hatchet, wooden vessels, stone hammers, and its skeleton remains. In like manner a succeeding chapter is devoted to subsequent researches and discoveries at Friar's Carse, Dumfriesshire; Lochspots, near Maybole, in the parish of Kirkcubright, which yielded a flint scraper of the palæolithic style, as well as fragments of Samian and other pottery; Barhapple Loch, Wigtonshire, and Buston, near Kilmarnock. This latter site, having an internal measurement of 61 ft. by 56 ft., as far as investigations were made, was composed of a succession of layers of trunks and branches of trees intermingled with stones and turf, the whole mass being firmly kept together by a peculiar arrangement of upright and horizontal beams forming a series of circular stockades. The central portion was rudely paved with wooden beams, many of which were firmly fixed to the lower woodwork by stout wooden pegs as well as to the encircling stockades. The entrance to this central area was looking south-east, and in front of it there was a well-constructed wooden platform made of large oak planks, supported on solid layers of wood to which they were pinned down. As to the dwelling-house of which this was the foundation, it is difficult to decide whether one large pagoda-like building or a series of small huts occupied the site. Dr. Munro, however, inclines to the former of the two. A canoe was found near the gangway, and a considerable variety of relics turned up during the excavations, among them whetstones, stone-polishers, whorls, flint flakes and cores, bone pins, fine examples of bone combs ornamented with patterns of small circles, iron axes,

knives, and other weapons, and gold finger-rings formed of a spiral wire. Besides these, other objects were found too numerous to be specified here. Dr. Munro's remark on the classification and geographical distribution of ancient Scottish lake-dwellings, from the simple mound of stones and earth to the elaborate stockade, are of great interest, and his tables will be found useful for reference to the records of this particular form of ancient dwelling. His concluding chapter on the remains of lake-dwellings in England embraces notices of those at Wrotham Mere, Suffolk, the pile structures at London-wall, the Crannog at Llangorse Lake, near Brecon, South Wales; Barton Mere, near Bury St. Edmunds; Holderness, county York; and other sites. These, sparse and scattered as they are, may be but the remnants of a more widely distributed custom; and this custom itself may possibly point to the fact that the original British Celts (from whom, in all probability, have descended the modern Gaels) were an offshoot of the founders of the Swiss lake-dwellings, who emigrated to Britain at a time when lacustrine abodes were in fashion, and that they resorted to this particular form of insular protection long after the custom had been abandoned on the Continent.

ARCHITECTURAL STYLE AND CRITICISM IN THE STATES.

It is curious to observe how closely and immediately any architectural movement in England seems now to be followed and reproduced on the other side of the Atlantic. The illustrations in the leading architectural journals which come to us from across the water are in themselves sufficient to show this. Except in some slight local habits of draughtsmanship, difficult to define, which give a somewhat different look to the lithographs and photolithographs in an American from those in an English paper, and some peculiarities of phraseology in the letter-press of the drawings,—but for such slight differences, there is little to show us, in turning over the illustrations of our contemporary, the *American Architect*, for instance, that we are not looking at illustrations of new buildings in England. We see the same "æsthetic" bookcases and curtains and "art tiles" in the interiors; the same variation between Transitional Gothic for churches and "Free Classic" for business buildings; the same specimens of the old English style of picturesque building reproduced in cottages or *ornées*. The latter class of work has been particularly exemplified in the results of a competition recently instituted, we observe by the journal just referred to, for the best design for a small house to cost 3,000 dollars. The designs sent in, and published in the *American Architect*, for this little test competition, may be supposed to represent the taste and style especially of Young America in architecture, as the elder members of the profession would hardly be likely to amuse themselves in that way, and they are like the number of our drawings for the same class of work as anything well could be. One of the designs is described by its author as a house "for a young man of unexceptionable position," a description which would hardly be found in an English paper; whether it is humour or simplicity, or whether this roundabout phrase is a pleasantry for "gentleman," we do not feel sure. The interior view of the new Cathedral of All Saints, Albany, N.Y., by Mr. R. W. Gibson "of that ilk," is a solid and monumental-looking reproduction of Early French Gothic, which might have come from the pencil of a London Gothic architect. All the old and new imitations, reproductions, and fashions seem to be going on there just the same as here, with an entire faith in their suitability and their power to satisfy the requirements of modern life and modern culture. It is, in one sense, certainly, rather gratifying to find that we are no worse off in the Old Country than they are in the New. English architects are frequently twitted with being able to do nothing but reproduce old forms; but, at any rate, it does not appear that the architects of the comparatively new country across the Atlantic, with its possible new associations, new materials, &c., to help them, can get any further in the matter of design; and, indeed, they seem to be even a step behind ourselves, for while we have been imitating genuine ancient styles, our American relatives have been to all appearance imitating our imitations.

The question whether this is the best that

might or should be done is especially raised in a very cleverly-written article in this month's number of *Harper's Magazine*, by Mr. Montgomery Schuyler, under the title "Recent Building in New York," a paper which we have read with much pleasure and interest, and which is one of the best pieces of architectural criticism we have recently come across. It is rendered more interesting to readers on this side of the water by a considerable number of illustrations of recent New York architecture, chiefly of the domestic class. We may, perhaps, be excused for regarding it with the greater satisfaction because we find a very decided re-assertion of the views which we have always expressed in regard to what is called the Queen Anne movement, since it came into fashion here. "A new departure," says Mr. Schuyler, is an apt name for the new movement, since it has "departed" from everything which makes real architectural design, and shows no symptom of "arriving" at anything. "It is, in fact, a general 'breaking up' in building, as the dispersion of Babel was in speech, and we can only somewhat desperately hope that the utterances of every man upon whom a dialect has suddenly fallen may, at least, be intelligible to himself. From a movement so exclusively centrifugal that it assumes rather the character of an explosion than an evolution, not much achievement can be looked for. In fact the 'movement' has not, so far, either in England or in the United States, produced a monument which anybody but its author would venture to pronounce very good." Mr. Schuyler goes on to remark that at the time when the majority of English and American architects were divided into two camps, the Gothic and the Renaissance, each of them had some principles of style to work upon, some motive of self-restraint in regard to detail and general composition. They were, he thinks, more in a position to evolve something original under these circumstances, on Viollet-le-Duc's principle "that only primitive sources supply the energy for a long career," than they can be in working upon the faded details of the degradation of the English Renaissance, which, even its earlier and stronger forms produced less admirable and important results than in either Italy or France. We will quote the American critic a little more at length in regard to his view of the artistic fitness and logic of the "new departure"—

"Mr. Norman Shaw has been the chief evangelist of this strange revival. Mr. Shaw is a very clever designer, with a special felicity in piquant and picturesque groupings, which he had shown in Gothic work, especially in country houses, before the caprice seized him of uniting free composition with Classic detail, and the attempt at this union is what is most distastefully known as Queen Anne. Whoever considers the elements of this combination would hardly hope that the result would be a chemical union, or more than a mechanical mixture. Classic detail is the outcome and admixture of the simplest construction possible, which was employed by the most Greek architects in the simplest combination possible, and precisely because it was so simple and so primitive they were enabled to reduce it to an 'order,' and to carry it to a pitch of purity, lucidity, and refinement to which the most enthusiastic Medievalists will scarcely maintain that more complicated combinations have ever attained. But this very perfection, which was only attainable when life was simple and the world was young, this necessary relation between the detail and the construction of Greek Doric, makes it forever impossible that Greek detail should be successfully adapted to modern buildings. The latest and strongest of the writers on the theory of architecture has said of Greek architecture—'As partisans of its historical glory we should desire that it remain for ever in its historical shrine.' We laugh at the men of two generations ago who covered Europe and America with private and public buildings in reproduction as exact as they could contrive of Greek temples. But, after all, if the Greek temple be the ultimate and consummate flower, not only of all actual but of all possible architectural art, were not these men wiser in their generation than their successors who have taken the Greek temple to pieces and tried to construct modern buildings out of its fragments? There is even something touching and admirable, on this view, in the readiness and completeness of the sacrifice to beauty which the reproducers of the Greek temples made of all their really material comforts and conveniences; something that we miss in the adepts. The Romans are severely to be said to have attempted this adaptation. They built Roman buildings for purposes and by methods which it had never entered into the minds of the Greek architect to conceive, and they built them with no more thought of art than entered

* "Ancient Scottish Lake Dwellings or Crannogs: with a Supplementary Chapter on Remains of Lake Dwellings in England." By Robert Munro, M.A., M.D., F.R.S. Scot. Edinburgh: D. Douglas. 1882.

the mind of a modern engineer in designing a truss bridge. After they were designed according to their requirements the Roman engineer overlaid them or, according to some conjectures, employed Greek workmen to overlay them, with an irrelevant trelis of Greek architecture, debasing and corrupting the Greek architecture in the process. And it is this hybrid architecture, which analysis would at once have dissolved into its component parts, that was accepted without analysis as the starting-point of the 'new departure' of the fifteenth century, and the ultimate English debasement of which in the eighteenth is taken by the contemporary architects of England and America as the starting-point of the new departure in the nineteenth. It cannot be said that Mr. Norman Shaw and his followers have succeeded in the task of combining free composition with Classic detail, which the Romans forbore to attempt, and in which the French architects of the sixteenth century failed. Every attempt to fit antique detail to a building faithfully designed to suit modern requirements shows that it cannot be so fitted without being transformed, and, since the sole excuse for the attempt is that it cannot be bettered,—without being debased. What the Queen Anne may have done is virtually what the Romans did. They have shirked the impossible problem they unnecessarily imposed upon themselves, and have either overlaid or inlaid their buildings with their architecture. . . . Classic ornament cannot grow out of modern structures faithfully designed for modern purposes, as it grows out of antique structure, or as Gothic ornament grows out of Gothic as an efflorescence. It must be 'adjusted' as visibly an after-thought, and to say this is to say that in all Queen Anne buildings the architecture is *appliqué*."

We do not entirely accept all the views embodied in the above quotation. The frank reproduction of Greek architecture in its purity, for modern buildings, involved such an entire disregard of the practical considerations which are at the very basis of architecture, such a want of architectural common-sense, as to outweigh the merit which might be imputed for pure love of architectural beauty, though that is a merit to a certain extent and as far as it goes. Nor do we think that the French architects of the sixteenth century so entirely failed in giving life and coherence to the forms which they adopted as Mr. Schuyler would imply. Nor are all Mr. Norman Shaw's productions in this "new style" to be characterised as nothing better than *appliqué* architecture. His church at Bedford Park is certainly a painful and most extraordinary specimen of it, and we cannot imagine how a designer who has produced some things which he has produced could have been so reckless of his reputation as to have done such a thing as that. But his new building at the corner of St. James's-street and Pall-mall, with its bold arched openings for the shop-fronts, is, in spite of the illogical details in other parts of the front, something much better than *appliqué* architecture; though it may be added, certainly, that the points which render it so are just those which are not "Queen Anne" architecture in any sense. In regard to the main characteristics of the "new departure," however, as we see it in our streets, and as it is to be seen apparently in New York streets, the characterisation is as true as can be; and the American critic goes to the very root of the matter in the expression he uses, that this mingling of details of bastard Classic is "a mechanical mixture," not "a chemical union." This is a perfectly good simile for indicating what is really wanted to produce a genuine and homogeneous architectural style. The design and details should have an obvious relation to one another and to the constructive basis of the architecture. But in the Queen Anne buildings we find tags and ends of Classical detail from Greek, Roman, and Renaissance work indiscriminately plastered on with no regard whatever to relations of style or design; vases on the top of the cornices, wreaths and skulls in another place, Doric triglyphs in another. To call such work architectural design or architectural style is ludicrous. The delusion seems to exist to the same extent in New York. Some of the architects there have, to quote again from Mr. Schuyler, "subjected many miles of sandstone to the refining influences of egg-and-dart mouldings (the designer of a house in Fifth Avenue has so much faith in the efficacy of that ornament that he has belted his street-front with three rows of it, one above another), and triglyphs (faithfully to have contemplated which softens the manners nor suffers to be rude) have been brought within the reach of the humblest in the decoration of tenement-houses." Triglyphs and egg-and-dart ornament were admirable inventions of archi-

tectural detail, in their own place, but the reproduction of them does not make architecture.

The American critic thinks that the transference of architectural allegiance from Gothic to Queen Anne in his own city has been attended with a very great fall in the architectural excellence of the recent buildings there. We have little doubt of his being right in the main; but the examples he gives of recent Gothic or quasi-Gothic street architecture from New York are not all what we can admire. The "houses in Madison-avenue" (Mr. R. M. Hunt, architect), though unobjectionable, are somewhat weak and tame in design; the engraving possibly does not do justice to their real effect. The front of a house in Fifty-sixth-street,* by Mr. Bruce Price, is really good and picturesque as well as suitable, and shows true Gothic feeling without slavish imitation of details.

To come to the broader question which the subject suggests, whether we are likely to be any better off in modern architecture for discarding the special study and profession of special styles in favour of a mixture of incongruous details, we may say that while we have always been opposed to mere reproduction, whether it be of Greek, Gothic, or anything else, we concur in believing that much better modern architecture is likely to arise from design founded on consistent and complete styles than on a lawless freedom recognising no guiding rule of any kind in regard to the combination of detail. And if we come to the question of imitation, at all events the imitation and reproduction of good detail is better than the imitation of bad. The development of modern architectural style from ancient styles really depends, however, on intelligent modification to suit modern circumstances and varying climates; on the attempt to develop further the suggestions presented by the details of past styles; and (which in its way is nearly as important) on the omission of what has become out of date, unnecessary, or unsuitable, in regard to the new circumstances under which the style is to be developed. A man who can successfully work upon the basis of an old style in this manner is an architectural artist; a man who only regards architecture as a question of fashion in the choice of styles is rather a pattern-maker. It is not quite fair to say, as Mr. Schuyler does, that he is only a tradesman, because to carry out and reproduce ancient styles requires qualities of taste and study which are quite outside of what is required from a mere tradesman.

Another question of some interest is as to the degree in which one may and ought to expect a new and characteristic style from a new country. On this head, we think that some critics make demands which are hardly reasonable. Mr. Schuyler refers to the kind of feeling which has been expressed in regard to American literature and art, that it should be of the soil; that even American architects should "talk United States." He evidently does not believe in this idea much; nor do we. If civilised people could be turned loose to deal with entirely new materials under entirely different conditions from those in which any of the usually practised styles of architecture arose, they might be expected to produce a new phase of architectural style. It has been said that early settlers in some parts of America did so, and that the log-house is the typical and national American domestic architecture. But the fact is that in these days of rapid transit and continual intercourse between all parts of the civilised world, habits of life and culture sway more than external circumstances; or, rather, the resources of civilisation tend to make circumstances pretty much the same everywhere. American civilisation is the same thing in the main as European civilisation, and American culture is becoming so (we hope it is not rude to hint that it has not quite "become" yet). Every ten years of the world will now see a greater *rapprochement* between the habits of life and thought of civilised peoples; the only differences which can appreciably influence architecture in such a case are very marked differences in climate. And therefore we hold that the idea of having a national style for America or for any other civilised country, except in regard to minor local differences, is or must soon be at end. The civilised world is becoming what we may call, for want

* What a pity that this great city should have thrown away all the historic and local interest which may be embodied in the naming of streets, in favour of this dry and uninteresting arithmetical nomenclature.

of a better word, Europeanised. Many people may lament the loss of the picturesque contrast of national style which existed under the old conditions of population; but it is of no use to shut our eyes to the fact, or to lament it. It cannot be helped. And, therefore, in regard to our American critic's question, we hold that at the present moment what is good architecture for England and France is good architecture for America, and that the British lion and the American eagle may feed in the same architectural pastures. There is, of course, an additional reason for this in the case of a country which, however great and independent now, and however magnificent its future may be, was originally, as we may well be proud to reflect, an offshoot from our own, and may therefore have the most natural cause for following out the architectural lines of the old country.

In regard to some more practical matters connected with building, however, there is more difference between England and America than in matters of purely architectural taste, and we may have more to learn from our Transatlantic cousins on these subjects than on architecture as an art. This side of the subject we shall have an opportunity for speaking of shortly.

PROFESSIONAL PORTRAITS.*

AN ARCHITECTURAL BAYARD.

"The poets represent the gods themselves as full of imperfections."—PLUTARCH.

It has, I am told, been objected to these scrambling sketches,—wherein I have but attempted to delineate certain of the commoner types of professional character,—that a sinister mark, so to speak, has been placed by me against each of the subjects of them in succession. The gentleman, *par excellence*, is, after all, but a feeble creature, suffering with unmanly forbearance accumulated indignities. The man of business is a downright cad; the artist insincere and a coxcomb; the virtuous youth turns out in the end a sot or a spendthrift, or both; and the man of marked ability declines into a shameless vagabond and castaway.—and so on to the end of the chapter. If these are a fair sample of my professional acquaintances I have, it is concluded, been very unfortunate in my friends; and here is thrown in a sly allusion to a Latin aphorism, which is to the effect that by a man's associates you shall know his own character. To all of which I simply reply that for effective portraiture some salient characteristics in the aforesaid are desirable. That talent, virtue, propriety, always admirable, are, nevertheless, not always picturesque, or portraiture, if one may invent a word; and that, as my subjects are of my own selection, I am at liberty to seek such as offer the greatest opportunities for pictorial treatment; and there are other reasons which will appear by and by. Imperfection is a note of human nature. I do but draw men as I have seen them, and, so far from exaggerating the shades, I have softened them. I have extenuated some failings, and I have not set down aught in malice.

Sir Thomas Browne, amongst his store of quaint reflections hath this one,—that there are, or have been, greater and better men, in every respect, who never were recognised or remembered as such, than those whose lives and virtues have been recorded for us; and I have no scruple in admitting that outside the range of my very limited experience there have been, and indeed are, architects of rare ability and exemplary conduct,—may, that I can lay my finger on many such at this moment. But I am debarred from the pleasure of portraying them, because in doing so I must necessarily invade the sanctities of private life, and exhibit their attainments and virtues at the expense of their modesty.

If, however, I am expected to include in this series of sketches the likeness of "one who in the authority of his merit did justly put on the vouch of very malice itself," I must address myself to the task as mathematicians attack certain problems, and proceed by elimination. I should say of such a one, to begin with, that he never claimed the merit of designs prepared by his assistants, nor withheld from such their due share of credit for all they did for him. He neither overworks them, nor underpays them, nor trades upon their impetuosity, nor leaves town for an indefinite period just as their

* See pp. 211, 243, 278, and 310, ante.

modest "screw" falls due. Nor does he vent upon them the ill-humour which the trials of business breed in him. He does not fill his office with pupils, first receiving a handsome premium with them, and then turning them loose to pick up what stray crumbs of professional knowledge they may; or keep them engaged in mere mechanical drudgery, to save the expense of hiring such aid. He is not at all jealous of the success of younger men, nor ever refuses them the benefit of his experience and advice. On the contrary, as he never accepts more work than he can honestly attend to, he has frequent opportunities, which he never neglects, of transferring surplus commissions to those who have passed through his office, and have, of course, by the careful training bestowed upon them, fully qualified themselves for independent practice. He never *kotows* a client, nor browbeats or cajoles a builder, nor does he ever throw upon a clerk of works the odium of mistakes due to his own carelessness or incompetence. He never defames the character of his professional brethren, nor endeavours to take work out of their hands, nor to prejudice their clients against them; nor does he write anonymous articles in the magazines with which he happens to be connected, commenting adversely on the stability of his rivals' works. When entrusted in the course of business with the leasing of building land, he does not attempt to serve two masters by hinting that the designs for the intended buildings will be more surely and readily approved if he prepare them, and that, otherwise, difficulties on that head may arise; nor does he, failing that manoeuvre, introduce certain young friends who are quite alive to his views and requirements, &c.; and, as a consequence, he never shares the emoluments arising thence with the young friends aforesaid. He never affects to take out quantities with a qualified surveyor, and, doing no part of the work, yet pockets a part of the fees. Nor does he cause to be inserted in his contracts items of preposterous amount, ostensibly to cover the cost of extra copies of the plans and specifications, but really as a bribe from the builder. Nor does he introduce special manufacturers, whose only recommendation is that he is financially interested in their employment, or prescribe the wares of tradesmen only because he "stands in" with them.

He never gives evidence in the public courts at variance with his convictions, nor brings his profession into contempt by the looseness of his valuations, or sticks to them, when made, merely to bolster up a foregone conclusion,—or to thwart a rival, or because he is retained and paid so to do. Nor does he obtain election to public bodies solely with a view to serve his private ends; or so manipulate his official duties and opportunities as to fill his own pockets. I say he does none of these things.

But the astute reader will not fail to remark that in the foregoing I have restricted myself to the use of negatives, and that by their aid no concrete fact can be presented to him. A portrait cannot be painted by any such means. The canvass will remain a blank; for these "pale abstractions" go no way at all towards giving us "assurance of a man."

It will be remembered with what engaging frankness the author of "Pendennis" relates the circumstances which led him, at the eleventh hour, to modify the intended plot of his story, for the fulfilment of which, as originally devised, the agency of a cut-throat and burglarious ruffian was necessary. That upon mature reflection the author (who, like a person who shall be nameless, always drew from the model) discovered that he did not happen to number a single murderer or burglar amongst his acquaintance, and that on this account it was necessary to abandon the original scheme of the novel, and arrange an entirely new denouement. That there were to be found burglars of a sufficient depth of infamy for the purpose he did not affect to deny, but his circle of acquaintance was narrow, and they were not of it.

Is it necessary for me to suggest the application? There are architects in plenty who possess all the positive virtues at which by negatives I have obscurely hinted. But remember these are not fancy sketches, and they are published without permission. If I should venture to combine in one portrait all the talents and all the virtues, each member of my profession would at once appropriate the likeness, and resent the freedom of the painter.

Public men in this country are public property, and there is no sound reason to be rendered why writers and artists should make free with members of the Cabinet, the Government, the aristocracy, nay, with Royalty itself, and that the more prominent members of our profession should escape the like playful attentions. Under some relaxation of the prevailing etiquette it would be easy to present our readers with recognisable likenesses of "eminent architects" who would have, moreover, nothing to fear from the scrutiny or the publicity involved. But such, as yet, is not the fashion; and we hold Pope's advice to be good, and will not be the first to make the experiment.

The season is over, and our select little gallery will, according to custom, be closed for the present; to be re-opened, perhaps, hereafter, with some attractive additions, and with a finished study of the architectural Bayard, if by that time we shall have had the happiness to make his closer acquaintance, and the good fortune to secure his permission to include him amongst our collection of Professional Portraits.

FROM VIENNA.

THE great topic of excitement and of popular interest here at the present time is the Electrical Exhibition, held in that large and exteriorly formless, but, interiorly, most impressive building, the Rotunda, in the Prater. The public flocks out by the thousand to the distance of five kilometres, or about three miles, from the centre of the town, and the Café Krouncher and the Hungarian Gipsy-bands are comparatively deserted. The interior of the Rotunda, being a large and spacious dome, with light-tinted walls, is exceedingly well adapted for the demonstration of the powers of the arc-lamps now in use. In the lantern, round a circular gallery, and throughout the area, the lamps are distributed with so much symmetry of arrangement that the light produced is approximately uniform. It is also shown to be now capable of retaining a condition of almost complete steadiness. This result is achieved in consequence of the use of improved dynamos and more efficiently-adjusted lamps, as well as by the application of a system of accumulators. As these appliances are at present constructed, though they conduce to steadiness, they do not as yet conduce to economy. They consist of sheets of lead covered with a layer of oxide of lead, immersed in sulphuric acid. In each accumulator, of which a series must be employed, two such sheets are arranged at a little distance from one another, and are separated by intervening pieces of felt or layers of parchment paper. There are two great disadvantages attending the use of accumulators. In their present form the use of lead and of oxide of lead in large quantities is necessary, and there is considerable difficulty in getting the oxide to remain adherent to the sheets of lead. In order to ensure adherence a complicated disposition of the lead is necessary. In spite of this the permanence of the arrangement is but small, and the annual depreciation is about 30 per cent. Since the prime cost is great, the expense of upkeep of a series of accumulators is, in consequence of this heavy depreciation, very considerable, and, in point of economy, the electric light fed by accumulators is as yet, for domestic use, simply nowhere. As to the incandescent light, the set of apartments here devoted to its exhibition is exceedingly well lighted, though, for the reasons mentioned, the lighting cannot be economical. Still, where expense is no object, this beautiful light, which appears absolutely steady, may come to occupy a field of usefulness which, though it is at present necessarily limited, may be trusted to become cheaper as accumulators are rendered less heavy and more durable. The interiors just mentioned are furnished by the different upholsterers of Vienna, and are most instructive examples of rich good taste. The favorite leading idea seems to be a high oak or American nut wood wainscoting, simply divided into panels, carved to a slight extent and often inlaid with darker wood in simple lines; a light tapestry lining the remainder of the wall; a carved wood ceiling, ceilings of this character being found everywhere in private houses in Vienna. There is in the arrangement of every apartment a manifestation of rich good taste and an absence of tawdriness which is exceedingly pleasing to a British eye, and which is strikingly shown throughout the whole Exhibition, the entire arrangement of which is,

from an artistic point of view, extremely satisfactory. The electric incandescent lamps are exceedingly amenable to good artistic treatment. The favourite method of dealing with them seems to be to arrange a candelabrum in the form of a group of flowers. When a flower of tulip or campanula form, whose petals are of glass and whose calyx is of metal, polished bronze, or chased gilt, has arranged in its centre an incandescent lamp to represent the pistil, and, when a number of such flowers tastefully grouped with foliage also in metal work, the effect is pleasing, but will not stand criticism. From this it may be gathered that the furniture displayed must be of a corresponding richness and costliness, but the taste of the Viennese is conspicuous in graceful solidity and absence of pretentiousness. There is exceedingly little gilding; what there is of the narrowest. Lines of gilding the twenty-fifth part of an inch in breadth are occasionally used by way of outline; these are hardly visible, but produce a very pleasing effect.

The principal of the upholsterers who have rendered their aid in this department of the Exhibition may be here mentioned. Bernhard Ludwig has furnished an ante-room, a bedroom, a dining-room, and a drawing-room. For simplicity these apartments take the leading place. In the drawing-room, a glass lustre, by Zahn, attracts great attention. One peculiarity in these apartments is that a part of the decorative work on the surface of the wood has been worked out by means of a continuous torrent of electric sparks, this process being known as pyrography. Portois & Fix have furnished the ante-room, a reception-room, a bedroom, and a drawing-room in the Louis XIV. style. The firm takes great advantage of the simple richness of broadly-carved unstained oak, contrasted with crimson-brown plush and yellow brown silk. Richard Ludwig contributes a dining-room in the German Renaissance style. Heinrich Irmler shows a well-furnished room in which the lambris and ceiling are of oak, while the furniture is of American walnut. Kramer & Eidam show a dining-room in oak in the Old German style; Friedrich Pauliczky a study, with lambris and ceiling in carved American walnut and Hungarian ashwood, inlaid in black, while the furniture is of walnut, the lustre being of polished bronze, and the upper part of the wall covered by noteworthy tapestry. J. Ch. Schneider shows a bedroom in the Louis XIV. style, designed by the well-known architect Prof. Herdte, the lamps, in floral device, having been designed by the architect Rudolf Bakalowitz mainly in the Venetian style of glass-working. The brothers Zizula have contributed the unpolished oak furniture of a well-appointed billiard-room. Johann Klopfer has contributed the furnishing of two original-looking rooms,—the one a gentleman's drawing-room, the other a smoking-room, the former arranged in the style of the German Renaissance, the furniture being of American walnut, with Spanish walnut inlaid work; the latter is provided with divan seats and is fitted up with Persian stuffs arranged after a quasi-Oriental fashion. Ludwig Schmitz has an ante-room in larch wood, a dining-room in oak with ash panels; a kitchen, with appliances complete, in which the light of the Lane-Fox incandescent lamps is reflected from the white walls and the polished copper so as to make a most attractive and popular display. F. Schönthal shows a room arranged in a composite style in which a number of Lane-Fox lamps are fitted in the ceiling, producing a beautiful and uniform light. L. and C. Hardtmuth show an apartment decorated in the German Renaissance style, with carved oak lambris and furniture, with inlaid majolica plaques. Carl Bamberger has an interior in the French Renaissance style, in which the lamps are arranged in candelabra of a conventional florid design. Sigismund Järay has furnished a ladies' salon in *rococo* style, which is lighted up with Maxim lamps. This room is an exceedingly well-worked-out example of the pompous amplitude of this style: the fountain in the apartment, with the inevitable dolphin, flowers in large vases, Cupids and Bacchus, and all the heathen deities, and above all the stars of heaven, electrically twinkling in a dark blue ceiling. A winter garden, with artificial flowers by Zimmermann, is also one of the attractions of the scene: illuminated by fifty-two Edison lamps, it produces a somewhat pleasing though artificial effect. Three apartments are devoted

to the exhibition of pictures. Of these, one is illuminated by the Lane-Fox incandescent lamps, another by the Soloi lamp, another by Edison lamps. In picture-galleries the incandescent lamp is well adapted for warm tints; ruddy sunsets, Egyptian sands, warm flesh tints come out well, but blue skies, raging seas, and storm clouds seem to be very dirty in the colour; the latter, when placed in the presence of arc lamps, appear, on the other hand, to be of exceedingly natural hue. Those pictures in which the red end of the spectrum is best represented should be illuminated by incandescent lamps; those which have a bluish or cold character should be illuminated by arc lamps. When two contiguous rooms are lighted by different systems the incandescent lamps seem to give, for general purposes, the more acceptable light; this light being of a rich warm brown is very comfortable-looking as compared with the clear, cold, unsympathetic light of the arc lamps.

The city of Vienna is now in the highest state of activity in the erection of public buildings. The new Rathhaus, or municipal building, which will be opened on the 12th inst., is one of the finest examples of Gothic they have, and produces an effect of purity of form which it would be difficult to match. The new houses of Parliament, which are, if it be possible, to be opened in October, are in the Greek taste, while the internal decoration is of a beautiful character, and shows that the architect, Hofbauer (court architect-advisor) Prof. Hansen, a very animated and kindly gentleman, of seventy years, who has himself designed the whole, is as remarkable for his sense of colour as he is for his power over form. The new Law Courts also are worthy of the closest attention, and the new Hofburgtheater (Court Palace Theatre), which is opposite the municipal buildings, will, as far as can yet be seen, be a building of exceeding beauty. Further, the present Imperial Palace is considered to be insufficient, and a new one is being built, the foundations of which, all that can yet be seen, give promise of a colossal work. These buildings, together with the Museums and the exceedingly rich street architecture, in which no lack of resources is in the slightest degree manifest, have already rendered Vienna, in the writer's opinion, much superior to Paris. Paris has nothing to show which in general effect can compare with the southern part of the Ringstrasse. This Ringstrasse or Circle is a very wide street, containing a large number of *allées*, devoted to different purposes, such as riding, walking, tramways, carriages, all these being separated by trees; the whole being situated on the site of the fortifications which formerly surrounded the original town of Vienna. This original town is now the so-called Stadt, which, like the City of London, is merely the centre of a large inhabited area. It will perhaps be understood that this wide Ringstrasse, adorned with an occasional garden, with numerous public buildings in which white marble is copiously used, and with impressive domestic architecture, with its wide curve, and the contrast of bright purple slate against a cream-coloured stone and a bright blue sky; with the absence of smoke, with the wholesome appearance of the houses, which have no *persiennes*, with the abundance of water which is freely used,—all this produces an impression of thorough appropriateness and comfortable magnificence which renders Vienna to those who travel so far afield one of the most cherished of residences and of memories. It is very astonishing to hear in such a place so little English; it seems to be quite out of the track of the tourist.

The construction of theatres is a matter of great interest, and it perhaps may not be amiss to draw attention to the plan of construction proposed under the name of the Asphaleia Theatre. This plan, which is being carried into actual practice in the new National Opera-house in Buda Pest, and also in Fiume and Odessa, involves a complete modification in the stage. The stage, and all the fixtures behind the footlights, with the exception of the boarding of the stage, are of iron. It seems difficult, therefore, to imagine how any danger from fire can arise in a building so constructed. Even though the scenery took fire, no conflagration could spread; for above and all around there is nothing but iron. The practical nature of the proposal is to a certain extent guaranteed by the names of the proposers. They are the engineers Carl Dengg and Robert

Gwinner, the scene-painter Johann Kansch, and the City Architect, Franz Roth. Of the first named, Herr Gwinner is himself an ex-artist, and has full knowledge of stage mechanism. These four gentlemen laid their heads together, after the Ring Theatre catastrophe, with the view of designing a plan which should do away with the dangers of the present system. They constructed a model, which the writer has, by the kindness of Herr Gwinner, had an opportunity of studying, in conjunction with a well-known theatrical artist. It is not necessary here to enter into elaborate details. A few only of the results may be mentioned. The stage is divided into four sections, one behind another. These can be moved up and down, independently, by the aid of hydraulic machinery, which in Vienna can be worked by the town water pressure alone. Each of these sections can be tilted so as to lie at any angle across the general level of the stage. When the four sections lie at different angles, the portions of the scenery lying on the different sections are related to one another in a natural way, which, in the case of landscapes, can be adjusted so as to present an appearance of extreme naturalness; and such effects as those of an Alpine town, in which one street is seen to go up a steep hill while another street goes away down hill and passes out of sight, are produced with ease. Further, the effect of a double stage is rendered with ease, and in this connexion some transformations which, with the existing mechanism, requires a long interval between acts, are operated at once. Notably, in "Aida," a change which often occupies twenty-five minutes is here operated in a few seconds. The whole stage can, by the simple turning of a handle, be twisted after the fashion of the deck of a ship at sea,—as in Meyerbeer's "Africane,"—and this movement may be compounded with that of foundering, to the production of a great effect.

The whole mechanism is under the command of one performer on a kind of keyboard of stopcocks, and, in view of the public safety, it seems desirable that those interested should make themselves acquainted with the nature of the plan proposed. It is affirmed that there is considerable economy in the use of this more comprehensive mechanism than has previously been attained. Scenery, which has cost hitherto the sum of 1,700*l.*, is said, under this new arrangement, to cost no more than 1,100*l.* This is a matter as to which the writer is not competent to offer an opinion.

The iron fire-curtain can be let down, in case of an alarm, from any part of the house; for all over the building there are distributed stopcocks, which on being turned cause the hydraulic mechanism to act upon the curtain, and thus completely to separate the stage from the body of the house.

Passing from the Asphaleia Theatre, and referring the reader who is desirous of making further inquiry to the firm of engineers already mentioned (Dengg & Gwinner, Maschinenfabrikanten, Vienna), we may mention that the Ring Theatre catastrophe has borne fruit in making people in Vienna exceedingly cautious as to fire in public buildings. No theatre is now allowed to open its doors unless it have a proper fire-curtain,—not even the smallest. This fire-curtain must be, at least, once every evening lowered to its full extent when the audience is assembled; this is done between the acts. It is thus rendered absolutely certain that the thing is in working order, and that there is no chance of a flaw in its mechanism or its accessibility being discovered when it is just too late. The exits are to be kept clear, and notices are put up indicating the shortest ways out, means of getting upon the roof, and so on. The reservoir of water upon the roof is taken under the protection of the law. Candles are seen burning in company with gas-lamps in all the passages, and candles make a feeble light here and there in the body of the theatre and in all the galleries; if the gas became extinguished the people would still find their way out by the candle-light, feeble but sufficient. The nightly rehearsal of the fire-curtain renders people cool when they see it descend. It descends between acts at the most unexpected times, and sometimes more than once in the course of an evening. From what he has seen the writer believes that if the curtain were seen to descend in the midst of an act the audience would go away quietly without saying anything, and that there would be no unusual crushing, no panic.

A DAY IN DUNFERMLINE.

THERE was great joy in this ancient and royal burgh the other day over the opening of a new Free Library, presented to the town by Mr. Carnegie, a distinguished American citizen, and a native of the place. The Earl of Rosebery did the chief honours on the occasion, and, of course, did them well. There was a large influx of country people, likewise a considerable infusion of the county gentry; the mills had a day of rest; the mill-girls wore their bonnets, and most of them their boots; the Provost and Town Council were in full force; flags were flying from the buildings,—conspicuous among which was the American stars and stripes; carriages of unusual type and fashionable build were rolling through the narrow thoroughfares; and, in short, the ancient town was in the full enjoyment of a gala day of pleasurable excitement on account of the promotion of a noble object. Having had the opportunity of witnessing the proceedings, and spending a day in the town, we made some observations,—chiefly on the town itself,—which, slight and desultory as they are, may be of some service to those of our readers who have not yet become acquainted with the "Kingdom of Fife," and its most ancient and most royal burgh.

It is hardly necessary to point out that the days are somewhat changed since the time, according to the old ballad, when,—

"The king sat in Dunfermline town
Drinking his blood red wine,"—

and seeking for a "sleeky schipper to sail this schip o' mine." * Whether this old ballad be authentic or not is at this moment of very little consequence, for Dunfermline has a remote enough history, in all conscience. If we are to believe the annals which are founded on the Scotto-Chronicon and the equally veracious History of Archdeacon Barbour, King Malcolm Canmore,—who married the Princess Margaret of Norway (the tutelary saint, and almost the deity of the district),—founded the abbey for an offshoot of the Benedictines of Canterbury somewhere about A.D. 1083, and this ancient and noble abbey, restored and desecrated as it is at this moment, is, without doubt, the jewel in the crown, the pearl of great price. We do not undervalue the fine mills by any means, which are admirably designed and constructed for their purpose, and in one case, at least, very much over-embellished; but, if one might venture on a slender prognostication of a poetical character, it may easily be said that, long after the linen trade of Dunfermline has ceased to exist, or, at all events, has been superseded by jute or some similar fabric and fabrication, it will be remembered that Edward I. of England wintered here in this ancient monastery, giving, within its own resources, hospitality to three kings and their respective suites; and also that, in addition to its being the burial-place of more royal and noble families than we care to enumerate, it is the tomb of the thrice-illustrious and immortal King Robert the Bruce. The tomb of Robert the Bruce, as the guide-book tells us, was discovered almost accidentally at the building of the new Scotch Presbyterian church which was engrafted on the ancient abbey and opened so recently as 1821. The skeleton of the king, it is proper to mention, was disinterred, and, according to the phrenological practice of the school of the time, a cast was taken of the cranium. It never seems, we may hint, to occur to those who practise this that such casts are of little practical value one way or the other. Even a "cranium" will moulder and decay during the lapse of 600 years, and possibly decrease in size, and, even if it happens to be a big head, like "Malcolm Canmore," it may not be of very much worth after all! Robert Bruce's cranium, for example, was uncommonly small.

But to proceed. We travelled to Dunfermline from Edinburgh, per rail to Queensferry,—in a somewhat more expeditious, albeit less romantic, method than that which Sir Walter Scott so beautifully describes in "The Antiquary." There was no time, for instance, to get a lunch or a glass of whisky at the celebrated "Hawes Inn." On we go,—into the steamer,—across the Ferry,—passing the little island of Inchgarvie, which is already under the operation of being made into the centre pier of the Forth Bridge. The scenery here on both sides of the noble river is very beautiful, causing one to heave a little sigh for the stern necessity of these

* See the ballad of "Sir Patrick Spens," in the "Border Minstrelsy."

monster bridges and aqueducts which are slowly but surely obliterating the rustic and sylvan features of our native land. From the North Queensferry, the next station is Inverkeithing, — a melancholy mass of dead wall and disused distilleries; and the next station to that is Dunfermline. With the exception of the old massive sepulchral-looking and monastic pile which constitutes the abbey, there are few objects of antiquity in the town worth noticing. The ancient cross has of course been, not indeed demolished, for there is a fragment of it stuck up on a pedestal within a railing at the Guildhall, but razed from its site, as was the fashion almost universally with the Burgh reformers of Scotland. There are, however, two or three old houses in the High-street of date 1624, with the old cross-stepped gables fronting the street, and adorned with the old devout legends in the quaint characters of the period, which are now chiefly remarkable as showing how small were the rooms and still smaller the windows with which the ancestors of the present burghers were content. There was, of course, a purer kind of atmosphere in that age. And, talking of atmosphere, we are bound to report that Dunfermline is the very *facile princeps* of manufacturing towns. Manchester and Glasgow might well take a lesson from Dunfermline. The Guildhall, — its most prominent object, — is certainly no ornament to the High-street, particularly as to its steeple, which seems to have been built during the period of the debased Renaissance. But the new town-hall is a very creditable specimen, indeed, of the modern Scotch Baronial, somewhat too much bedizened, however, with gargoyles and demoniac corbels.

With regard to the buildings of the Library and adjoining hall, they are plain, neat, commodious structures, — the latter something defective in its acoustic properties, we are sorry to say. They occupy a corner site between Guildhall-street and the Maygate. The baths in Inglis-street, of which Mr. Carnegie is also the donor, are, we should think, unique in Scotland. We had scarcely time to examine them inside; but we heard on all hands good accounts of their beneficial results. Mr. Carnegie is a man who, like Mr. Peabody and other Anglo-Americans, prefers giving away some of his surplus wealth during his lifetime. As Lord Rosebery very happily remarked, he first of all attended to the cleanliness of his native town. He did not at all interfere with the godliness. But, like a sensible and good man, he has given them a library of 12,000 volumes in the great and noble cause of self-education. The Corporation, which, by the way, is wealthy, have agreed to adopt the Free Libraries Act.

The Public Park of Dunfermline is the last and greatest feature of its beauty. From that point of view one can observe the silvery flow of the river, the historical ferry of Queen Margaret, and beyond that the sunlit slopes of Dalmeiny. The factory chimneys are seen silently smoking, — also the neat and picturesque villas of their owners, — white freestone buildings embowered in green trees, chiefly on the square Italian model. It seems to be, we shall say, from the view of a poor cotton-spinner in Lancashire, a sort of terrestrial paradise. But to our recollection there dwells on it chiefly the memory of the old abbey and the archway across the Monastery-road, through which King Robert the Bruce and his spearman made their triumphal entry after the battle of Bannockburn. On the whole, we spent a very pleasant day in Dunfermline.

THE COLLECTIONS AT THE TOWER OF LONDON.

THERE has been of late in our public collections a great *renouveau-ménage*, to borrow a characteristic French word which thoroughly expresses the general upsetting, over-hauling, and rearrangement which has been, and still is, the order of the day in Great Russell-street, at South Kensington, and in Trafalgar-square. Our great institutions, — as has been said of royalty in the present day, — live in the full glare of a public observation unknown in the past, and a spirit of emulative pride, roused by the severe criticisms which have been so plentifully administered of late, has led to results which are already showing themselves. And with a wealthy country like ours, inheriting such a glorious line of traditions, it is but right that in the changed conditions of our society

these traditions, so many gained in a stirring past, should be kept alive by our respect for the more refined victories of what our American cousins have taught us to understand as "culture," of which no surer or more patriotic form can be said to exist than a pride in, and a knowledge of, the achievements of our warriors, our artists, and our artisans in the days gone by. It is this belief which leads us to the expression of a regret that the intelligent re-organisation which is observable at the British Museum, the National Gallery, and the South Kensington Museum should not have been extended to the equally popular collections at the Tower of London, where there exists a museum of armour which, if arranged with the skill noticeable in foreign collections, would form not alone one of the most interesting and beautiful museums in the world, but constitute, we have no hesitation in saying, one of the greatest attractions of our metropolis. Berlin, as our readers are aware, has within a short time opened a museum which is professedly a counterpart of our South Kensington Museum; Paris is at present organising a museum of the decorative arts on the same principle; and throughout the capitals of Europe the same re-organisation and rearrangement observable at home have succeeded to a long period of dormant inactivity. It is on this score that we would urge some attention being paid to the sadly-neglected collections now so inadequately housed at the Tower.

What might be done by this superb gathering, now huddled together within the cramped chambers of the sturdy old fortress, can be seen by a visit to the collection exhibited at the Invalides in Paris, where an enthusiastic director has formed within a few years a museum of armour which is one of the most deservedly popular sights of the French capital, — a fact of which any one may be amply convinced by a visit on a Sunday or a *fête* day. The Tower of London, since the new regulations for admission have been established, has found a singular increase in popular favour; so much so, indeed, that changes will have inevitably to be made to receive the crowds who on the Saturdays and Mondays wind up and down the narrow Mediæval staircases of the old palace fortress.

Our national collection of armour is one of more than usual interest, from an historical and artistic point of view, — a fact which only renders its present state of disarrangement the more lamentable. Space is, of course, absolutely necessary to display in a satisfactory manner the many rare pieces of which the collection is composed, and this space, where is it to be found in the Tower? The authorities, it will be admitted, are scarcely open to a charge of neglect when it is remembered what are the existing conditions of the Tower, a Mediæval fortress with walls often 6 ft. and 8 ft. thick, newel staircases, in many cases the only means of communication, dark chambers, and dungeons; some portions still occupied as barracks, others crowded with military stores kept ready for immediate use. A different understanding should be arrived at, and the Tower constituted what it is essentially fitted to be, and what the present Commissioner of Works has proved his willingness to render it, a national monument, and as such, with great skill, it may serve as a most interesting museum, resembling, in a measure, that formed by the Brussels municipality in the Mediæval gateway of their city, the Musée de l'Armée de l'Hôtel. But for the display of the collection of armour for which the Tower has long been famous, there can scarcely be said to be sufficient space to do full justice to the choice and historic character of many of the pieces. In the past, before the days of Mr. Planché's direction, the collections at the Tower simply excited among connoisseurs a smile of pity and regret; but in the present day, when our travelling public have the opportunity of seeing such collections as those at the Invalides in Paris, the Ambras Collection at Vienna, the Armouries at Turin, at Vienna, at Dresden, and at Madrid, when a general knowledge concerning matters of art has spread in every direction, it is something more than a subject for regret that so superb a gathering of specimens of the armourer's art, many of the utmost historical interest, should be displayed in their present inadequate manner.

When it is remembered how successfully the French collection has been housed at the Invalides and the contents of Pierrefonds and other gatherings skilfully brought together,

the use of Chelsea Hospital for a similar purpose almost naturally suggests itself, space being absolutely necessary to properly display a fine collection of armour, the decorative character of which when skilfully arranged it is impossible to over-estimate. If we can scarcely hope at present for so instructive a museum as that at the Invalides, which shows us the costumed figures of the warriors of every period from prehistoric times down to the soldier of the present day, — a series of full-sized models always examined with interest by the public, — we can, at least, display in an attractive manner the choice specimens of armour we at present possess, and which are at this moment so singularly huddled together at the Tower. What has been already done by foreign Governments of late years should show us how to proceed, and before the difficulty becomes greater it may be suggested that we shall at a later day have to take some steps in this direction, or we shall perhaps find our American cousins ahead of us. From every point of view the question merits attention; not alone is the Tower collection a choice one, but its artistic and historical interest constitutes it a source of no small national pride. The beauty of the armourer's art is but ill appreciated by the general public; to it, let it never be forgotten, we owe all the early progress of the art of engraving proper, while a study of the creation of the armourer will reveal in how true a spirit he worked, and how patiently elaborated were all those features of beauty which render a choice piece of armour a positive encyclopedia of industrial and creative art, and still well worthy of that walk "ten miles a foot" which Benedick has described Don Pedro willing to undertake to see "a good armour." Such suits as now repose at the Tower, mounted with care and grouped with skill (and ample space), would produce a positive sensation. No one who has visited the justly-famous Ambras collection of armour at Vienna can fail to have been struck with the singular air of life in the suits of glittering steel once worn by the German emperors, the archdukes, and their sturdy vassals, to whom these pieces once belonged; there the figures, — so many of whose wearers are famous in history, — stand in grim reality seemingly ready to start forward into action at the trumpet's sound. A similar impression would be produced were our equally interesting suits, — though so many of them have long borne such atrocious names, — arranged with skill. London would possess another institution in which it might justly take pride, and which would serve as a model to the provinces; the Tower collection can scarcely be said to serve at present either as a model, or, indeed, as a very instructive lesson, of that respect for the good work of the past which it has been one of the chief efforts of our art-teachers in the present day to inculcate.

FOX COURT, GRAY'S INN ROAD.

WITH the demolition, a few weeks ago, of the eastern side of the southern portion of Gray's Inn-road has disappeared Fox-court. In that court, at the house of Mrs. Pheasant (who styled herself for the nonce Mrs. Lee), Anne, Countess of Maclesfield, by the name of Madam Smith, gave birth to the subject of Dr. Johnson's celebrated biography, — a man whose writings entitle him to an eminent rank in the classes of learning, and whose misfortunes claim a degree of compassion not always due to the unhappy, as they were often the consequences of the crimes of others rather than his own. Savage's baptism is thus recorded, though it escaped Boswell's notice when he sought for it, in the parish register of St. Andrew's, Holborn: — "Jan., 1696-7, Richard, son of John Smith [Richard, Earl Rivers, his sponsor and reputed father] and Mary, in Fox-court, in Gray's Inn-lane, baptised the 18th." This same register also chronicles the burial of Chatterton, who was laid in the Shoe-lane workhouse ground, now covered by Farringdon Market. At the other end of Fox-court, in Brooke-street, was standing, but two or three years since, Chatterton's last home. Here on the morning of Saturday, 25th August, 1770, he was found dead by his landlady, — one Mrs. Arncliffe, — in her garret at No. 39. From its window the steeple of St. Bride's and the dome of St. Paul's were then visible across Holborn Valley; St. Bride's having received the remains of another luckless poet, Richard Lovelace, who died of

starvation in Gunpowder-alley, Shoe-lane. The coincidence is strengthened by the circumstance that Savage closed his life on the morning of 1st of August, 1743, in the jail at Bristol, the birthplace of Chatterton.

THE ROMAN VILLA, MORTON, NEAR BRADING, ISLE OF WIGHT.

DURING the past few months several important discoveries have been made at this spot, one of the most interesting localities which modern research presents to the archaeologist and antiquary. The acquisition of the entire site by Lady Oglander,—whose family have been settled here since the time of the Conquest,—has enabled the Messrs. Price to continue their exploration along the lower portion of Brading Down. Here they have found a wing on the southern side corresponding with that on the northern side, and which latter is, probably, familiar to our readers. Moreover, in an adjoining field a distinct range of buildings is being unearthed. These comprise chambers containing fragments of wall-paintings and tiles, transverse flues, and indications of a furnace. One of these rooms, originally warmed by a hypocaust, has, apparently, been appropriated in later times to a singular use. Within its area are structures resembling kilns or ovens, adapted to domestic or manufacturing purposes, and illustrative of long occupation. Adjoining it is a square of masonry in perfect state, in the centre of which lies a bath or bisterne neatly paved with slabs of stone. The bath or tank rests upon a suspended floor; close by are some curious examples of the drainage system here practised. Many traces exist of the further extent of these buildings, whilst, taken together with the now revealed southern wing, they are plain proof of how much yet remains to be accomplished ere the works can be considered to be complete. Additions are constantly made to the already large collection of coins, now ranging from Domitian, A.D. 81-96, to Honorius, A.D. 393-423, together with specimens of pottery, window and other glass, personal ornaments, metal-work, human and other remains, and the like. Those who have charged themselves with the excavations have taken a lease from Lady Oglander of such lands as they deem necessary for the due accomplishment of their investigation, but the amounts of rate money and public subscriptions fail to cover expenses, of which latter the necessary new roads, the salaries of the curator and his assistants, the buildings and fences to protect the remains and museum, form no inconsiderable items.

ELECTRIC TRAMCAR TRIAL IN PARIS.

A TRIAL of a new electric tramcar took place in Paris on the 6th inst., with very satisfactory results. The proceedings were under the auspices of the French Electric Power Storage Company, who are prepared to supply the motive power in the form of electric accumulators. The vehicle employed in the trial was an ordinary three-horse tramcar. It left the Place de la Nation in the extreme east of Paris at three o'clock, and traversed the capital by the following route:—It passed first through the Faubourg St. Antoine to the Place de la Bastille, thence along the Boulevard Henri Quatre, and across the Pont Sully to the Boulevard St. Germain. At the Boulevard St. Michel end of the Boulevard St. Germain, a short stoppage was made. The second part of the journey took the car to Montrouge, returning to the Eastern Railway by the Boulevard de Sebastopol and the Boulevard de Strasbourg. The Boulevard Magenta was then reached, and the journey continued past the Northern Railway to the beginning of the Boulevard Ornana. Turning to the left, the whole length of the external boulevards was traversed to the Arc de Triomphe, and thence to Passy. The La Muette line of rails was then followed, *via* the Trocadéro, to the Boulevard Haussmann, the experiment being completed at the Circular Tramway Office at the end of the Rue Taitbout. Thence the car retraced its journey to the workshops, after having travelled forty-five kilometres through the crowded streets of Paris. It reached the starting-point again soon after six o'clock. A distance of thirty English miles was thus made in about three hours. The progress of the noiseless, but apparently animate, car, through the crowded streets, was

witnessed by the public with speechless astonishment. There was not the slightest accident, and not a single horse shied throughout the entire route. Whenever there was an impediment, the driver, directed by M. Philippart, the manager of the company, brought the vehicle to a standstill at a second's notice. The ease with which the car was turned off one set of tram lines and got on to another across several yards of unmetalled ground was likewise admirable. The motive power was furnished by four accumulators weighing about two tons and a half. They are fixed under the carriage seats, and connected with a Siemens' machine placed under the floor. This machine makes 1,200 revolutions a minute, and by means of a pulley sets in motion an axle, with which are connected the chains that drive the wheels. These wheels revolve sixty times to 1,200 revolutions of the machine. The speed of the electric tramcar is $9\frac{1}{2}$ miles an hour on level ground, and $5\frac{1}{2}$ miles on an ascent. The present tramway-lines in Paris are not well adapted for the new locomotion. On the newer lines the motion was sufficiently smooth, but on those that have been laid for some time there was a marked difference, and the force actually utilised was considerably below the indicated horse-power. The experiment, however, which was the first ever made over a long distance, fully proves the practicability of electric tramcars, and it may safely be predicted that before long they will take possession of the tram routes of the French capital, as the estimated cost is only one-half that of horse trams. The company who made the trip consisted of engineers and journalists, M. Ferdinand de Lesseps, being among the number. On Sunday a similar trip was to be made from Vincennes to Versailles.

AT YEOVIL AND ROUND ABOUT.

WE gave, on page 208, *ante*, a notice of the Abbey Church of Sherborne, which occupied a good deal of the attention of the members of the Architectural Association during their day's visit to that Dorsetshire town from Yeovil in the course of the fourteenth annual excursion. In this number some of the church towers seen during the week are illustrated; and in another number we hope to show some of the most noteworthy roofs.

In arranging the occupations of the week, it is always made a special point that on each day some buildings not purely ecclesiastical shall be reached, so that varying tastes and moods may be well suited. When, for instance, the three breaks full of good humour, sketch-books, sketching-stools, and the materials for the lunch at the road-side, started at nine a.m. from the excellent headquarters,—the Three Choughs at Yeovil,—for the north and north-west, the Manor House of the Wyndhams at Trent, and the charming Lytes Cary, with the churches at Trent, Queen's Camel, and Somerton, occupied the day, till six o'clock, when the long drive home began. The remaining monastic buildings, and the fine gateway at Cerne Abbas, with Lord Ilchester's mansion at Melbury Sampford, and four churches, made up the programme of the second day, spent in Dorset to the south-east of Yeovil; the division between Somerset and Dorset is the line of the Yeo, which just touches the town on its eastern side. The great house of the Phelps family, built between 1580 and 1601, the picturesque Priory gateway, and other buildings at Montacute, were visited on the next day, and East Stoke, South Petherton, and Martock churches also. Barrington Court, another house connected with the Phelps family, is of the same stamp as Montacute,—not so large, but beautifully put together. The exterior is a very perfect example of the best class of well-proportioned, strongly-modelled façades: a well-gabled and mullioned and Tudor-chimneyed bulk, now used as a farmhouse, and kept from decay, but left alone a good deal. With this *pièce de résistance*, the Abbot's House, the Vicarage House, and Almonry, at Melchely, were presented, and thereafter Langport, and the magnificent tower of Huish Episcopi. Newton Surmaville, the pleasant home of the Harbings, just by Yeovil; and the sadly-reduced, but still interesting, Clifton Maybank, near the Yeovil Junction; Preston Grange, with its great barn, 102 ft. long and 24 ft. wide in the clear; Brympton d'Evercy, a rare group of buildings; and a number of others would have to be described, if it was important to make out a complete list for the

guidance of sightseers. This, however, is hardly needed; and we will pass to our church towers with the remark that we shall find something to say about some of the domestic work when illustrations of characteristic details appear in our pages.

If Yeovil had been on the main line of the London and South-Western Railway, many people who now pass within less than a couple of miles of it would have looked upon it as a half-way house between Salisbury and Exeter. But the town placed itself long ago on the west of the Yeo valley; so that, unless a loop of line had been introduced, the rail to Crewkerne, which now meanders a little in finding its way from the Yeo to the upper course of the Parrett, would have crossed the table-land which gives such admirable points of view for looking over central Somerset. This table-land resembles a misshapen hat, with a crown about six miles from east to west and four from north to south, and a very irregular sloping brim. The very distinctive Chiselborough Knoll, sloping down to the Parrett at the west end, helps to close in the narrow valley on three sides, and is in part responsible for some of the saddening stories about that strange village. Hamhill or Hamdon, a promontory on the colt escarpment, from which the Hamhill stone comes, and *Mons Acutus*, St. Michael's Hill, the landmark a little on the west of Montacute village, which are also on the edge of the higher land, impressed not a little the imagination of previous generations. In coaching days Yeovil was actually on the great western highway, which ran from Salisbury to Exeter, through Shaftesbury, Sherborne, and Yeovil. Then the descent and ascent of Babylon Hill, and the crossing of the higher land on the west, were merely very notable "bob-up-and-downs" among the many others. The town contains glove-factories, and wears a prosperous look. Perhaps it will become famous in respect of the Nautilus grate, for the ingenious and persevering inventor, Mr. Potter, is bent on convincing the world of the importance of economising heat and fuel by its means. Some of the designs are of considerable merit, and the appearance of the stove is comely and novel.

Beyond the well-known inn, and a few pieces of domestic work, there is no old architecture to be seen in Yeovil town except the church. The tower (a large square western one), 90 ft. high, is dignified and thoroughly satisfactory and pleasant to look upon, without any claim to rare character or originality. The same may be said of the church itself, which has tall nave arcades, no clearstory, a wooden cradle roof, wide and tall aisles, with great four-light windows, and a well-developed chancel. There is (I) no step at the entrance to the chancel,—a feature, or rather absence of feature, seen elsewhere. [We will note in this way some peculiarities and number them; not in any order of importance, but as they happen to come up for notice.] The vestry is a crypt under the chancel, vaulted from a central pillar, and reached by a staircase entered from the north of the chancel. As fixing the date of the church in one direction, it may be noted that, in the will, dated 1382, of John Sambourne, vicar of Yeovil and Canon of Wells, instructions were given for the completion. The tower is now used as a baptistery; it opens from the church through a grand arch. The stair turret is at the north-west angle, not so frequently the position for it as the north-east angle (II.),—which is usually selected,—most probably on account of a real preference for a symmetrical western wall. Mr. E. A. Freeman, in his classification of Somersetshire towers, puts this tower with St. Stephen's, Bristol, and Dundry, on account of the staircase turret being brought into prominence. Considering the many radical differences between these towers and that at Yeovil, this might teach a useful lesson to ardent classifiers.

Queen's Camel and Cerne Abbas resemble Yeovil in the position of their turrets. Queen's Camel is only two miles to the west of Cadbury Castle, and Cadbury Castle is, by tradition, "the sacred mount of Camelot," of Arthurian legends. The peculiarly-shaped hill on the escarpment of the colt shows from afar in the comparatively flat lands to the west of it. West and Queen's Camel assist in reminding one of the name of the "dim rich city." The manor of Queen's Camel was granted in 1299 by Edward I. to his queen,—whence the first part of the name. The tower there is a fine one, with plenty of size and height; perhaps it is a little spoiled by the regularity of the size of its

vertical subdivisions. The masonry is somewhat peculiar, consisting of two thin courses alternating with a thicker one. The soffits of the chancel arch has good foliated panelling, a mode of enrichment carried out on piers also, and of which there are even finer examples (III.). Sherborne has been mentioned before:—the tower arch of Martock has the panelling in two planes. There are also canopied niches on each side of that arch; indeed, Martock recalls St. Mary's, Taunton, by the richness of its ornamentation as well as by the character of its design. The turret at Yeovil suggested the mention of Queen's Camel; and, when turrets are being thought about, Yetminster tower deserves a word, if only for the vigorous square turret at the north-east of it. The tower itself has two buttresses at each angle, but no part of them is carried into the upper stage. It has merely a two-light window on each face of that stage, and thus in most respects it has rather less pretension than some of the other towers which we have promised to name.

Spires are rare enough in Somerset, as there are less than a dozen in the whole county, and Trent was the only church visited which had one (IV.). In Dorset old spires are still more rare. Iwerne Minster, between Blandford and Shaftesbury, near the Wiltshire border, is commonly stated, with a delicate indecisiveness, to be "perhaps" or "almost" the only old spire in the county. Trent would have been at least a second if it had been placed about a quarter of a mile further south. It is reached from Yeovil by tree-shaded roads almost entirely in Dorset. Beyond being in good relation to the tower the spire is in no way remarkable. Its position at the east end of the south aisle is not the most ordinary one, but occurs occasionally in the district (V.). Three-fourths of the churches visited, have western towers, the most common position for a perpendicular tower hereabouts (VI.); the exceptions usually belong to earlier periods. Most of them are disengaged; that is, the aisles stop at the east wall of the tower, the arrangement which does the most justice to a western tower. At Trent, the tower forms a sort of transept inside, and a true transept on the north replies to it, which also has been observed in several instances (VII.). The lights of the windows are filled in with stone panels pierced with quatrefoils,—a beautiful finish, enriching the general effect, and well in scale with all around,—which cannot always be felt with reference to the great French slopes; and they are less awkwardly formal than the too-regular louvres of Northants and other parts. These stone panels are rarely found in old work outside Somerset, Gloucester, Dorset, and Wilts (VIII.). The stone covering to the chancel roof,—used a good deal in church, house, and barn aforesome (X.),—does not seem to be in favour nowadays as a weather-resisting and durable material. The bold lines of shadow, rough texture, and beautiful growths on the surfaces will be regretted as time goes on. There are gabled cottages just by the church with short unlined windows and labels over their heads, types of the cottages which are to be found in every valley (IX.), simple and unpretending enough, but with just that slight forgetfulness of absolute "need," without which no man's work has charms.

The towers at Bradford Abbas and Cerne Abbas may be classed together on account of the treatment of their angles. Bradford Abbas,—that is, the broad ford over the River Yeo or Ivel, which is running by the village from Sherborne towards Yeovil,—called also "Abbas," in compliment to the abbot of Sherborne, who lived at times at Wyke, about a mile off, just by the railway. The church was connected with the abbey, and is believed to have been built by wool-staplers, in the reign of Henry VII., on the site of an earlier thirteenth-century church. The tower is about 90 ft. high, with breadth to match, and to make a stately whole; also possessing rare beauty of outline, and subtlety in the proportions of the stages. Everything is on a good scale, the top of the plinth, for instance, is 5 ft. above the ground. The octagons at the angles set in at each stage, and lose size consequently in the whole ascent; immediately above the plinth the five sides are 22 in., and the two return-sides 16 in. From these dimensions it will be seen that, though an extremely narrow stair would be possible at the lower stage, the space would be too strait even for that on the upper stages. These octagons encasing the angles of the tower from ground to pinnacle are, in fact, quasi-turrets

merely,—reproductions on a small scale of the turreted angles of (to go to the very large) the west towers of Lincoln, the perfect tower of Magdalen College Chapel, and the majestic, though imperfectly terminated, tower of Wymondham. Such turreted angles, rising straight from the ground, are sometimes justifiable to reproach for too great severity of outline:—not that any one has found fault with Magdalen College Chapel on that or any other ground. There is no doubt that in smaller buildings than those a suavity of outline and sufficient variety as well may be attained, which, with square double buttresses, even diminished most gradually, and with nicest art, are very rare. Such successes as Bruton, Bishop's Lydeard, and Evercreech can be counted up very quickly. The western doorway at Bradford Abbas is particularly elegant and original; there is an ogee crocketed hood-mould, a fringe of cusps to the arch, and a seat for one person in a large hollow in each jamb.

Cerne Abbas is quite sufficiently out of the world, as dwellers in big towns look at things nowadays, being six miles by cross roads over the downs, to the east of Maiden Newton Station on the Weymouth branch of the Great Western,—and placed in a well-marked valley about three miles from its head. At the top of the valley just beyond Minterne Magna the waters divide, and the Cerne starts down the valley on its way to the Frome and the sea at Poole. The Cerne giant and his club on the hill above the town are in good order, being well scoured periodically as,—

"Men weed the white horse on the Berkshire hills,
To keep him bright and clean as heretofore."

The giant is said to be 180 ft. high, and his club 120 ft. long. Once a market town, Cerne Abbas now bears all the signs of being worsted in the attempt to maintain its dignity. Of the conventual church which gave to Middle Cerne the special name which distinguishes it from Upcerne and Nether Cerne, there are no remains above ground. The tower of the parish church comes directly upon the little street, which rises gently towards the monastic buildings and gateway. The turret at the corner has been noted above as occupying the same places as at Yeovil. The pinnacles, carried on corbels at the bottom of the upper stage of each front, are singular. They show traces of the influence which led to the projected angle pinnacles at Huish, St. Stephen's (Bristol), Chewton Mendip, and elsewhere (IX.).

South Petherton is about half-way between Ilchester and Ilminster,—the latter celebrated for its noble tower over the crossing. Crewkerne contends unsuccessfully in respect of its central tower with Ilminster, but it excels every other such tower in Somerset. South Petherton cannot be considered a good second to Crewkerne, but it makes a good figure in the landscape as seen from the roads running towards the Parrett. Its considerable height and unusual form make it strike the eye and the fancy. From the south side the octagon is seen to the best advantage,—the south-west turret being then brought into view also gives more variety and character. It strikes one as under-windowed, and what piercing there is seems somewhat weakly designed. The stone vault under the tower supports the canted sides; the corbels of the ribs are finely moulded, and there are well-carved symbols of the evangelists in the lower portions of them. The house oddly named King Ina's Palace,—but one name is [nearly] as good as another,—built early in the sixteenth century, will not now reward the visitor as when Mr. A. A. Clarke, of Wells, made his pretty drawing of it. It has been added to and made into a modern residence, and has lost its charm.

It will be proper to allude to Somerton Church in connexion with South Petherton,—seeing that it also has an octagon tower; of course, each consists of later work added on to earlier. At Somerton the tower is, however, not over the crossing; it is, in fact, in the same position as that at Trent, serving as a transept on the south side, and being echoed by a small transept on the north. It is not octagonal for its whole height, but starts from the ground on the square, and gets into the octagon at about the level of the parapet of the nave-roof by means of long tablings. The tablings ascend from good sculptured heads, starting out from the angles of the tower between the two buttresses which project from each angle at the same level. Somerton is reached by Kingsdon Hill,—from which, it is claimed that, on a clear

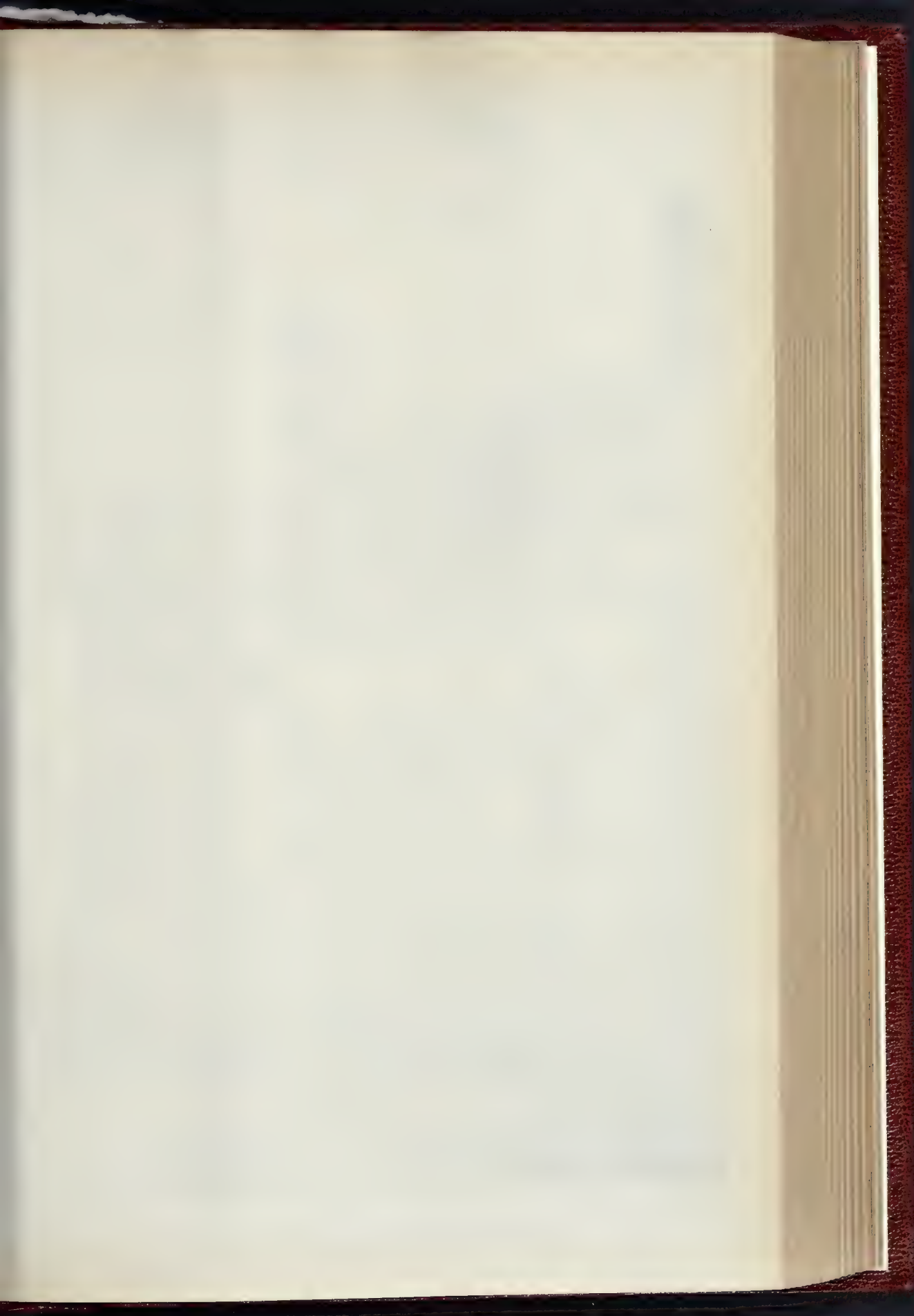
day, the prospect extends forty miles,—from the east border of Somerset to beyond Taunton in the west,—and a gladsome sight it is. There is plenty of interesting work in the church besides the tower, and there are old houses with projected bay windows in the streets of the little market town, and the inn signs are worth a pilgrimage thither. Mr. J. L. Robinson, architect, of Dublin,—a most skilful amateur photographer, who was one of the party,—was tempted to forsake for a moment his graver work in order to take a sun-picture of the very Red Lion, which,—mounted on a large platform perched upon a column,—strikes terror by its awful glare into the sufficiently impressive.

With Langport, situated at the end of the line of hills dividing the valley of the Carey from the valley of the Yeo, and on the railway from Yeovil to Taunton, we may bring these notes to an end. From the churchyard an observer may look over the low lands in which the Yeo, the Ile from the Blackdowns, and the Parrett, are moving northwards to meet at Langport, and then go forwards as one stream, the Parrett of Bridgewater, into Bridgewater Bay. Huish Episcopi is practically part of Langport; and the tower of Huish is known at least by repute to all students of architecture. It is notable for the management of the buttresses,—on the same system as Bishop's Lydeard and Bruton. A small buttress does reach the parapet, but the main bulk of the buttresses is parted with at about the level of the springing of the windows of the upper stage of the tower. This gives the tower a pyramidal outline, which in Bishop's Lydeard is the perfection of easy grace; but at Huish the temptation to something more led to the construction of the pinnacles projecting out from the angles. These are fascinating enough when seen from near at hand, but are often regretted when further off, as the top of the tower seems unduly swelled. The space behind the pinnacle is seen very clearly in the near view, and the main angle of the tower looked upon as the line of strength. The treatment of windows and niches, the bands of quatrefoils dividing the stages, and under the parapet, the perforated slabs in the windows, the small pinnacles attached to the faces of the buttresses of the middle stage, the setting out of each stage a little beyond that above it,—all have been the subjects of serious effort, and the result is a perfection rarely attained.

Kingsbury, about four miles up the Parrett, has a very noble west tower of the same kind as Huish. There are vestries below the east windows at Kingsbury and Langport; the same thing occurs at North Petherton, between Taunton and Bridgewater, another church with a remarkable western tower. This, however, is not a merely local arrangement, for we find it, for instance, at St. Peter Mancroft, Norwich, and Hawkhurst, Kent. Langport, it will be seen, has two square buttresses as far as the upper stage, angle buttresses through the upper stage, and equal well-developed pinnacles. The windows of the upper stage are divided by small pinnacles, four to each front. Less piercing and elaboration are given to the stage below,—a good quality in all tower designs. The west tower at Bruton,—a finer and more expressive work than Langport,—is worked out on much the same lines. Each detail which has been mentioned above appears, but in a better class of design. The parapet, too, at Bruton is very noteworthy. A great six-light window takes the places of the five-light window at Langport, and there are three niches in that stage above the window. The ideas worked out in these towers were favourites with the Perpendicular builders of Somerset, and appear again and again. The variety obtained out of similar materials, by the truly original artists who put their minds into these designs, is a constant source of interest to those who have come into the inheritance.

DESIGN FOR TOWN-HALL, JERSEY.

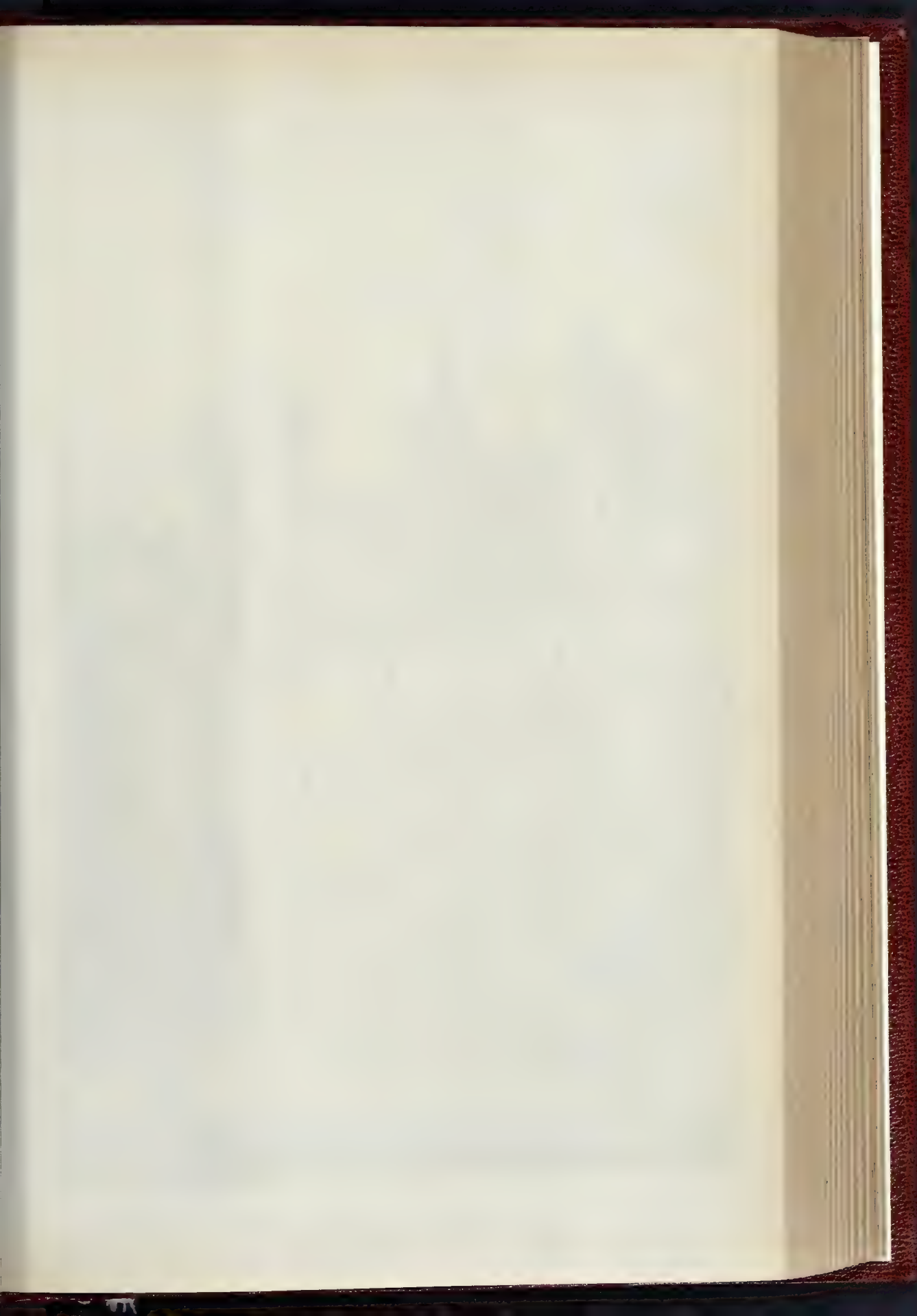
This illustration is from a design sent in competition for a Public Library and Grefrier's Office, in the island of Jersey, by Mr. J. M. Bignell, architect, 22, Surrey-street, Victoria Embankment, London. The design is treated to suit the different levels. The Public Library being on the first-floor level, running through from back to front, the entrance to it is from the back street, and not communicating with the Grefrier's entrance.





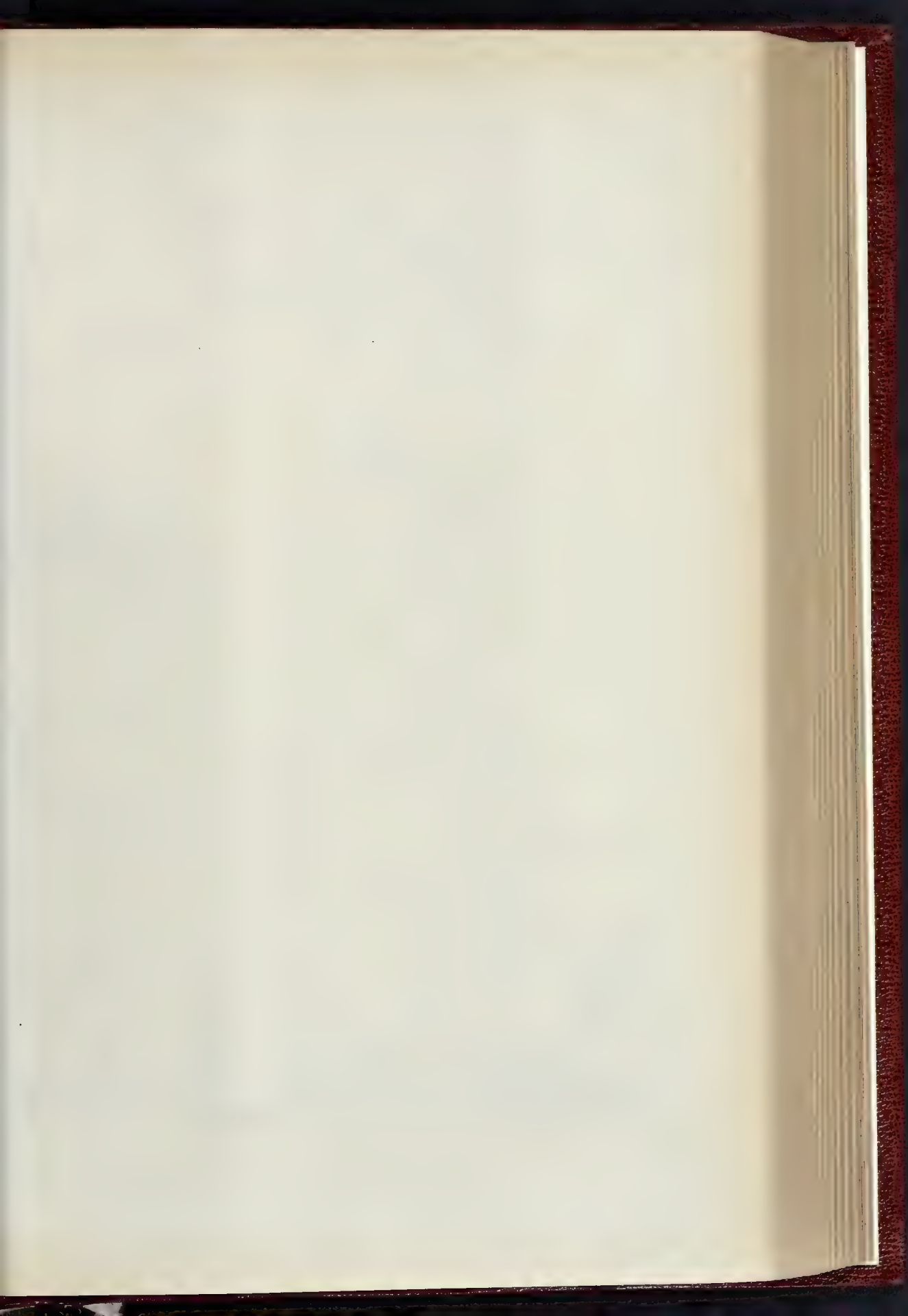
Vincent Brown, Esq. & Co., Photo-Litho, London W.C.

DESIGN SUBMITTED FOR TOWN HALL, JERSEY
By MR. J. M. BIGNELL, ARCHITECT.



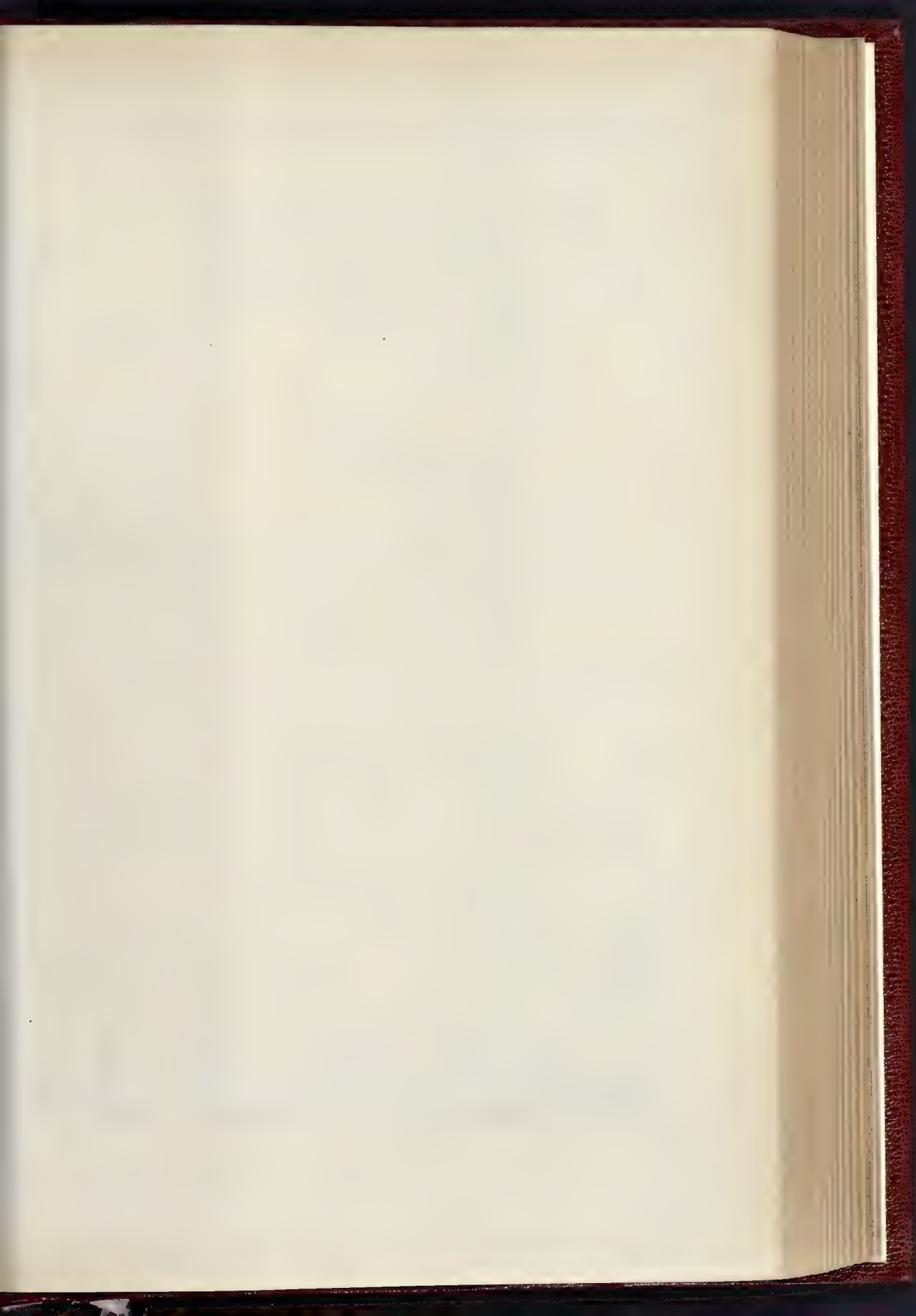


BOARD ROOM, EPSOM UNION.
MR. HERBERT D. APPLETON, ARCHITECT.





BOARD ROOM, EPSOM UNION.
MR. HERBERT D. APPLETON, ARCHITECT.



CHURCHES visited from YEOVIL by the ARCHITECTURAL ASSOCIATION.

August, 1883.

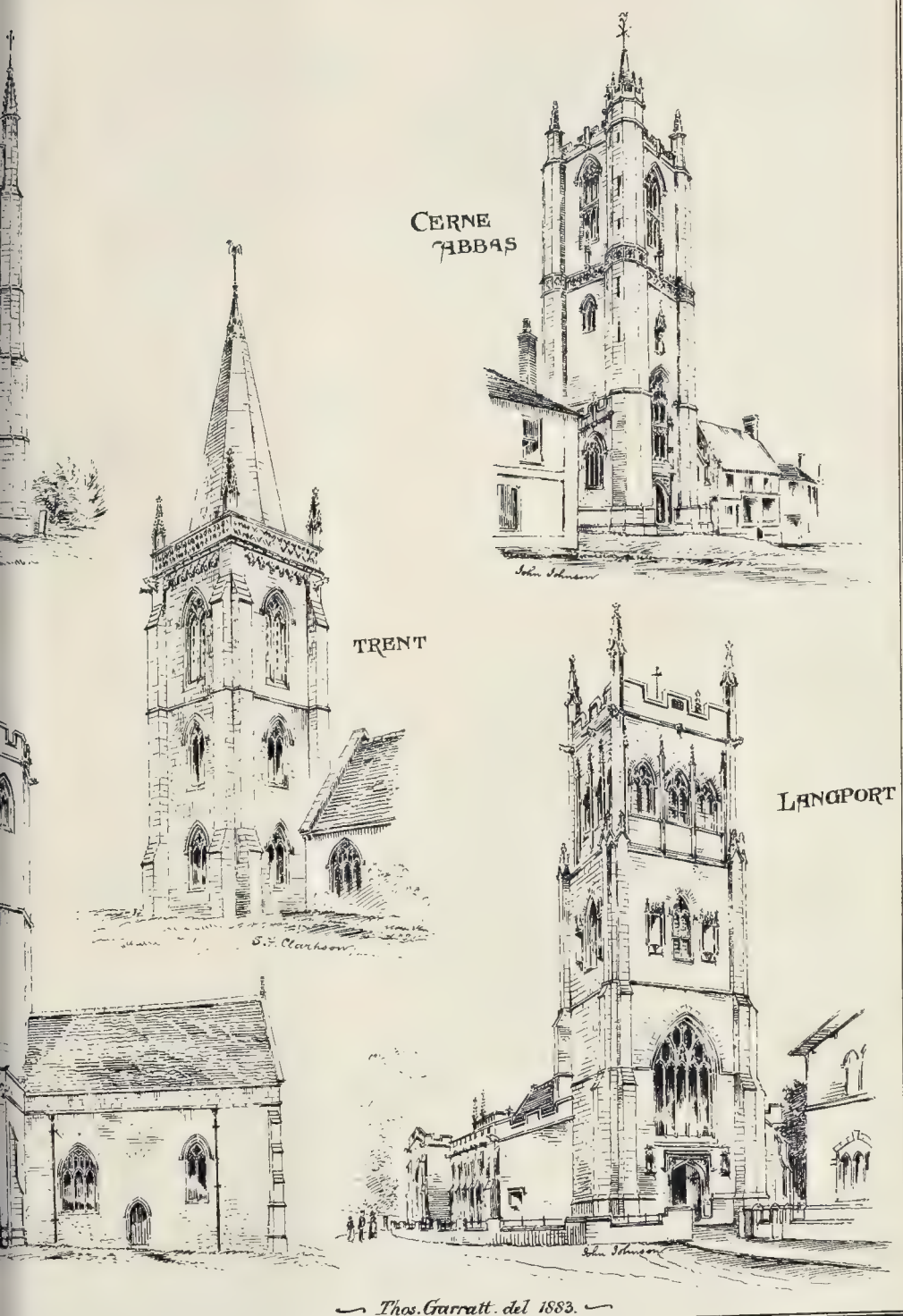
BRADFORD
ABB45

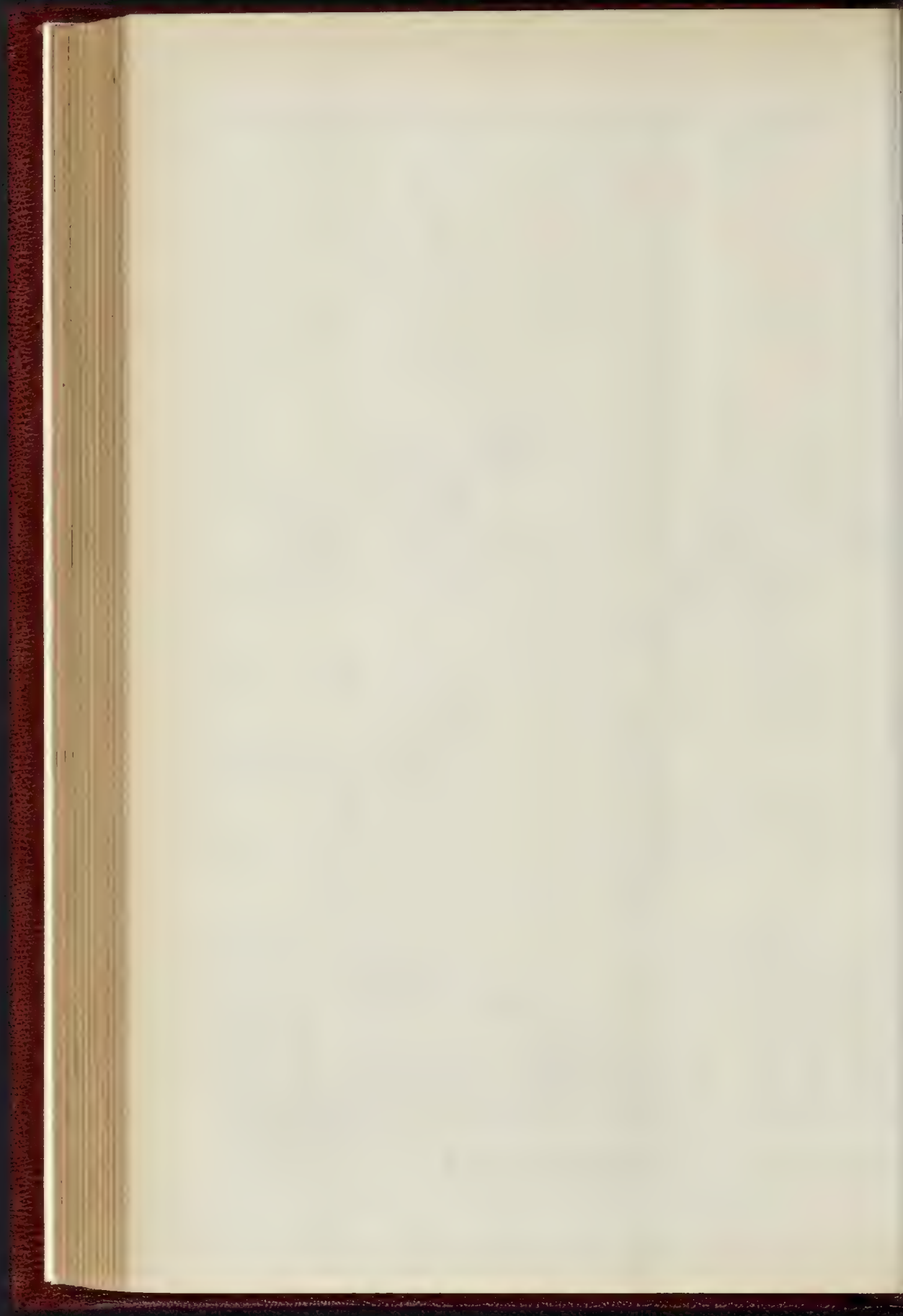
YEOVIL

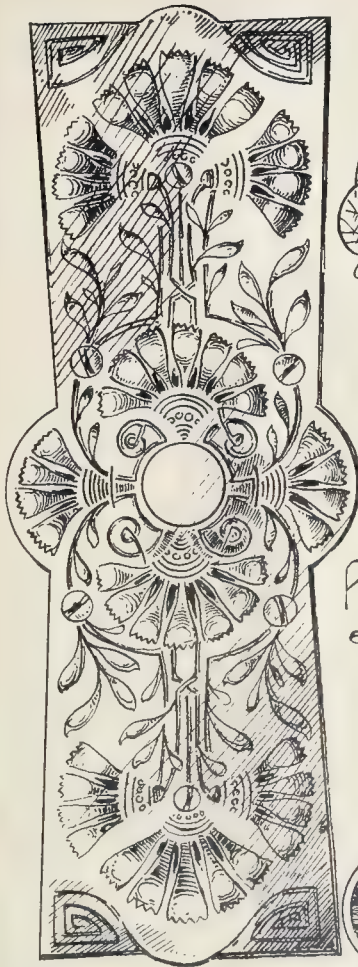


SOUTH
PETHERTON







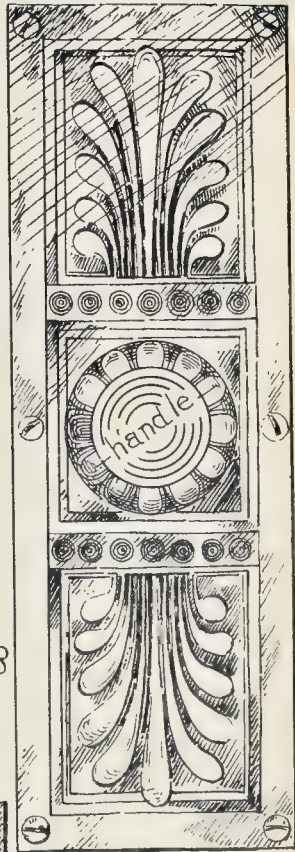
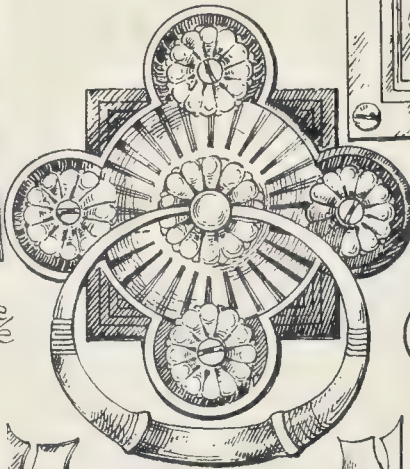


finger or handle plate

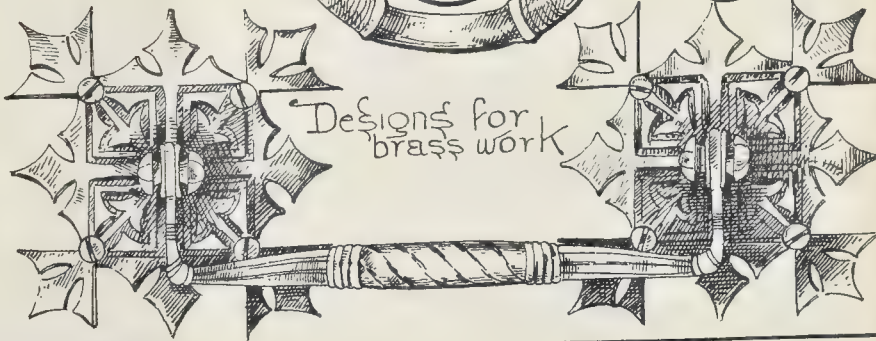
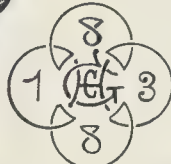


key plate

finger plate for engraving or embossing



door plate for handle or key



Designs for brass work



TRALEE BAY, IRELAND.

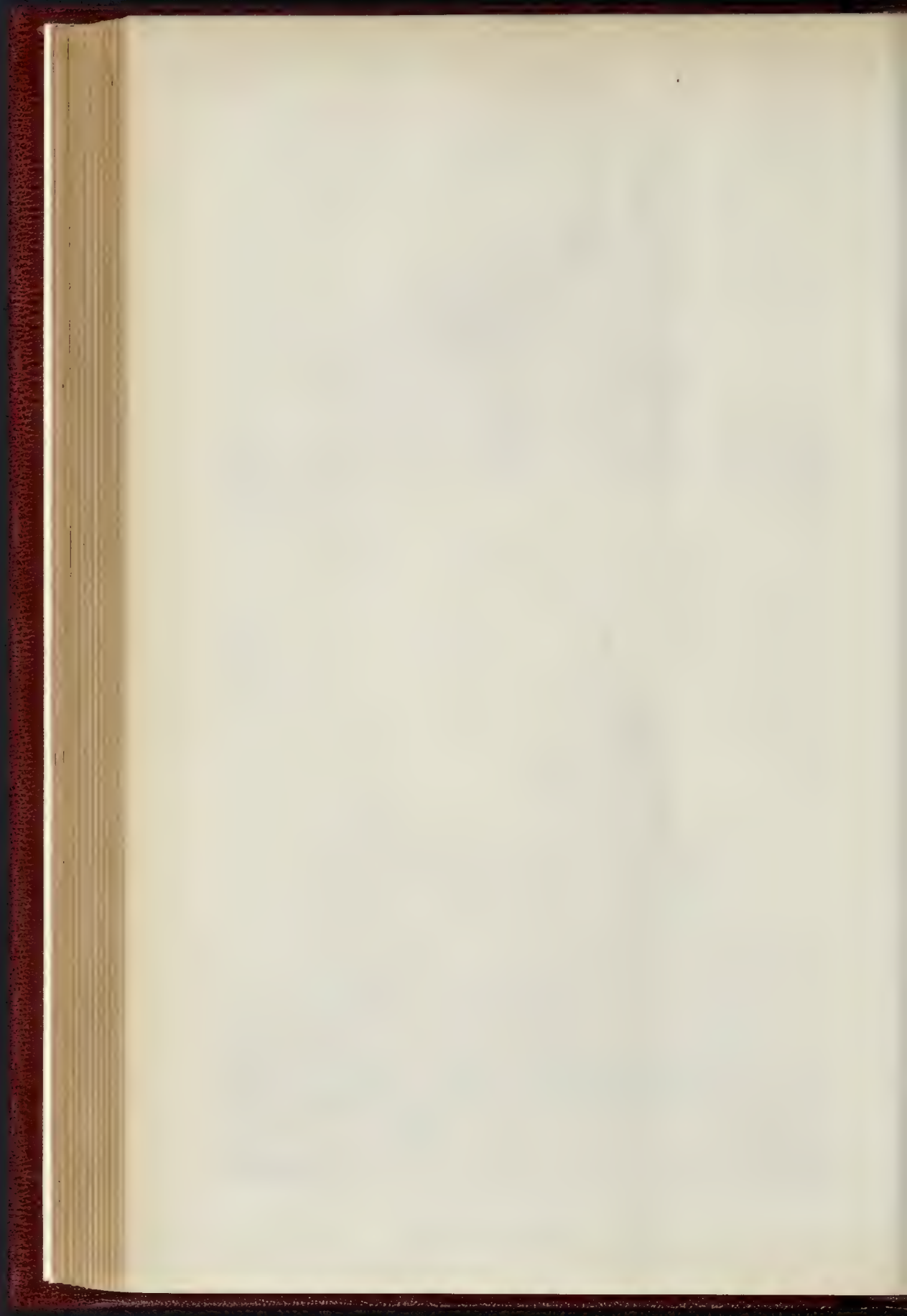


Vincent Brooks Day & Son, Photo Litho, London, W.C.

CLACTON ON SEA, ESSEX.

LIFE-BOAT HOUSES.

MR. CHAS. H. COOKE, F.S.A., ARCHITECT.



BOARD-ROOM, EPSOM UNION.

This building is an alteration of the old Board-room belonging to the Epsom Union, and was effected by raising the floor of the old chapel, and carrying out the front walls. The new Board-room is 37 ft. by 24 ft., and 12 ft. high; in addition to this a committee-room, workroom, and store, have been provided. The building is of red local bricks from Messrs. Chuter's field, the facing being of gauged work, the mouldings being all cut brickwork. The Board-room is heated by two open stoves, and a coil of steam-pipes. The contract was taken for 559l. 15s., by Mr. George Hards, of Ewell, and has been carried out under the inspection of Mr. Coleman.

The architect was Mr. Herbert D. Appleton, of 157, Wool Exchange, Coleman-street.

LIFEBOAT HOUSES.

ROYAL NATIONAL LIFEBOAT INSTITUTION.

In continuation of our illustrations and description (see pp. 118, 119, and 125, ante), we now give views of the following additional stations:—

Clacton-on-Sea, Essex.—This house, which is a very commodious one, is built of red brick, with a slated roof, and placed in a very prominent position in this rising watering-place. The expense of this lifeboat station was met from the munificent gift voted to the Institution by the Freemasons of England, for the establishment of two lifeboat stations in perpetuity, in testimony of their loyal gratification on the occasion of the safe return of their Grand Master, H.R.H. the Prince of Wales, from his tour through India. The other lifeboat station is at Hope Cove, on the coast of Devon.

The public inauguration of this lifeboat establishment took place on the 10th of July, 1878, in the presence of a large concourse of people, with full Masonic honours, the day being observed as a general holiday at Clacton. Lord Skelmersdale, Deputy Grand Master of Freemasons, and a numerous party, specially came from London to take part in the proceedings. The first work of the day was the holding of an especial Provincial Grand Lodge, after which a procession to the boat-house was formed by the Masons, who were clad in their regalia, and accompanied by the mayors and corporations of Colchester, Ipswich, Harwich, and Maldon, the local lifeboat committee, and others. On arriving at the house two memorial-stones were laid by Lord Skelmersdale and Richard Lewis, esq., the late secretary of the Institution. The cost of this house was upwards of 600l.

Tralee Bay, Ireland.—This house is built of limestone, with a slated roof. This station was established upon the application of the local residents, it being hoped that the boat would be also available for Ballyheige Bay, if required. The boat-house has been erected on a suitable site, which was readily granted to the Institution by the late Mr. John Hurly, of Fenit. The lifeboat is named the "Admiral Butcher," and the whole expense of this station was presented to the Institution by Mr. R. G. Butcher, the eminent surgeon at Dublin, in memory of his late father and brother, and a suitable inscription upon polished granite has been placed on the front of the house.

These houses have been carried out from the designs of the honorary architect of the Institution, Mr. Charles H. Cooke, F.S.A., of Burlington Chambers, 180, New Bond-street.

BRASS-WORK.

A LITTLE brass-work judiciously used in the decoration of a room is pleasing and effective. Besides the fender, fireirons, and dogs, it can be employed for sconces, gas-centres, door-plates, handles, &c. It is of the latter I now speak, and show a set of designs for same, a little out of the beaten track. They are suitable for engraving or embossing, that is, punching up. The engraved parts should not be cut too deep, or the crevices will hold the dust, and make the process of cleaning difficult and unsatisfactory. When rooms are decorated in light colouring, finger-marks will, sooner or later, appear, and the paint suffers from the frequent scrubbing found necessary. For this reason finger-plates are used, of various

materials, such as papier mâché, china, and brass, the latter, in my opinion, being the most suitable. It will be seen there is no endeavour made to hide the screws, but I have rather sought to emphasise and so place them as to form part of the design. Where a lock is not required, the handle-plate shown might be used, and the handle would thus receive the support it seems to require. Surely it is anything but good construction for the heavy brass handle to stand alone, surrounded by woodwork. It seems more in keeping to find it supported and springing from a base of its own material. The handle should, I think, have a few lines or suitable pattern slightly ribbed upon it, to afford a better grip for the hand. The square handle is suitable for a coal-box, so that the lid could be easily raised; the majority of even expensive articles of that kind have only a small knob, forming no feature or connexion with the rest of the box, and difficult to grasp. It will also suggest itself for many other purposes.

The butterfly key-plate is suitable for a chest, cabinet, or any piece of furniture where a little ornamental brasswork is required. Key-holes, where possible, should be well surrounded with brass, as the woodwork round about will sooner or later get scratched; it should also in ornamental work of this kind be sunk a little, as the receding helps the introduction of the key.

At some future time I hope to show examples of pierced brasswork for hinges, &c., and hope to see the day when the hinges of our doors will be honestly shown, and in such a manner as to prove a decorative feature. It seems strange that such a necessary piece of construction as a hinge should be hidden away, and its useful functions made such a secret and mystery, especially when the mechanism is so capable of decorative treatment, and enhancing the appearance of the door itself. The desire now, in almost all crafts, seems to be to disguise as much as possible the *modus operandi*. Familiarity with good construction can never breed contempt, but, when effectually hidden, it is likely to give rise to doubts as to what is really beneath. The drop-handle is fixed to two plates, designed to give the effect of pierced work, but leaving no small crevices likely to be filled with dirt.

In conclusion, I may say that this sheet of designs is intended for works which could be turned out at a fairly moderate cost, and being hand-worked, would always possess a charm that is never to be found in mechanical work, no matter how elaborate or intricate the designs may be; indeed, to a man possessing any taste at all, there could be no hesitation in selection between plain lines round the edge of a door-plate done by the graver, and a design by mechanical process.

GEORGE C. HAITÉ.

PROGRESS OF RAILWAY AND PUBLIC WORKS CONSTRUCTION.

FOLLOWING upon the close of the late session of Parliament, the Report of the Board of Trade on Railways for the year ending 1882, and the list of private Bills passed during this year's session, have just been simultaneously issued, and both of these Parliamentary papers show that notwithstanding the present great length of the railways of the United Kingdom, there is a certainty of the mileage and capital of these vast undertakings being still further increased to an almost incalculable extent.

The Board of Trade's Report states that the total length of the railways in this country up to the end of 1882 was 18,457 miles as compared with 18,175 miles at the close of the year 1881, showing an increase during the year of 282 miles. The aggregate capital of the several railways, at the close of 1882, was 767,899,570l. as against 745,528,162l. at the end of 1881, showing an increase during the year of 22,371,408l. Adverting to the receipts and expenditure of the different companies during the two years respectively, the report states that whilst in 1882 the receipts amounted to 69,377,124l., they were only 67,155,000l. in 1881, an increase in 1882 of 2,222,124l.; the expenditure in 1882 being 36,170,436l., and in 1881, 34,900,000l. The Report, on these figures, remarks that "mileage, capital, traffic, working expenses, and net earnings have all increased by small percentages, and at much the same rate, with the exception that the increase of mileage is at a less rate than the increase of capital, an indication of the con-

tinued capital expenditure on lines open for traffic." The report further shows that during the last decade, from 1872 to the close of last year, the increase in capital had been at the rate of 20,000,000l. per annum, the capital in 1872 being 569,047,000l. as compared with 767,899,570l. in 1882.

As already stated, the result of the private Bill legislation of the late session proves that an immense further increase in the mileage and capital of railways may confidently be expected, independently of new railways authorised in former sessions, and now in course of construction. There were ninety-six Bills promoted by existing railway companies, several of which were for the construction of an aggregate of 623 miles of new railway and other works, at a proposed expenditure of 31,537,632l. Of this number, upwards of sixty received Parliamentary sanction, forty-four of which were for the construction of an aggregate of 539 miles of railway, at an estimated outlay of 22,532,100l. The total number of railway Bills promoted by new companies was fifty-five, for the construction of 1,164 miles of railway, at an estimated cost of 56,828,567l. Several of these new projects were, however, strongly opposed by existing companies and other adverse interests, the result being that fifteen only out of the entire number were sanctioned, authorising these several new companies to construct 252 miles of entirely new railways, at an estimated cost of 8,150,000l. The aggregate total length of additional railways sanctioned during the session was, therefore, 791 miles, with a capital of 30,682,100l. So far as the powers obtained by existing companies go, the Great Eastern stands at the head as to new mileage, that company's Act authorising the construction of 58 miles of new railways in Essex, and other works, at an outlay of 2,250,000l.; the Great Western Company 52 miles of widened line, at an outlay of 1,000,000l.; the Didcot, Newbury, and Southampton Junction 31 miles of new railway, at a cost of 600,000l.; the Midland Company 30 miles of new railway and other works, cost 1,800,000l.; the Eastern and Midland Company 26 miles of new railway, cost 640,000l.; and the London, Tilbury, and Southend Company, 24 miles of new railway in Essex, cost 400,000l. The London and North-Western Company are empowered by their Acts to expend 2,433,000l. in alterations and widening of their railway at different points, and the construction of new railways, 15 miles in length; the London and South-Western Company 2,013,000l. in constructing 30 miles of new railway and works in connexion, and the Lancashire and Yorkshire Company 2,600,000l. in works of a varied character at different points on their system. Amongst the heaviest undertakings of the new companies are those of the East and West Yorkshire Union, who are empowered to construct 30 miles of new railway at an expenditure of 1,700,000l.; the Midland and Central Wales Company, 42 miles of new railway at a cost of 1,600,000l.; the Pewsey, Salisbury, and Southampton Company, 44 miles of railway, at a cost of 1,066,000l.; and the Plymouth, Devonport, and South-Western Junction Company, 30 miles of new railway, at a cost of 1,000,000l. A considerable proportion of the works sanctioned by the different Acts is within the metropolitan area, including those under the Act of the Regent's Canal, City, and Docks Railway Company, who have obtained powers in respect of two Bills, one of which constitutes the canal undertaking a separate undertaking, with a capital of 1,500,000l.; the other Bill constituting certain of the authorised lines a separate undertaking, with a separate capital, to be called, "The City Lines Undertaking." The North London Company's Bill authorises the expenditure of 333,000l. in the purchase of lands for additional works in the districts intersected by their line. The Metropolitan Company have obtained a Bill for the expenditure of 716,000l. in the construction of works authorised by an Act passed in 1879. The London and North-Western Company's Bill, amongst its other powers, authorises the construction of new roads in the neighbourhood of Euston-square. The London and South-Western Company are authorised by their Bill to form a junction with the Metropolitan District Railway at South Kensington; also to widen the Waterloo Station; and to make several alterations of roads on their Richmond line at Mortlake, Chiswick, Chertsey, and Twickenham. The London, Tilbury, and Southend Company are empowered to make a junc-

tion with the Metropolitan Outer Circle Line at Little Ilford; whilst the Hounslow and Metropolitan Company's Bill authorises that company to make an extension at Hounslow, and a junction at Ealing with the extensions of the Metropolitan Railway. A newly incorporated company, which designates its undertaking the London, Hendon, and Harrow Railway, has likewise obtained powers for the construction of a new railway, eleven miles in length, from the authorised Beaconsfield, Uxbridge, and Harrow Railway at Harrow, to Hendon and the Great Northern Railway (Edgware and Highgate Branch) north of Highgate, and to the Alexandra Branch Railway; also branch lines to the Midland Railway at Hendon, to the Harrow and Rickmansworth at Harrow, and to the Metropolitan Outer Circle at Kingsbury. The capital for this undertaking is 373,800l.

The number of tramway Bills sanctioned also involves a large outlay in the construction of the works to be carried out. Of this class of Bills fifteen received the royal assent. Under them the construction of 38 miles has been authorised, at an expenditure of 623,000l. Of these Bills, three are for the construction of 14 miles within the metropolis, at a cost of 314,000l. In the Croydon and Norwood district 8 miles of tramway are to be laid down, at a cost of 147,000l.; 3 miles in Brentford and Isleworth, at an outlay of 150,000l.; and 3 miles in Peckham and Dulwich, also at a cost of 47,000l. As regards eight of the Bills, the use of steam or other mechanical power was sanctioned. The foregoing number of Bills sanctioned by the Parliamentary committees does not represent, however, the full number of tramway projects which have been authorised. In addition to them there were thirty Board of Trade applications for tramway provisional orders, for the construction of 137 miles of tramway, at an outlay of 2,836,550l. In twenty-six cases orders were granted, in sixteen of which mechanical power was sanctioned, and in nine the Hallidie underground cable propulsion.

Gas and water Bills authorised by the Parliamentary committees numbered twenty, and in addition sixteen applications to the Board of Trade for provisional orders were sanctioned.

Of the Bills connected with harbours, docks, and rivers, seventeen were sanctioned, including that promoted by the Corporation of Preston for the improvement of the river Ribble, and the construction of docks at Preston, at a cost of 600,000l.; also Bills for the construction of docks at Hull, Milford, and Newport.

The town improvement Bills sanctioned were fourteen in number, including those promoted by the local authorities of Aberdeen, Birmingham, Burnley, Cork, Dumfries, Heywood, Liverpool, Longton, Nottingham, Penzance, Portsmouth, and Sheffield, and two promoted by the Metropolitan Board of Works.

The complete number of private Bills of all kinds which were sanctioned during the session was 180, of which eighty were connected with railways.

NOTES FROM BIRMINGHAM.

SIR,—Another Board School, on the class-room system, has just been completed and opened in Loxton-street, and a new departure has been made there by the adoption of penny fees, which will, of course, have the effect of rapidly filling the school, not only from the streets, but by the withdrawal of children from other schools where the fees are higher; for as the School Board have determined that the quality of the instruction in all the Board schools shall be of the best, including some elementary scientific knowledge, parents and guardians, not only of the poorest class but of classes above them, who can well afford to pay fees of a substantial character, are withdrawing the children from private schools, where the fees are high, and sending them to the Board schools where fees are low. The result of this plan is, at present, that very few of the 8,000 or 9,000 waifs and strays still in the streets of Birmingham find their way into any school at all, and the process is likely to continue until the new schools provided have overtaken the increase of population plus the bulk of the children now in private schools.

Two more schools, to accommodate 1,000 each, are already ordered, and land is being sought on which to erect seven or eight more. Of course, the school-rate is high and is increasing, but the effect upon the juvenile criminal class

is already beginning to be felt, and the number of cases in the police-courts of young delinquents is diminishing. Meantime, it is felt very strongly that some means ought to be adopted of bringing the large number of gutter children under control and instruction, as the very first principle which induced the invention of School Boards is at present evaded. Then again, the purely literary instruction imparted in the schools,—as opposed to useful technical education fitted to enable a young person to earn his or her living in the arts,—is likely to produce a race of prize who have been crammed for examinations with a mass of facts and figures, which, while very useful in themselves, are not sufficient of themselves to enable the possessor to earn an honest living. The hand and eye want training in the useful arts at an early age to enable their possessor to become an adept in his calling.

There has been quite an epidemic of small-pox and scarlet fever in the town lately, as many as 120 patients from the former disease having been in the borough hospital at once. It is believed to have been an importation from outside districts, but it has had the effect of finding out the vile and dirty places,—the weak joints in the sanitary armour,—in the borough. The disease was even carried into the borough prison by a chaplain who had the *entrée* into hospital and prison, and one of the prisoners has died. Chaplains and others must now undergo disinfection.

The contract for a new Liberal Club House, of considerable magnitude, has just been let for some 27,000l. The architect (Mr. J. A. Cossins) is the same gentleman who designed the Mason College, and the site is nearly adjoining that building, at the corner of Edmund-street and Congreve-street. The frontage is small, but that will be compensated for by great height and depth, and terra-cotta will be largely employed in the elevations. It is intended to be completed in two years.

The same architect is also about to build a large chapel in the Bristol-road, for the Old Meeting Congregation, whose place of worship has been absorbed by the railway companies for the enlargement of New-street Station, which latter work is making rapid progress, and the new offices and other buildings being erected. A large block of buildings is also going up in Dudley-street for an hotel and basket warehouse in brick and red stone.

The new hotel buildings at Smithfield Market, in place of the old Woolpack Inn, are approaching completion, and now that the scaffolding has been entirely removed, the frontages of red brick and red terra-cotta, in the English Renaissance style, are very effective. They are surmounted by lofty chimneys and roofs covered with green Westmoreland slates, the circular corners at Moat-lane and Jamaica-row having conical roofs, and the central portion having a terra-cotta gable flanked with octagonal pyramidal roofs, with gateway entrances to the market beneath. Altogether this building shows the most effective example of the use of terra-cotta dressings of any building hitherto erected in Birmingham, and is very creditable indeed to both architect and builder.

The new theatre in Corporation-street is making rapid progress, and it is intended to open it to the public before Christmas. It has its principal entrance in Corporation-street, amongst a row of shops, and has a very elaborate stone elevation, with large amount of carved work upon it. One of the reflections which must strike an English reader of the *Builder* in looking over the back volumes and illustrations, is the strange contrast in the treatment of theatres in England and on the Continent. Almost all the theatres on the Continent are shown as noble isolated buildings, standing in their own grounds, whereas, all, or nearly all, of our English theatres are thrust into some back position behind houses and shops or other buildings, as if they were things to be ashamed of. The reason, I suppose, is not far to seek. The Continental theatres are in most part controlled by the Government, whereas ours are entirely matters of private speculation.

The land at the upper corner of Bull-street and Corporation-street has been let to a speculator at a rental of 2l. per yard per annum, and a considerable area is being cleared of the old buildings preparatory to beginning new buildings. Adjoining this, and having three frontages to Corporation-street, Old-square, and the Minories, a large new building is being erected for a woollen firm in the town, whose premises

in Worcester-street are required for the station extension. Another building of large dimensions is also approaching completion in Corporation-street, fronting the New County Court. It is a block of shops and offices, surmounted with statuary and high roofs and clock-tower, intended for the use of lawyers and others having business at the court, and is to be called "Lincoln's Inn." It is sadly overloaded with carving. The new arcade intended to continue the Great Western Arcade into Corporation-street is nearly up to the roof, and has an elaborate stone front over lofty shops below. The whole of this building is carried on wrought-iron girders over the tunnel of the railway. Another arcade is nearly completed in Dale End, so that it will be seen we are not likely to suffer from the absence of shops and offices; in fact, there is quite a plethora now unoccupied and likely to remain so for a long time to come.

The new Parish Offices, at the corner of Edmund-street and Newhall-street, are rising up to the roof, and will be an effective monumental building in stone in a Renaissance style. A large block opposite this, in Edmund-street, is being erected for Messrs. Jones & Willis, the art metal workers; and another lower down on the same side is going up for a firm of printers.

The new Eye Hospital, still further down, at the corner of Church-street, is progressing after having been delayed by the failure of the contractor. It is a lofty building in red brick and red stone, with frontages on three streets, and, well, therefore, have excellent light and air, and be very convenient to the railway station for persons who may come from the country.

The architects of the Eye Hospital have been recently erecting a new branch dispensary in the Monument-road, adjoining the Corporation Baths. This building is in the Queen Anne style, and is another example of those designs which may look well on paper, but fail in the work by reason of being too diminutive. At present it looks like a large doll's house. The only bold feature about it is the large Watson's ventilator sticking through the roof. Everything about it, to the minutest details, wants magnifying twice at least. One very remarkable feature over the main entrance is a semicircular faulight,—the key-stone of which is supported by a strong stone mullion. There are also a number of panels enriched with festoons, &c., of foliage in carved brick, and, of course, very diminutive. Now, if there is one thing more absurd than another in building it is the carving of burned clay. The proper way to deal with clay is to mould it to the desired shape when in its soft and plastic state, and then burn it. Why architects will display their ignorance in this matter is to me a source of wonder.

The new Art Gallery and Museum, adjoining the Council House, is progressing, and the lower part of the tower at the Congreve-street end is coming into shape, the portico adjoining the same being set. This building will, when complete, be a noble one; and it is to be hoped that the Art Purchase Committee who have charge of the getting of examples in the arts most appertaining to the town will not fail to get a good variety of artistic metal-work especially. Lately they appear to have been buying largely of Italian door-knockers.

All the working men in the building trade in the Birmingham district, except the stonemasons, stand very much in their own light, by the absurd practice of working systematic overtime. The stonemasons refuse to do this, and consequently leave off at five p.m. five days in the week, and one p.m. on Saturdays; but all the other trades are willing to work overtime, and as extra pay per hour does not begin till after seven p.m. that hour has come to be the leaving-off time whenever daylight permits. As the days shorten, so the overtime is gradually shortened, by half an hour at a time, till five p.m. is reached, after which, as daylight in the middle of winter does not extend till five p.m., work ceases at half-past four, but the lost half-hour is taken out of the dinner-hour. The work is thus reduced to a virtual slavery; many men who would be employed are kept idle, and those in work are kept at it so long that they are unable to find time for any recreation or instruction; and this applies not only to adults, but to all apprentices and learners over fourteen. The practice also has the effect of reducing wages below their proper standard; but somehow, workmen here cannot see it. Those of us who have for many years past had the control of

workmen have not failed to observe that there is a very marked deterioration in the average workman in the building trades in Birmingham. There is a very general consensus of opinion on this subject amongst architects and builders. This can only be rectified by giving workmen, and especially the younger ones, the leisure to obtain the necessary instruction, and by raising the general standard of intelligence. Excellent means are provided here by the classes at the Midland Institute and the Mason College, and the central and branch schools of art, besides the central and branch free public libraries and museum and art gallery, and the workers in other trades in the town take a proper advantage of these means of education, and it is very lamentable to find a sordid feeling either in masters or men operating to thwart their operation in the building trades. E. G.

PROGRESS AT SOUTHBOURNE.

SIR, — A description (fairly accurate in general particulars) of this new health resort having appeared in your issue for September 1st, some of your readers may be interested to know, from one who gave Southbourne its name, that twelve years ago there was no road to the place, and that the first house (correctly referred to by your correspondent as having been built "by a gentleman well known in the literary and social world of London") was actually erected only ten years ago.

The place now possesses a winter garden, a spacious hotel (with billiard and reading rooms), post and telegraph offices, &c., in addition to the advantages of a church, and the bridge lately constructed over the river Stour, which brings the Christchurch Railway Station within a mile of Southbourne. The new line about to be constructed by the London and South-Western Railway Company will bring this station (at which all trains stop) within about two hours and a quarter of the metropolis. An excellent supply of water and gas is now provided by the local company supplying Bournemouth.

A sea-wall and esplanade, affording sites for houses on the Under Cliff (thus securing the benefit of a winter warmth not yet made available in the Bournemouth Bay) is to be commenced almost immediately by the present owners (the Southbourne-on-Sea Freehold Land Company, Limited), which in less than twelve months of ownership has disposed of 14,000 ft. of land for building purposes.

The cause of this remarkable progress, which has not been referred to by your correspondent, has been, in my opinion:—

1. The remarkable climatic advantages of the place, which possesses a cool, pure, bracing air in summer; a mild dry climate, with plenty of sunshine, in winter; a gravel and sand subsoil; and an unusually small rainfall for its local position.

2. The almost panoramic character of the views from Southbourne, which has been well described by a former President of the Meteorological Society of London "as a diminutive tableland standing raised above the very margin of the genial Channel sea . . . free from all those contaminations which are incident to closely-aggregated human dwellings and crowded life."

3. The special facilities for boating on a pretty river (the Stour), within five minutes' walk, are not often to be met with at other south-coast watering-places.

4. The proximity of Bournemouth, and the facilities of access thereto which have been provided.

5. The owners of Southbourne have not been altogether devoid of energy.

THE OWNER OF SOUTHBORNE
FROM 1870 TO 1882.

Proposed New Theatre in Dublin.

There is a prospect of the erection of a theatre in Dublin in place of the Theatre Royal, which was burnt over four years ago, and remains an unsightly ruin. A large piece of ground in Brunswick-street, nearly opposite the Queen's Theatre, has been purchased by a speculative gentleman, who has been a caterer of amusements for the public, and big posters have been displayed informing the public that it is the site of the new theatre and opera-house.

RAILWAY MOVEMENTS OF 1882.

THE Railway Returns for 1882, and the Board of Trade Report upon them, show no very marked features of change. There is an increase of 1.6 per cent. in the mileage open, but an increase of 3 per cent. on capital, giving an increase of 1.43 per cent. in the cost of every mile of railway during the year. The increase in the working charges is 3.6 per cent. Thus the increase in the capital cost per mile, coupled with the increased percentage of working costs, not only balances, but over-balances, the good results of the increase of gross revenue, although 1,040,000*l.* of this increase is from the lucrative source of third-class passenger traffic. The percentage of net earnings on capital is reduced from 4.33 to 4.32 per cent., which is the figure at which it stood in 1877. The following are the principal figures:—

Railways in the United Kingdom, 1882.

Length open, 18,457 miles.	
Total capital	£767,399,570
Cost per mile	41,605
RECEIPTS.	
From passengers	£28,796,513
From goods	37,740,315
Miscellaneous	2,839,996
Total	£69,377,124
Receipts per mile	3,705
Working expenses	36,170,436
Per mile, £1,959.	
Net earnings	32,206,688
Per mile, £1,746.	
Percentage of gross earnings on capital	8.90 per cent.
Percentage of net earnings on capital	4.32 "
Percentage of working expenses on income	52.9 "

With these figures it is instructive to compare some of those of the Railways of the United States for the same year.

American Railways, 1882.

Length open, 113,320 miles.	
Total capital	£1,379,132,871
Cost per mile	12,169
Receipts	154,071,343
Per mile, £1,359.	
Working expenses	91,934,761
Per mile, £811.	
Net earnings	62,136,571
Per mile, £548.	
Percentage of gross earnings on capital	11.16 per cent.
Percentage of net earnings on capital	4.5 "

PENTELIC, PARIAN, AND CARRARA MARBLE.

A WRITER in the *Montan Zeitung* remarks that while Pentelic marble, and all works of sculpture and architecture in Pentelic marble, are at first beautifully white and brilliant, they subsequently begin to show reddish brown spots and discolorations. Sometimes in the course of only a few months, but oftener after the lapse of some years, columns and statues in this marble gradually become covered with a thin stratum which consists mainly of the reddish brown oxide of iron. This discoloration arises from the sulphuretted of iron, which is contained in this kind of marble, and which often appears in the form of little strips. In the course of time, through the influence of the air and moisture, this becomes oxydised, and then begins to make its presence disagreeably manifest by the above-mentioned reddish brown discolorations. These reddish brown spots or scales are often found to contain the germs of cryptogamic plants of the fresh water and marine algae descriptions. The new Academy at Athens is built of Pentelic marble, and already some of the blocks show yellow, reddish brown, and blackish discolorations, although the majority of the blocks still remain quite white, and may, perhaps, long continue so.

In strong contrast to this defect of Pentelic marble, Parian marble continues invariably white, as it contains no iron. This quality was, at obviously known to the ancient sculptors; at any rate, Praxiteles and Phidias employed it in their statues. Both Pentelic and Parian marbles possess over the marble of Carrara the advantage that they do not become weather-beaten or disintegrated on the surface under the influence of the atmosphere, while

Carrara marble, after a certain period, loses its brilliancy and soon begins to resemble the shells of boiled eggs. In repairing the defective portions of ancient statues the new marble parts may have the appearance of the old portions imparted to them by painting them over with a thin solution of chloride of iron. The new pieces at once show the yellowish-red brown tint which the ancient portions have obtained by the process of natural oxidation through exposure for centuries to the influences of the atmosphere and moisture.

NEW SYSTEM OF DRYING WALLS, AND DISINFECTING.

HERR STANISLAUS VON KOSINSKI, of Warsaw, has (according to the German press) patented an apparatus for the above purpose. It is in two parts: first, an air-heating chamber, which can be transported upon wheels, like a portable engine, and is placed in the room which is to be dried or disinfected; and second, a ventilator, which is placed outside the room, and is connected with the air-heating appliance by means of pipes, which are carried through suitably-arranged openings in the door or window. The air thus obtained is introduced from beneath into the chamber, where it is heated on heating surfaces, about 108 square feet in extent. It is then directed by means of a radiating pipe upon the wall or other object to be subjected to its influence. The sicative effects of the appliance act in three ways:—1. In the mechanical renewal of the air at the rate of about 1,000 cubic feet per minute; 2. in the action of the radiating warmth of the heating appliance; and 3. in the relative dilution of the air.

In addition to the rapid extraction of large quantities of moisture by the use of this apparatus, it is remarked that the temperature of the air, being easily brought by it to 66° Fahrenheit, its powerful disinfectant action is evident. The inventor has applied it to the arrangement of large disinfecting chambers, in which the rapidity with which the air passes through the objects to be treated combines with the high temperature in bringing about the desired result.

By means of this appliance the rapid warming of public buildings, churches, barracks, &c., can be effected, as well as the removal of vapour and moisture which may have accumulated in crowded rooms. The *Deutsche Bauzeitung* refers to its utility in many matters connected with building, and records several facts in connexion with its employment at Warsaw. The building of a picture-gallery was commenced in the autumn of 1881, and the edifice was ready for use in January, 1882. This result, it is asserted, could only have been attained by the use of such an apparatus as has been described. The picture-gallery contained rooms measuring 100,000 cubic feet. Experiments carried out in Warsaw under the inspection of an official commission showed that in a private house, the building of which was commenced in May, 1882, rooms measuring more than 7,000 cubic feet on the ground-floor and first story were completely dried in fourteen days by means of this system. After a sanitary inspection had been held, these rooms were declared ready for habitation on October 1st, at which time workmen were still engaged upon the upper rooms and the roof.

THE ARCHITECTURAL EXHIBITION AT BRUSSELS.

THE Central Union of Belgian Architects who organised the National Exhibition of Architecture opened last week at the Palais des Beaux Arts, Brussels, offered a prize for the best design for the proposed new building of the Academy of Architecture. In response, nineteen sets of drawings were sent in, which are all now to be seen at the Exhibition in question.

Water Supply, Caterham.—The Caterham Waterworks Company, who derive the whole of their supply from wells and bore-holes sunk into the chalk and lower greensand formations, have decided to execute further works, with the object of augmenting their present supply; and, acting upon the advice of their engineer, Sir Frederick Bramwell, C.E., the directors have determined to sink another large-diameter boring into the chalk.

THE TRADE UNIONS CONGRESS AT NOTTINGHAM.

THE sixteenth annual congress of Trade Unionists was opened on Monday last in Nottingham, Mr. J. Inglis, of the Associated Blacksmiths of Scotland, acting as *interim* chairman pending the election of a President of the Congress.

Mr. Inglis, on behalf of the Parliamentary Committee, said this was the second occasion on which they had met in Nottingham, having previously assembled in that town nearly twelve years ago. Many changes had occurred since their previous meeting in the town, which was one of the most important congresses the trades had ever held. In the first place, at that meeting the constitution which had been the guidance of trade unions congresses ever since was given effect to. That meeting was the first that was held subsequently to the passing of what might, not inappropriately, perhaps, be termed the Trade Unions Charter, or Bill of Rights, namely, the Trade Unions Act of 1871. Prior to the passing of that Act, embezzlement on the part of officials or members of trade organisations was of very frequent occurrence, and, unfortunately, the judges and administrators of the law, in coming to their decisions on any such questions that were brought before them, seemed to him to help to carry out what he might term legalised theft. Happily, however, this blot in the law had been removed, and the old doctrine that trade unions were in "restraint of trade" had passed away. Side by side with the Trade Unions Act of 1871 there was enacted, or rather re-enacted, the Criminal Law Amendment Act, which embraced a number of the clauses of the old 6th Geo. IV., and made the law on the subject more stringently penal than it was under the clauses of the original Act. That Act, as they were aware, had also happily been wiped from the statute-book. Through the passing of the Trade Unions Act of 1871, and through the removal of the Criminal Law Amendment Act in 1875, their trade organisations had prospered immensely. In every industrial centre trade organisations had been more fully developed than they had ever previously been, and the condition of the labouring masses of the people had been considerably benefited. During the past year several questions had been before the Legislature in which the Trade Unionists had been very deeply interested, and while they had not secured all they desired, they had made considerable progress. While they had been successful so far, he was sorry to say they had met with a check in the shape of a defeat on the Employers' Liability Act Amendment Bill. Probably, however, it was not a misfortune that they were not successful in carrying their amendments to that Act during the past session, because there was matter of very great interest in connexion with the Act to be brought before that Congress. A most serious calamity had occurred at a Bradford manufactory by the collapse of a chimney, and many people, old and young, were injured, some fatally. An effort had been made to hold the employer at these works responsible for the injuries that were received. He was informed that on the highest legal authority that an employer, being simply a tenant of the premises, was not responsible for any defect in the building; and the sufferers from the accident would have to take proceedings against the proprietor of the factory, and not against their employer. He thought it was unfortunate that there could be any doubt as to who was legally responsible, and he considered it would be necessary for the Parliamentary Committee of the future to take note of this question, and to endeavour to prevent the recurrence of such a difficulty. If the law were correctly laid down, — that the tenant of a factory or workshop was not responsible to those he employed for any injury received by workers through a defect in the building, — might it not be held that, if he was simply the tenant of the machinery, he had the same protection? If that were so, he urged that it was absolutely necessary that some provision should be made in any future amendment of the law to meet such a case.

On the motion of Mr. Thornton, Mr. Thomas Smith, of the Lithographic Printers' Society of England and Ireland, was elected President of the Congress, and Mr. Smith having taken his seat,

Mr. Broadhurst, M.P., read the report of the Parliamentary Committee, which referred at

some length to the new Bankruptcy Act and other measures passed during the recent Parliamentary session, more particularly as affecting the working man. With regard to the Payment of Wages in Publichouses Prohibition Act, the committee were pleased to have to record the passing of this useful little measure, after a vast amount of opposition from the Liberty and Property Defence League and the Licensed Victuallers' Associations, and added, — "The trade unions have by their action rendered this measure unnecessary, so far as the organised trades are concerned, by uniformly insisting upon wages being paid as soon as work ceases, and at the place of employment; but the benefit of the Act will be strongly felt in many brick-making districts and by riverside labourers. If the measure secures to those precarious callings the payment of their hard earnings in places apart from undue temptation to spend them in drink, it will accomplish a considerable social gain to this class of our fellow-workmen." With regard to factory inspection, the committee recorded the addition of "two more representative workmen" to the staff of Factory and Workshop Inspectors, viz., Mr. W. J. Davis and Mr. W. Paterson.

The President of the Congress, in his address, delivered on Tuesday last, said: — "There are a great number of honourable and respectable employers who desire and do their utmost to treat their employees fairly and to give them good wages, and to do everything to make the workpeople comfortable. Whilst this class of employers very seldom have cause to complain of the action of trade unions, they invariably find it greatly to their advantage to have trade unionists in their establishments. But there are some who are never happy unless they are getting their goods produced at a cheaper rate than others in the same business; and then they go into the market, unafraid to compete, and undersell the honourable employer. The result of this is apparent, that either the trade unions must take some action to prevent such a condition of things, or the person who pays a fair price for his labour must reduce the wages of the workmen. Working men would be neglecting their duty if they did not endeavour to prevent this evil as much as possible. You will have before you during the week the important question of the amendment of the Employers' Liability Act, 1880, and I believe you will agree with me that this Act requires amendment as early as possible. Every advantage has been taken of the defects of the Act by employers opposed to it to render it inoperative by compelling their employees to contract themselves out of the benefits of the Act. I hold that this Congress should use every legitimate means to improve that measure and abolish its permissive clauses. With regard to the desirability of increasing the number of factory and workshop inspectors, I believe that a much greater number is required than we now have, so as to properly protect the lives of the working classes and improve some of the miserable dens where men and women have to toil from morn till night."

The President's address concluded, the Congress proceeded to consider the Parliamentary Committee's Report. On the subject of the Employers' Liability Act Amendment Bill, the following extract from the report was read: —

"As per instruction of last Congress, the Parliamentary Committee again placed this Bill in the able hands of Mr. Burt, and he secured a place for second reading on June 13th; but, owing to its being a second order for that day, it was uncertain up to the last moment whether it would come on at all. In consequence of this uncertainty the committee did not deem it wise to put the trades to the expense of petitioning. This, to some extent, proved to be a disadvantage. The Bill was reached late in the afternoon, and a division taken just before six o'clock. The numbers were: — For the second reading, 38; against, 149; majority against the second reading, 111."

The society called the Liberty and Property Defence League put forth strenuous efforts against the Bill, and obtained petitions in opposition to it from Mr. Burt's constituents and other quarters. We are, however, of opinion that their great expenditure of money and labour had little, if any, effect on the result of the division. This one-sided action must not, however, be permitted another year. Should Mr. Burt succeed in getting a place for the Bill next session, the trades must be called upon to petition from every branch lodge in the country.

It may interest the trades to be informed of the steady and increasing usefulness of the principal Act. Last year we gave the result of the actions under the Act so far as they could be gathered from official sources, and we here append a state-

ment from the same sources, in the return of County Court proceedings, moved for by Mr. Norwood: —

Employers' Liability Act Causes entered in County Courts.

	1881.	1882.
Number of causes entered	126	320
Percentage of increase.....	—	254
Cases in which damages were recovered.....	22	73
Average amount recovered £69 14 6	£96 14 2½	
Cases standing over to following year.....	6	36
Cases withdrawn and settled out of court.....	22	72
Cases in which the juries could not agree, or there was a verdict for defendants, or a non-suit	70	139

Considerable discussion arose on this subject, chiefly on a passage contained in the report to the effect that the Bill had been lost through opposition on the part of miners and other constituents of Mr. Thomas Burt, M.P. This statement was disputed, and the wording of the report slightly altered.

On Tuesday evening a "commemoration dinner" in connexion with the Amalgamated Society of Carpenters and Joiners was held in the refreshment-rooms of the Arboretum. Upwards of 250 persons sat down to table. Among those present were, — Mr. Broadhurst, M.P.; Mr. J. D. Prior, Government Factory Inspector, late General Secretary; Mr. T. Smith, president of the Trade Unions Congress; Mr. J. S. Nochie, general secretary Amalgamated Carpenters; Mr. Sharples, general secretary Alliance Painters; Mr. Barlow, general treasurer ditto; Mr. Coulson, general secretary London Bricklayers; Mr. Knight, general secretary National Society Operative Plasterers; Mr. Thompson, Congress delegate from the Scottish Society of Carpenters and Joiners; Mr. Ralwell, branch secretary Leicester Branch Amalgamated Carpenters; Mr. Harper, branch secretary Long Eaton Branch; Mr. C. James, branch secretary Nottingham 2nd Branch; Mr. H. Collier, branch secretary Nottingham 3rd Branch; Mr. G. Holah, branch secretary Nottingham 4th Branch; and Mr. J. Skerritt, Nottingham 2nd Branch Amalgamated Carpenters, delegate to Congress. Mr. John Osofort, secretary of the Society, occupied the chair. Mr. Coulson proposed "Prosperity to the Amalgamated Carpenters' Society," which the Chairman, in introducing him, had described as the toast of the evening. He (Mr. Coulson) could remember the time when the carpenters of London had no association; and, in consequence, they were subjected to a great deal of hardship by the lock-out in 1859, but since that time trade associations had made surprising progress, and they now had branches all over the country. Much of the success they achieved they owed to Mr. Applegarth, Mr. F. D. Prior, and Mr. J. S. Nochie. Mr. Nochie responded to the toast, and gave an interesting account of the progress that had been made by trade associations since the year 1860. One fact he thought spoke volumes, viz., that during that time they had paid 414,000*l.* to their members in benefits alone. When they started in 1860 they had only twenty branches, 618 members, and a capital of 321*l.* After twenty-two years of work they had 376 branches, 20,622 members, and a capital of 46,390*l.* 10*s.*

The first subject on the agenda paper on Wednesday was a resolution of which notice had been given by Mr. R. Knight, of Newcastle: —

"That this Congress requests the Parliamentary Committee to use their utmost endeavour to get the provisions of the Employers' Liability Act extended to all persons employed on board of, and in connexion with, any British vessel, either at sea or in harbour."

The motion was carried unanimously, and Mr. Frederic Harrison then proceeded to address the delegates. We reserve mention of some points in his observations, and other proceedings of the Congress, until next week.

A Forest on Fire. — The news of the Ravenna pine forest being on fire at several points is fully confirmed by the *Ravennate*. That paper says: — "Already more than half of the underwood has become a prey to the flames, without counting the loss of all the young pines and some fifty of the old ones."

OBITUARY.

Mr. R. C. Page, late Hon. Secretary to the Architectural Association.—A large circle of professional friends will be surprised and pained by the announcement of the early death of Mr. Page, who died of typhoid fever, at Barnstaple, at 4 a.m. on Sunday, the 9th inst., in the thirty-fifth year of his age. Mr. Page was on his holiday excursion when his fatal malady overtook him, accelerated by too sudden over-exertion from walking in the sun, followed by a chill, taken through lying upon damp grass. Mr. Cole Adams was with him at Barnstaple, and in conjunction with his friend the vicar of Trinity Church, were his "good Samaritans," till the arrival of Mr. Robins and Mr. Gray, followed afterwards by his relations, all of whom attended his funeral on Monday afternoon last, at Trinity Church, Barnstaple. The singular kindness of the medical staff and nurses of the North Devon Infirmary will ever be gratefully remembered by his friends. Those who remember his handsome figure, as he took part in Mr. Stannus's clever architectural adaptation of the "Pinafore," and joined in the refrain, "He is an Architect," will find it hard to realise that his bright and dauntless air, his quick elastic step, will never more be seen. Mr. Page was a pupil of Mr. Rumble, of Eastbourne, and was, for a short time, with Mr. Collier, after which he was for four years in the office of the late Mr. Street,—since which he became chief assistant to Mr. E. C. Robins, with whom he remained till his untimely death. During the later years of his engagement with Mr. Robins he reserved three days a week, which he devoted to the establishment of an independent practice, in which enterprise he was not so successful as his merits deserved. He was a student of the Royal Academy, and successfully competed for the Pugin prize. He was indefatigable in competitive work, which he carried on with strict integrity. He was a member of the Royal Institute of British Architects, and served on the Committee of Competitions. He was one of the most earnest advocates of reform and the recognised establishment of professional assessors. His services to the Architectural Association will doubtless be suitably acknowledged by that body. The mutual confidence and respect maintained for nearly ten years between himself and Mr. Robins was unbroken by a single misunderstanding. He leaves an unstained memory as a professional man. An artist in nature as well as by practice, he was, in all respects, a high-minded Christian gentleman. He was unmarried, but leaves three married sisters to mourn his loss.

Mr. Alfred Benjamin Richmond.—The very sudden demise of Mr. Richmond, of 39, Strand, who virtually prognosticated his own death, as announced at the coroner's inquest, and reported in the daily and weekly press of last week, deserves notice. Mr. Richmond, who was only thirty-nine years old at the time he died, purchased the business of the late Mr. Coombes, picture-dealer, and succeeded to and carried on the business in the name of that person up to the time of his own death. Mr. Richmond was a most energetic man of business, and a successful picture-dealer and picture-restorer of no mean order. On the occasion of the recent restoration of St. Stephen's Church, Walbrook, the famous altar-piece, "The Stoning of St. Stephen," was found to be in a very dirty and dilapidated condition, and the restoration of it was entrusted by the committee and their architect, Mr. Thos. Milbourn, to Mr. Richmond, and the creditable and successful manner in which he fulfilled his task met with praise at their hands. He was a vestryman of St. Clement's, Dances, Strand. The last time the writer of this notice saw him was at the recent annual excursion of the Surrey Archaeological Society, at Redhill and Godstone, when he appeared in robust health.

W. F. P.

"HIGH ART" IN SUGAR.

CONFECTIONERS, according to the *British and Foreign Confectioner*, are henceforth to be known as "saccharine artists," and one of their number, the "artist" who constructed Miss Jessel's wedding-cake, has had a special studio fitted up for him while engaged in the practice of his profession. No one, as the *Pall Mall Gazette* observes, will wonder at this when reading the following description of the bride's cake in question:—

"The centre subject, which was chosen by the bride, represents the meeting of Rebekah and Abraham's servant at the well. In the foreground stands the well, with camel-trough by its side. Rebekah and Abraham's servant are represented as in the picture by Horace Vernet. On the right, his camel stands on an inclined way, drinking from the trough, and held loosely in a leading rope by the camel-driver. On the left, coming under a high doomed [sic] temple and archway, are two maidens with pitchers on their shoulders, evidently coming

to draw water. Through and past the archway is seen a camel, laden with presents, going up the sloping rocky way, and being stimulated in his progress by his driver. Further up the path or travelling way, another camel, also loaded with baggage, is kneeling, while his driver rests with legs crossed and hands on knees on some rockwork that is nearly covered with tropical plants. Behind the well, on the highest part of the rock, a pillar of a ruined temple rises and supports one of the handsomest vases and flowers in the orthodox style. The height of the cake without the stand was rather more than 5 ft., while the weight of the cake itself, exclusive of the ornaments, was 227½ lb."

But it is not only in brides' cakes that "the saccharine artist" finds an opportunity to display his skill. The same paper makes, *à propos* of the visit of Lord Coleridge to America, the following announcement:—

"We are devising some new dishes for him; one of the most beautiful will be the Justice Trifle. Special moulds are made of Justice, represented by a female figure cast in sugar-work with the bandage over the eyes holding scales, the American and English flags entwined behind her, the English lion couchant on one side of her, and the eagle on the other. This will be set on a ground of sponge-cake, dressed with preserved fruits, and covered with whipped cream, while groups of cast figures in *blanc mange* and jelly will be grouped round. A model of the New Law Courts will be produced in sugar-work, with guardian angels hovering over. This work is entrusted to one of our leading confectioners, and promises to be a work of high art."

But we are not enlightened as to the means of making these sugar angels "hover over" the model of the building. Neither is it explained why the new Temple of Justice is to be represented particularly under the guardianship of angels.

BUILDING PATENT RECORD.*

APPLICATIONS FOR LETTERS PATENT.

- 4,213. S. B. Sutcliffe, Manchester. Tile hearths and fenders for fireplaces. Sept. 1, 1883.
4,227. T. J. Palmer, Carshalton. Decorative material for walls, &c. Sept. 3, 1883.
4,259. R. Adams, London. Toothed racks of opening and closing fanlights, windows, &c. Sept. 4, 1883.
4,270. D. H. Dade, London. Protecting wood, &c., against fire, &c. Sept. 5, 1883.

NOTICE TO PROCEED

has been given by the following applicants on the dates named:—

Sept. 4, 1883.

- 2,238. G. Nobes, London. Domestic fire-escape. May 2, 1883.

Sept. 7, 1883.

- 2,199. T. Smith, Sunbury. Combination of materials for making cements, &c. May 1, 1883.
2,282. T. J. Constantine, London. Open fire portable cooking-ranges. May 4, 1883.

ABRIDGMENTS OF SPECIFICATIONS.

Published during the week ending September 8, 1883.

- 5,915. J. M. Hooker, Sevenoaks. Protecting buildings against fire. Dec. 11, 1882. Price 2d.
The metal girders that support the floor are made hollow, and their sides are pierced with numerous perforations. They are all connected with a water-main, so that when required water can be discharged through these perforations. (*Pro. Con.*)

74. J. Botjemann, London. Fire-screens. Jan. 5, 1883. Price 6d.

These form shallow cupboards, and have receptacles for books, pipes, &c.

102. G. D. Peters, London. Apparatus for facilitating the action of spring rollers for window-blinds. Jan. 8, 1883. Price 6d.

Shoulders are formed on the spindle of a spring roller, in which pawls can engage when required.

152. W. P. Thompson, Liverpool. Manufacture of hydraulic and other cements, mortar, artificial stone, &c. (Com. by M. M. R. Bosse and P. E. Freise, Brunswick, Germany.) Jan. 10, 1883. Price 4d.

These cements, &c., are made from furnace slag, which is finely ground, and then mixed.

158. E. Edwards, London. Machinery for cutting and sawing marble, granite, &c. (Com. by A. Jeansaume, Paris.) Jan. 10, 1883. Price 2d.

This consists of an endless metal band passed round wheels, which are revolved, and is fitted with guides, &c. (*Pro. Pro.*)

* Compiled by Hart & Co., Patent Agents, 136, Fleet-street.

159. A. H. Dunnachie, Glasgow. Making silica bricks. Jan. 11, 1883. Price 4d.

A fireclay found at Glenboig is used to mix with the silicious material to give it the required adhesive properties.

162. J. Shaw and F. Milan, Lockwood. Indicating the presence or absence of water in cisterns or other vessels in connexion with baths, &c. Jan. 11, 1883. Price 6d.

A tube in connexion with the cistern contains a column of mercury. When the cistern is nearly empty, and steam is generated in the boiler, the mercury is expelled from the tube, and the steam escapes.

213. E. A. Showell and C. Turner, Birmingham. Sash and casement fastenings. Jan. 13, 1883. Price 4d.

On the meeting-rails of each sash is a short tube, the outer sides of which are inclined, when a bolt is passed through and turned teeth thereon engage the inclined surfaces, whereby the sashes are drawn together.

220. G. Davis, Aberystwith; W. Jones, Llannon; and R. Girdwood, Edinburgh. Chimney cowls and ventilators. Jan. 15, 1883. Price 6d.

The mouths of these are kept facing the wind by vanes above. The wind entering passes through a pipe therein, which is bent into the form of an inverted syphon, and when it issues from this in an upward direction, it produces an induced current of air up the chimney, &c.

238. H. H. Lake, London. Water-closets (Com. by J. Bennor, Philadelphia, U.S.A.) Jan. 15, 1883. Price 8d.

The basin and the trap are formed in one piece, and the passage between the two is governed by a retainer fitted with loose ball valves. Many modifications are shown.

- 2,475. A. Rudolph, San Francisco, U.S.A. Window-sashes. May 17, 1883. Price 6d.

The frames that hold the glass are pivoted in the window-sash-bars, so that the panes can easily be reversed for cleaning purposes, &c. Several methods are shown for securing the same.

COMPETITIONS.

Sessions House, Birkenhead.—By the Birkenhead Town Council, the plans of Messrs. T. D. Barry & Sons, architects, Liverpool, for the sessions-house to be erected in Chester-street, at an estimated cost of nearly 30,000l., have been adopted.

Belfast Free Library.—The Library Committee sat on the 4th inst. in the Town-hall, for the purpose of considering the different plans for the free library about to be erected in Royal-avenue. In reply to the advertisement, there were between fifty and sixty designs received from architects in all parts of the kingdom. The committee, we understand, selected that of Mr. Lynn, Belfast, and will recommend it for the first premium, which is 100l. Messrs. Maxwell & Tuke, Manchester, were second, the premiums being 50l.; and Mr. Johnston, London, third, 25l. The final selection rests, of course, with the Council.

Proposed Hospital for Infectious Diseases, Bromley (Kent).—A meeting of the Bromley and Beckenham Joint Hospital Board was held on the 7th inst., Sir J. F. Lennard, bart., presiding. The Board were occupied a considerable time in considering the plans which had been sent in for the proposed infectious hospital by Mr. Ladds, of Chapel-street, Bedford-row; Mr. G. St. Pierre Harris, Orpington; Mr. W. R. Mallett, Bromley; Mr. Bartlett, Beckenham; and Messrs. O. & F. Rutley, Dowgate-hill. The whole of these competitors were unanimous in the opinion that the work as proposed by the Board could not be carried out for the sum of 4,000l. as suggested. Some of them submitted alternative plans, whereon certain modifications were shown, and Mr. Ladds forwarded a plan of a building similar to the one suggested by the Board, the cost of which he estimated at 4,600l. After a lengthened consultation Mr. Batten proposed, Mr. Payne seconded, and it was carried unanimously, that the plans and designs of Mr. Ladds should be accepted conditionally, and that he be asked to attend a committee meeting of the whole Board, to be held next Wednesday. A cheque was drawn for 1,703l. 6s. 5d. for the purchase of the hospital site.

River Louman (Tiverton) Drainage.—The Town Council of Tiverton have, subject to the approval of the Local Government Board, awarded the first premium in this competition to Messrs. Gotto & Beesley, of Westminster.

New Bridge Over the Ouse.—The tenders of Messrs. Pilling & Co., Manchester, for brick-work, and Messrs. Goddard & Massey, Nottingham, for ironwork, have been accepted by the Bedford Town Council.

WESTMINSTER HALL AND THE LAW COURTS.

In the appropriate description, entitled "Early Recollections of Westminster Hall and the Law Courts," on p. 293, vol. xlv., of your journal, it is stated that "on the east side of St. Margaret-street, there had probably been erected, about 1780, by Sir William Chambers . . . a handsome front of official buildings, the King's Bench Record Office," &c. Having some doubts whether Chambers was the architect of this portion, I had hoped to find some reference to it, and having only lately done so, I now forward it:—"The range of buildings on the east side of the old Margaret-street, Westminster, and now containing the Law Courts, were designed by William Kent for holding the records of Parliament. The centre and southern wing are shown completed in Malton, 'London and Westminster' fol. London, 1792, pl. iv. James Wyatt probably added the northern wing to correspond in 1813; and part of the southern wing was taken down by Sir C. Barry in 1850." This is as stated in the "Dictionary of Architecture," article "W. Kent."

It is stated in your article that "in 1819-20 the north front of the Hall was cleared of some of its mean and incongruous attachments, and it underwent a good restoration by Gayfer." It may not be generally known that the important restoration of the north and south fronts, and also the reinstatement of the lantern or louvre in the roof of the Hall, the weight being calculated at eleven tons, were effected from the design and under the immediate superintendence of John William Hiert, at that time one of the officers of the old Board of Works. These works are commented upon in "Observations on Magdalen College, Oxford," 8vo, 1823, p. 177, usually considered to have been written by Buckler, of Oxford. Richard III.'s architect (query, Henry Yeveley?) is supposed to have built the "ten massive flying buttresses to resist the thrust" of the "beautiful hammer-beam truss principals." It has been stated that these buttresses are not built into the wall of the hall, paper having been passed between the arm and the wall.

WYATT PAPWORTH.

ON SPECIAL PREPARATIONS TO RENDER WOOD AND OTHER THEATRE CONSTRUCTIONAL MATERIALS UNINFLAMMABLE.

It has been suggested that the Board of Works and other authorities should make it compulsory on the part of proprietors of theatres and other public institutions, to render the combustible elements of those structures incombustible by means of some special preparation. The suggestion is a good one; the only difficulty appears to be in the definition of what is really a reliable and permanently effective preparation for this purpose. The writer is not aware that any of the uninflammable compositions have been proved to possess the quality of permanent value. As evidence of the importance of this latter quality, mention may be made of M. Carteron's preparation, introduced in 1854, which consisted chiefly of tungstate of soda. This was considered a great invention at the time, and received a favourable report from M. Biel, the Inspector General of Buildings at Paris, which resulted in the formulation of the following recommendation by the Conseil Général des Bâtimens Civils:—"Considering M. Carteron's processes are incontestably proved to protect wood, scenery, costumes, and other theatrical decorations from fire, it is advised that they may be recommended to the attention of the Superior Administration."

Later on, the official journal, *Le Moniteur Universel*, of December 2nd, 1859, registered the following decree of the Ministers of State: that in future the costumes and the decorations of the opera, as well as the timbers, canvas, &c., should be treated by Carteron's process.

The incapacity of this process to prevent a terrible calamity was proved in 1873, when the Opera was completely destroyed by fire; probably, however, the preparation had gradually lost its refractory characteristics, or become reduced to powder and disappeared; anyhow, it points to the advisability of constantly renewing such preparations, otherwise they will become useless. The writer suggests that, before any regulation enforcing the use of these

preparations be made, that the special anti-inflammable composition shall be examined by a Commission appointed by some scientific body such as that of the Royal or the Chemical Society.

The Société d'Encouragement some short time ago offered a prize for a special anti-inflammable preparation, and, after a searching examination and trial, the only prize was awarded to M. Martin for his Ignifuge. This material is neither corrosive nor poisonous, and it does not affect colouring materials, and permits the latter to be added to it, and is, moreover, very cheap. The following are the constituents which enter into its composition, its base being a fixed salt,—hydrochlorate and carbonate of ammonia, boric acid, felpasap, potash, silicate of soda, mixed with starch, some gelatine, and Meudon whitening.

The mixture can be applied to manuscripts as well as to paintings, and will perfectly resist, for an indefinite duration, a temperature of from 40° to 50° Cent. without losing in the least its refractory qualities. What has prevented the adoption of these anti-inflammable preparations is just this loss of refractory properties which occurs when the materials are continually exposed to the high temperatures which some of the decorative elements of the theatre are subject to. M. Garnier, architect of the Grande Opéra, was credited with a sum by the Minister of Arts for the purpose of applying Martin's Ignifuge to all the wood-work of the New Opéra; and M. Paris, Colonel des Sapeurs-Pompiers of Paris, has obtained permission for the application of the same material to the joiner's work and carpentry of the Exposition of Flora at the Préfecture de la Seine, in which a fire broke out some months ago, which, if it had not been suppressed, would have jeopardised the precious collection in the Louvre.

It has been suggested that these preparations would prevent the overheating of iron girders, but this is a mistake. All constructional elements conduct heat more or less rapidly. It is only a question of degree. The author has succeeded in melting iron which was coated one inch thick with a mixture of silicate of soda and finely-ground fireclay, and certainly the constituents of these two highly refractory materials are amongst the worst conductors of heat of all the chemical elements. B. H. T.

BUILDING LAND AT BOW, AND OVER-HEAD TELEPHONE WIRES.

A QUESTION OF COMPANIES' RIGHTS.

AN inquiry of considerable interest to owners of land and buildings, in connexion with alleged rights of telegraph and telephone companies, was under investigation last week at the City of London Court. Mr. W. H. Gorman, a gentleman residing in Brighton, and owner of building land at Bow, brought an action against the United Telephone Company for 50*l.* damages for erecting posts and wires on the land in question, without his permission. The hearing of the action had been preceded by an application on behalf of the plaintiff for an injunction restraining the Company from carrying out any further trespass, and on this occasion Mr. Commissioner Kerr held that according to English law an owner of land was entitled to the enjoyment of everything between his property and the heavens, and he asked why the plaintiff did not cut the wires. In reply, the plaintiff's solicitor said that he purposely refrained from advising such a course lest injury might occur to life and limb, whereupon the Commissioner remarked that even in that event the plaintiff would not be liable to a charge of manslaughter; and he added, that considering the multiplicity of telegraphic and telephone wires recently erected, it was desirable the public should know such was the fact. When the question as to damages claimed came on last week it was heard before the Registrar of the Court, and Mr. Purcell, barrister, who appeared on behalf of the Company, said there need not be any further contention between the parties, as the posts and wires had been removed; but Mr. Kebbell, who appeared on behalf of the plaintiff, said there was no doubt that was the fact; still he submitted that all the circumstances of the case entitled the plaintiff to adequate damages, because the company had only lately agreed to make the amends which they ought to have done months ago. Besides, when the plaintiff attempted to remove the posts force was used to prevent

him. The Registrar said if any actual damage which had been sustained was pointed out to him he would deal with it, whereupon Mr. Kebbell contended that surely a public company could not commit a wrong of this sort against a private person and maintain it to the last moment without the law compelling them to give proper redress. His client had an opportunity of selling the land, and could not carry out the bargain so long as the posts were up, and that was certainly a hardship. The Registrar observed that as the plaintiff had not claimed special damages he could not give them as against the company. On the part of the company it was admitted that they had committed a technical trespass, but that was all, and, ultimately, the Registrar fixed the damages at forty shillings with costs on the higher scale, observing that, as to the costs of the application for an injunction, he should deal with them on taxation.

The subject of these overhead wires came before the Bethnal-green Vestry at their meeting last week, when the vestry-clerk said he was surprised to see the rapid multiplication of telephonic wires over the streets, but thought the vestry had no control or power of prohibition. Mr. Ewin, the representative of the Vestry at the Metropolitan Board of Works, said that was so, and nothing but an Act of Parliament could interfere if a telephone company chose to treat with private residents for stretching their wires across from house to house; but Mr. Jones, another member of the vestry, held that surely vestries had some jurisdiction by reason of the wires crossing the public highways which were under their control. The Parliamentary Committee were requested to direct their attention to the matter.

MANCHESTER CATHEDRAL CHURCH.

Sir,—Whilst I was taking shelter from the rain a few days since, I noticed a man who marked a flat grave stone with a straight line, and then proceeded to cut away a part therefrom on which the inscription was cut. It took place at the south-easterly nave column or pier. Part of this stone was covered with short lengths of timber, on which the uprights were placed and wedged to support the arch above. Taking such liberties with things which ought to be preserved by the officials in charge is too bad. No doubt the party who ordered the slab and the inscription to be cut had to pay for placing it inside the building.

If ordinary care had been exercised, all monuments in the church would have been carefully covered over or removed, and common flags laid in their places *pro tem.*; in fact, a plan of their respective positions should have been taken before scaffolding the place.

I had been a descendant of the family whose name was inscribed on the slab, I certainly should have been inclined to "take the man's hat off" who was smashing it up.

(The last line but one has a meaning in it, and will give them an idea of the circumstance.)

What is the use of paying for permission to place stones over our departed relatives when they can be so ruthlessly destroyed, and in face of a clerical official, who only noticed that I had put my hat on at that spot (it was cold and draughty), and told me to take it off. All the workmen had theirs on, and I had uncovered twice. These facts I will vouch for.

H. PERCIVAL.

RE CORFE CASTLE.

Sir,—Writing of Corfe Castle, it was said (p. 311, ante) to have been in possession of "Sir Christopher Hatton, or, rather, of his imperious wife . . . and was held by her beautiful and no less imperious daughter, the Viscountess Purbeck." Here is an error of one generation. Sir Christopher, the dancing Chancellor, appears to have died a bachelor; but his nephew and heir, Sir Wm. Newport, who took the name of Hatton, married Elizabeth Cecil, the "imperious wife" of Sir Edward Coke, the eminent lawyer. This lady continued to call herself Lady Hatton when really Lady Coke, for she and Coke had both been previously married. This appears to have been part of her imperiousness.

It was Frances Coke, daughter of the above couple, who became Lady Purbeck by marrying a Villiers. The whole story is one tissue of pride and profligacy, presenting intrigue and personal adventure, unsurpassed in ideal romance. A. H.

Dry Dock Extension in South Wales.—The Shipway and Dry-Dock Company, just formed, has taken twenty-three acres of ground, with a large river frontage, upon which it is intended to construct a gridiron slipway, and dry docks.

THE PADDINGTON VESTRY AND
SEWER CONTRACTS.

THE Paddington Vestry are just now in collision with Messrs. Wilkes & Co., a firm of sewer contractors in the City. It appears that this firm recently made a tender for certain sewerage works in Paddington, and that although their tender was 173*l.* below any other it was rejected. Some two years ago the same firm tendered for another sewer in the parish, and although their tender was 40*l.* below the tender of the next lowest it was rejected. Their tenders, although the lowest, having been twice rejected by the Vestry, presumably on the ground that the latter had not confidence in the stability of the firm, Messrs. Wilkes, on this last occasion of their non-success communicated with the Vestry, inviting the fullest inquiry into their standing and position, and referring the Vestry to a large number of firms and local Boards for whom they had either executed or were now executing work. It appears that in this communication Messrs. Wilkes intimated to the Vestry that they would ask for no money in payment until the work was completed, at the same time offering security for the fulfilment of the contract. As the Vestry declined to take any notice of the communication Messrs. Wilkes & Co. have now fallen back for a redress of their alleged grievances upon the ratepayers, before whom they have laid the whole of the circumstances connected with the respective tenders.

THE NEW TRADES' HOUSE BUILDINGS,
GLASGOW.

A SPECIAL meeting of the 'Trades' House was held on Monday last to consider the minutes of the Committee on Buildings, and the report by Mr. John Honeyman, architect, on the designs of the new Trades' Hall Buildings. Deacon-Convener Reid presided. In all, six sets of plans were submitted to Mr. Honeyman, who began his report by stating the probable cost of the buildings as designed by the competitors. He found that the building by the architect signing himself "Unity" would probably cost the full amount which it had been resolved to expend, viz., 18,000*l.*; that by "Utility," 17,600*l.*; by "Union is Strength," 17,500*l.*; by "Bis," 17,250*l.*; by "Handwerke," 16,700*l.*; and by "Bis 1," 16,600*l.* The probable rentals which would be derived in respect of the various buildings were:—"Unity," 1,250*l.*; "Utility," 1,240*l.*; "Union is Strength," 1,330*l.*; "Bis," 1,120*l.*; "Handwerke," 1,350*l.*; and "Bis 1," 960*l.* The reporter said that the probable rentals bore little relation to the cost; for example, while the cheapest plan,—that of "Bis 1,"—would yield about 52 per cent., the dearest,—that of "Unity,"—would yield about 7 per cent. On the other hand, the buildings as designed by "Handwerke" would yield 8 per cent., while those designed by "Bis" would only yield 6*l.* In conclusion, Mr. Honeyman said he had no hesitation in assigning the first place in the order of merit to the design bearing the motto "Unity," the second place to the design bearing the motto "Bis 1," and the third to that having the motto "Bis."

The Chairman moved a resolution re-affirming the decision come to in October last to rebuild the Halls, at a cost of not more than 18,000*l.* Ex-Deacon-Convener M'Onie seconded the motion.

The motion was adopted.

The Deacon-Convener then proposed "That the House, subject to securing the unanimous support and approval of the incorporations, resolve to proceed with the reconstruction of the Trades' Hall Buildings in conformity with the plans signed with the motto 'Unity,' subject to any alterations on the plans recommended by the Building Committee; and further recommend that the Incorporations take up their share of the expense of the new buildings in proportion to the shares they hold at present, and remit the matter to the Building Committee to be carried out, and to report at a future meeting of the House."

Deacon M'Ewan seconded the motion.

On a division being taken, the motion was carried by 18 votes to 8.

The envelope accompanying the plans signed "Unity" having been opened, it was found that the successful architects were Messrs. Campbell Douglas & Sellars, Glasgow.

THE IRON CURTAIN AT THE ROYAL
LYCEUM THEATRE, EDINBURGH.

SIR,—This curtain, at the stage opening, the first of its kind in the United Kingdom, has been erected for me by Messrs. Clark, Burnett, & Co., of London. It measures 30 ft. 6 in. wide by a depth of 23 ft. 6 in., and is constructed of two screens of wrought-iron plates $\frac{1}{2}$ in. thick, with an air space between of 6 in. The top portion of the curtain is framed and riveted to double wrought-iron girders secured to the heads of hydraulic rams, which are fitted with their cylinders on each side of the proscenium opening. The supply of water for working these rams is laid on from the town mains, and with an expenditure of only 84 gallons of water the curtain, weighing about 8½ tons, is raised or lowered in 50 seconds, the movement for working it being on the stage, under the control of the prompter, thus forming, with the brick proscenium wall, a fire-resisting division entirely separating the stage from the auditorium. The curtain, at the opening of the theatre on Monday night, worked admirably and, in my opinion, quite solves the question which has lately been so much discussed.

CHARLES J. PHIPPS.

CHEAP PATENTS.

SIR,—I read with much interest your article in last Saturday's issue [p. 333, ante] on "the reduced patent rates," but I am very much surprised to find so little alteration in the "costs." It seems to have been hardly worth the alteration, seeing that it is so far short of what is needed by the country, namely, a comparatively free patent. It seems to be the general opinion that any invention should be protected by a fee not exceeding a guinea, or even less. Much good has been done to the country by the cheap rates of postage and the Patents Act, and it is very certain that a greater blessing would be conferred were men not taxed for using their inventive faculties.

It has often been sarcastically hinted that America is far in advance of England in its useful inventions; but the reason is obvious when it is seen how easily a patent is obtained, and what encouragement is offered for men to think. But here in this free England invention is imprisoned in the mind, and not allowed to be made known (in the great majority of cases) by reason of the expensive Patent Laws. Especially are the working classes affected. There are a great number of persons in this country who are continually inventing, but by reason of the "Patent Law" impelment are prevented the production of their ideas: hence it is a loss to the nation.

I am well acquainted with a person of humble position who has devised about thirty useful inventions very recently, which, when satisfactorily finished, he has destroyed, saying that having worked out his ideas with satisfaction to himself, he is prevented giving the world the benefit of his thought by the expense and trouble of the existing patent laws, with their questionable probabilities of ultimate profit. There are many such men as this only awaiting the freedom of a comparatively free patent law.

Should the time ever come when this will be the case, it would, no doubt, open up quite a novel "profession," it being that of an "inventor," whose business it would be to invent things for his customers upon payment of a small fee. In fact, there are men now ready to commence this, did the facilities offer.

RESERVED INVENTION.

PROVINCIAL NEWS.

Birmingham.—In connexion with the covering over of the Smithfield Market, and the widening of St. Martin's-lane, a large and imposing block of buildings has been erected in the latter thoroughfare, extending from Jamaica-row to Moat-lane, so as to form a suitable front to the vegetable market. The buildings, which are from the designs of Messrs. Osborn & Reading, architects, Bennett's-hill, are designed in the style of the English Renaissance of the Stuart period, and are constructed of red brick, with red terra-cotta dressings. At each end of the St. Martin's-lane front are circular turrets, with conical roofs, flanked by ornamental gables, and in the centre is a gable with octagonal turret on each side. The main entrance to the markets is in the centre of the St. Martin's-lane front, and consists of a central roadway for carts and wagons, 15 ft. wide and 24 ft. high, together with a wide entrance on either side for foot-passengers. The main piers supporting the large archway are of stone, but the arch itself is constructed of terra-cotta, richly moulded and carved. Over the archway will be two sculptured figures in red terra-cotta, representing "Flora" and "Pomona." The whole of the carving and sculptured work has been executed by Mr. John Roddis, of Aston-road. The archways are fitted with massive wrought-iron gates, manufactured by Messrs. Hart, Son, Peard, & Co., of Grosvenor-street, Birmingham. The Jamaica-row front and about one-third of the St. Martin's-lane front are occupied by the new Woolpack Hotel. The hotel is entered from St. Martin's-lane by a wide hall, having a staircase which leads to the upper floors. On the left of the entrance there is a commodious smoking-room, and on the right a large bar, 18 ft. wide by 36 ft. long, with an entrance at the Jamaica-row corner of

the building. The other end of the Jamaica-row front is wholly occupied by a large luncheon and dining room, the dimensions of which are 39 ft. by 23 ft., and in which there will be a bar extending the length of the room. On the left of the large entrance to the markets has been placed the market superintendent's office, which has a staircase communicating with his house, on a portion of the first and second floors. The remaining portion of the St. Martin's-lane front is occupied by large shops, with show-rooms on the first floor, and well-lighted basements extending underneath the footpath. That portion of the building which faces Moat-lane has been planned for use as a coffee-house, and has a good entrance-hall, and a staircase leading to all the upper floors. Extending down Moat-lane there will be an addition to the main building, intended for the formation of a secondary gateway entrance to the markets, a stable and carriage-house for the superintendent, and lavatories for women. The various lettings in the building are all divided by fire-proof floors and walls, and the floors of the kitchens are constructed of fireproof materials. The contractor is Mr. Frederick J. Briley, of Coventry-road, Small Heath.

Littleworth (Berks).—A new vicarage-house, with offices and stabling, is now being erected in this village, from plans and specification prepared by Mr. F. H. Barfield, architect, Faringdon, Berks, at a cost of about 1,300*l.* The walls are of local stone, with red brick dressings, the covering of Broseley Tiles, the internal woodwork being stained and varnished. The builder is Mr. George Cooper, of Aylesbury.

CHURCH-BUILDING NEWS.

Diddlebury.—The parish church of Diddlebury, Shropshire, about 7½ miles from Ludlow, has been reopened, after internal re-arrangement. The church is dedicated to St. Peter, and consists of a nave, chancel, and south aisle, while at the west end is a square tower with a peal of bells. In the church are one or two Norman arches, and there is a fine specimen of herringbone masonry in the north wall of the nave. The church was restored in 1860. The chancel floor has been raised and tiled by Mr. Godwin, of Lugwardine Works, Hereford. In the chancel are also handsome carved oak choir-stalls. Two arches have been thrown across the Cornwell chapel for the organ-chamber and vestry. The floor of the nave has been laid with Godwin's tiles on a bed of concrete, and there are wood blocks under the seats. The old high pews have been converted into open seats.

The eagle lectern is the gift of the vicar, and is by Hiles, of Hereford, carved out of old oak from Preston-on-Wye church, the vicar's former parish. New glass, of different green tints, has been put in two windows of the south aisle and east window. An entirely new porch has been erected, and also additional warming apparatus in the south aisle provided. The cost of the whole work has been about 600*l.* The architect is Mr. Thomas Nicholson, of Hereford; and the builders were Messrs. Jones & Sons, Sedgely, near Dudley.

Haile.—The parish church of Haile has been reopened by the Bishop of Carlisle. The church is built upon the place of an ancient one. Before the present works began it looked abject and mean enough. Covered externally with Roman cement and internally with mouldering plaster, with modern windows and doors, and modern fittings fast going to decay, it presented to the unprofessional eye no feature of antiquity; but Mr. Ferguson, the architect to whom the works were entrusted, reported that its plan, with simple proportion of nave and chancel, was ancient, and showed the outline of an early Norman church,—early from the shortness of its chancel, for in later days they were lengthened,—but that from the moderate thickness of its walls it had in later times been rebuilt. Under Mr. Ferguson's advice, and under the direction of the vicar, as a preliminary the outer coating of cement and inner coating of plaster were removed, the seats and floors taken out, and the anatomy of the building so exposed that its condition could be seen and its history read. It then was plain that the older church had at some previous time been taken down to the level of the ground and rebuilt, and that all except the walls were past repair. The walls themselves were made up of ancient fragments broken up and used as walling stones in the south wall. The position of the

principal entrance could be seen in the early wall of the foundation. A Roman altar, dedicated to Hercules and Silvannus, was found. This, with portions of window-heads and other remains of the fifteenth century, are preserved in the porch. On the external face of the east wall of the nave, the southern return wall, there may be seen a fragment of the tapering stone of a churchyard cross of large size, executed in hard whiststone, and stated to be not later than the eighth century. A substantial new oak roof has been put to the nave and chancel, and the whole church re-seated in oak throughout. The chancel arch did not exist, and none has been added, but in place of it a handsome oak screen has been put up. To the west end, the only available space, a porch and vestry have been added, the walls of chiselled redstone, the roofs of oak. The fabric, as far as the walls and windows, has been left almost untouched, repointed outside, and replastered inside. The whole work has been executed by Mr. Foster, of Wighton, in the space of five months.

Bromsgrove.—The old church of St. Godwald, built originally as a chapel-of-ease for St. Michael's, Stoke Prior, being found too small and in other respects unsuitable to the wants of the inhabitants of the ecclesiastical parish of Finstall, a movement was set on foot by the vicar, the Rev. J. H. Bainbridge, to provide a new church, which has been so far successful that the foundation-stone was laid on the 7th inst. by Mrs. Bainbridge, wife of the vicar. The church, of which Mr. J. Cotton, Birmingham, is the architect, and Messrs. Brazier & Weaver, Bromsgrove, the builders, will contain sitting accommodation for 262 persons. It will be built of Bromsgrove red sandstone, with dressings of Bath and Bromsgrove white stone, and the interior will be enriched by a painted glass window at the east end representing the Resurrection.

SCHOOL BOARD SCHOOLS.

Acton (Middlesex).—The Priory Board Schools, which have been erected in Acton-lane, near the Berrymead Priory, by the Acton School Board, afford accommodation for 300 boys and 300 girls. The schools and classrooms are on the ground floor, and are arranged around a central hall or covered playground, which is intended to be used by the children during inclement weather. The exterior of the building is of stock brick, with red brick and Beer free-stone dressings, in the Queen Anne style; the roofs are slated. The interior of the schools and classrooms is finished with a pitch pine dado, the upper part of the walls being plastered; the central hall or covered playground has a glazed brick dado, about 5 ft. high, of chocolate and black, with a moulded black capping, the upper part of the walls being faced in white Arlesley bricks with red brick strings, arches, and moulded courses. The roofs throughout are of an ornamental character, executed in pitch pine, stained, and varnished. The central hall is 30 ft. by 40 ft., and about 40 ft. high to the ridge of the lantern; it is lighted by twenty clerestory windows, and has a lantern running the whole length of the roof with side lights only, half of which are hung for ventilation. On either side of the hall are five large openings, which run right down to the floor, and are filled with pitch-pine revolving shutters, executed by Messrs. Salmon, Barnes, & Co., of Ulverston. In the event of a very large meeting being required, these shutters can be raised and the schoolrooms thrown into the central hall, by which means a room 80 ft. square can be obtained. The central hall and schools are warmed by hot water at low pressure from an "Excelsior" boiler, which is fixed in the basement. The class-rooms and the Board and committee rooms are warmed by Manchester grates, by which a current of warmed fresh air is admitted into the rooms. The heating has been carried out by Messrs. Leggett, of Bradford. The site upon which these buildings stand was a part of the Priory Estate, and contains rather more than an acre and a quarter. The buildings cover about a quarter of an acre, thus leaving about an acre to be divided into boys' and girls' playgrounds, but it is contemplated to erect an infants' school in the rear of the present building at some future time, which will, of course, take away a portion of the playground, but will still leave a good open space. The buildings have been erected from the designs and under the

personal supervision of Mr. Edward Monson, jun., architect, Acton. The contractor was Mr. John Cardus, of Birkbeck-road, Acton.

LEYTON LOCAL BOARD.

BREACH OF THE BUILDING BY-LAWS.

On Wednesday last, at the Stratford Police-court, James Godwin, builder, of Grove Green-lane, Leyton, was summoned for a breach of the 97th By-law in allowing a house in Oakdale-road to be occupied without giving the requisite notice to the Surveyor of the Board.

Mr. Vincent, Clerk of the Leyton Local Board, who appeared for the prosecution, said the defendant had failed to comply with the requirements of this section, and that the house, although occupied, was not connected to the main sewer, and that it was most important this By-law should be enforced. At the present time there were about 700 houses in course of erection, and it was almost impossible for the surveyor to know of the completion of a house if notice was not sent.

The defendant, who pleaded guilty, had since the service of the summons sent the requisite notice, and had the house connected to the sewer.

Fined 2s. 10s. and costs.

On the same day, Frederick R. Green, builder, of 5, Wilmot-road, Leyton, was also summoned for a breach of the same By-law, in allowing a house in Tyndall-road to be occupied without sending the usual notice. Defendant said he was the tenant, but not the owner of the house in question, and that the tenant had gone into the house without his sanction.

Mr. Dawson, Surveyor to the Leyton Local Board, who produced the notice and plans which had been deposited with the defendant in April last and signed by him, said the house was in a most unsanitary condition, drains not connected to sewer, sink and drop water flowing into the yard, and having no separate cistern for water-supply and water-closet.

Mr. Powell stated that this By-law was one which it was most important for builders to observe. The Bench fined defendant 3s. and costs.

Books.

Studies in Architectural Style. By R. P. PULLAN, F.R.I.B.A. London: 15, Buckingham-street, Strand. 1883.

This appears to be really a collection of architectural designs, some of which have been executed and others made in competition for various works. The author has entitled it "Studies in Architectural Style," because the greater part of the designs have been made with the object of exhibiting various phases of architectural style. Mr. Pullan adopts the old and time-honoured view, that certain styles are best suited for certain requirements, as for instance, Gothic and its related styles (Romanesque, Byzantine, &c.) for churches, Italian or French Renaissance "for public offices and such like edifices, in which light and air are the chief necessities," and pure Classic, Greek or Roman, for "museums and other buildings of a monumental character, where dignity of effect has chiefly to be studied": such, we suppose, as the British Museum, with which Mr. Pullan has been a good deal connected, and which is certainly a wonderful example of this supposed suitability of pure Classic for such a purpose. We confess we had previously been under an impression that good light was above all things necessary in a museum; and where there is a large staff of workers, either resident or spending all their working hours in the building, air seems also a consideration. This practice of regarding the leading styles of the past as ready-made materials to draw upon for various classes of building has, no doubt, been consecrated by long usage, and perhaps it has had the advantage of providing proportion, finish of detail, and harmony of style, ready-made for many who would not have been able to evolve such qualities for themselves; it is so far a path of safety, and saves a great deal of trouble. But to see it deliberately stated as the correct and logical path on which to work, is somewhat melancholy. Mr. Pullan's reasoning is odd in other respects. Gothic is "unsuitable for large public buildings in narrow streets and other confined situations," but there is "one notable exception," the Houses of Parliament,—"this magnificent building, standing on a free and open site," &c. If it stands "on a free and open site" (as it certainly does), how is it "an exception" to the rule that Gothic is unsuitable to confined situations?

Mr. Pullan's designs are for the most part, however, a great deal better than his criticism or his literary style; and considering that the majority of them seem not to have been executed, they show a somewhat high degree of industry and energy, which merits more substantial success than we fear it has met with. The best thing in the book is the design for the decoration of St. Paul's dome, the architectural arrangement being by the author and the figures by the late Mr. Heath Wilson. A large painting

of this design was exhibited somewhere in London at the time when the subject was in full debate; we forget where, but we remember the painting very well: and though we question the suitability of the painted colonnade round the middle height of the dome, the whole design comes perhaps more near to what Wren himself would have approved than anything else that has been suggested, and is quite in keeping with the general character of the building. The designs for Truro and Lifle cathedrals, if a little tame (and this criticism would apply also to a good many of the Renaissance studies towards the end of the book) are very creditable specimens of modern Gothic.

The author appears to be a decided believer in the system of architectural composition on a geometrical basis, and gives part of the façade of his Lifle Cathedral design, scored over with lines to show its arrangement on a system of similar isosceles triangles. But we fear the author's logic in this respect is no better than his literary logic. We do, indeed, see that the centre of a triangle in the gable is on the apex of a triangle, of which the base angles are on the inside of two buttresses, on the plinth line; but why these particular points should have a relation to the centre of that unimportant window, why the apex of the gable should be left out of the scheme, why it is sometimes the centre of a buttress and sometimes the side that is the important point, why the axefoil light of the clerestory windows is dignified by having the apex of a triangle at its centre, while the similar point in the aisle windows is entirely out of the scheme,—of these and other queries which suggest themselves there is no explanation whatever; and the impression produced by the drawing is that the design was first made, and that the draughtsman, desirous of making it an illustration of the principle of geometric design, drew similar triangles over the drawing wherever they would fit between any points, and omitted them where they would not. We are far from denying that geometric basis may afford a valuable guide in proportion; but if Mr. Pullan could give no more logical example of it than this, he would have been wiser to have omitted any reference to, or at all events, any graphic illustration of, the system.

The scheme of decoration for the interior of the church at Baveno is well carried out and effective, and some of the examples of style may be useful to students, and serve as good suggestions for working out the subject further. We cannot, however, honestly think that all of them were of sufficient importance for publication, at least, not for an architect of Mr. Pullan's reputation in other ways.

VARIORUM.

MR. BATSFORD is appointed agent for the sale in England of an important work just now completed on the "Architecture and Decoration of the Italian Renaissance" ("Die Renaissance in Italien," von Alexander Schulz). This work comprises 332 folio plates printed in phototype (a process combining the fidelity of the photograph with the permanence of ink printing). The subjects are selected from the choicest edifices in Rome, Florence, Venice, Naples, Genoa, Siena, Pisa, Bologna, Ferrara, Brescia, Parma, Vicenza, Pavia, Milan, Bergamo, and other cities of Italy. The complete work forms four volumes and may be had separately as follows:—I. The Early Renaissance; II. The Later Renaissance; III. Decoration in Stone and Terra Cotta; and IV. Decoration in Wood.

Miscellaneous.

Patent Fireproof Cyanite.—A fire-brigade fete at Hackney was recently held, at which the Patent Liquid Fireproof Cyanite Company (Limited), of 33, Midland-chambers, Bishopsgate, E.C., gave an exhibition of Astrop's Patent Cyanite. Two wooden buildings, one only having been coated with cyanite, were simultaneously fired, with the result that this one withstood all the efforts of the flames, while the ordinary building was destroyed in a few minutes. We are informed that cyanite is a basic silicate of alumina, and that it can be used instead of a priming, while the ordinary paint or varnish can be then applied. Cyanite has been already adopted by the North Metropolitan Tramways Company, and the Princess's, Savoy, Lyceum, Standard, and other theatres.

Freemasons' Hall.—The special building committee, of which Sir J. B. Monckton (Town Clerk) is chairman, appointed to reconsider the rebuilding of the Masonic temple, which some months ago was destroyed by fire, have unanimously rejected the proposal to transfer the site from Great Queen-street to the Thames Embankment, on the ground that "such a step would not only seriously prejudice the property of Grand Lodge in Great Queen-street, but, irrespective of this, would require an enormous expenditure far beyond the resources of Grand Lodge to provide the multifarious items of the necessary accommodation without corresponding or proportionate benefit." The proposal now is to incorporate Bacon's Hotel with Freemasons' Tavern, for which Messrs. Spiers & Pond agree to an increased rental of 2,000l. per annum, instead of, as at present, 1,200l., on condition of a new lease of fifty years being granted to them from the commencement of the alterations. They will also give up their banqueting-hall, which would be thrown into the space of the old Masonic banqueting-hall, and thus a new temple might be constructed capable of affording accommodation for 1,500 persons. The cost of purchasing Bacon's Hotel and to rebuild it so as to form part of Freemasons' Tavern is estimated at 21,000l., of which 6,000l. is to be paid to the present lessee of the former, and 15,000l. to go towards building expenses. The cost of reconstructing the new temple is set down at a net sum of 10,000l. beyond the 6,400l. realised as insurance on the old building, and, in addition, 5,000l. is named as the cost of removing the present tavern kitchens to the top of the new building, and 4,000l. for decorations, fittings, and contingencies. The total expenditure, therefore, of remodelling the whole structure is estimated at 40,000l.—*Times*.

New Works in Ischia.—The Roman correspondent of the *Pungolo* says that offers for undertaking works of re-edification in the island of Ischia are being continually sent to the Italian Minister of Public Works by Belgian, English, and French firms, accompanied by designs for various kinds of houses in iron, wood, or both materials combined. Italian firms have only made offers for furnishing the wood or iron. As the Italian Government cannot think of any definite erection of towns in Ischia, its work being at an end when the temporary barracks for the protection of the population are finished, it will scarcely accept any of the offers made. It will, however, directly accept offers for the erection of public buildings, such as schools, hospitals, churches, &c., expecting the expenses to be reimbursed by those for whose benefit they are made, or indirectly, by subsidising and promoting the construction of houses by the commune or the province. Such offers will be accepted as present the most complete project and the surest guarantees. Peculiar privileges will be conceded. At present the idea is to grant ground gratis to any one desiring to build a house, and the question of exempting or reducing the taxes on building, &c., is being considered. Is it right to offer inducements to build in such a locality?

Fatal Accident at Manchester.—On Saturday afternoon a number of men in the employ of Messrs. Eastwood & Swingler, of Derby, the contractors for the ironwork in the extension of the Lancashire and Yorkshire Railway Company's portion of the Victoria Station, Manchester, were engaged in raising to its place in the roof of the extension an iron girder, 75 ft. long, 3 ft. deep, and weighing several tons, when the hook of the hoisting tackle broke, and the girder fell, in its fall knocking down and severely injuring two of the workmen, named Joseph Keegan and James Halliday. As speedily as possible the men were removed to the Royal Infirmary, and Keegan, whose injuries were of a much more serious nature than those of Halliday, he having several ribs fractured and being badly crushed in other parts of his body, died a few minutes after admission.

The Obelisk on Putney Heath, now called Wimbledon Common.—In reply to your correspondent (p. 336), this exists at the end of the grounds of Fireproof House, the property of Mr. Edward Radley. It can be seen from the Kingston-road. I believe it has an inscription on the base, but is now almost wholly overgrown with ivy. The fireproofing I have reason to believe was copper as thin as paper.—H. F.

The Condition of the Thames.—A certain amount of feeling has sprung up in the localities concerned in favour of the construction of a lock on the Thames somewhere below Richmond, and it is expected that meetings will shortly be organised in the neighbourhood to consider the whole question. Mr. H. Labouchere, M.P., announces his intention to move for a Select Committee to inquire into the condition of the Thames between Teddington and London, and asserts that since the Conservators dredged the river between Teddington and Isleworth the water has fallen about 2 ft. at low-water tide. He suggests that the authorities of Richmond, Twickenham, and Teddington should aid him in his demand for a Select Committee; and one object, he says, ought to be to have a lock either at Isleworth or at Brentford, for without it the river in the neighbourhood would each year become shallower, until in the end all who visited it for boating purposes would betake themselves above Teddington Lock. A few days ago Sir Charles Dilke, the President of the Local Government Board, visited the Twickenham Sewage Works, accompanied by Major Tallooh. This visit was, it is said, the result of a communication from Mr. Labouchere and other influential residents of Twickenham, who appear to have grave doubts of the purity of the effluent at present discharged into the river. The Twickenham Sewage Works were designed and carried out under the superintendence of Mr. H. M. Ramsey, the Town Surveyor, at a cost of close upon 100,000l., and it is claimed for them that they are a thorough success.

Fine Art Exhibition at Stockport.—On Monday last a fine-art exhibition was opened by Lord Egerton of Tatton in the Mechanics' Institution, Stockport. The object of the holding of the exhibition is to raise funds for the foundation of a local school of art. The collection consists of a large number of oil paintings and water-colour drawings, and specimens of art workmanship lent by noblemen and gentlemen in the counties of Chester and Lancaster, and a selection of paintings from the Sheepshanks Gallery, with several cases of fine-art productions from the South Kensington Museum. Lord Vernon is the principal contributor, having supplied several family portraits and other works. The Duke of Westminster has contributed both paintings and water-colour drawings to the exhibition. The loans from South Kensington entirely fill one room. The paintings from the Sheepshanks collection are by Callcott, Stanfield, Uwins, Wouvermans, Clint, E. W. Cooke, and others, and there are, in addition, a number of studies by some of the principal artists of the English school. The cases in the room are filled with porcelain, glass, ancient jewelry, and needlework, and in the adjoining room is a case of Oriental weapons lent by Lord Egerton of Tatton.

The Colonnade of Old Burlington House. A movement has been set on foot with a view of inducing the First Commissioner of Works to consent to the utilising of the colonnade of Old Burlington House, which has been described as "one of the finest pieces of architecture in Europe," by embodying it in the main entrance to the new exhibition buildings in course of erection adjoining Battersea-park. The colonnade was some years ago advertised to be sold by auction, but in consequence of the remonstrances of Mr. Beresford Hope in the House of Commons it was withdrawn from public competition, and as the stones were taken down they were numbered and carted away to Battersea-park, where they have lain in a heap ever since.

English Church in Switzerland.—The Bishop coadjutor of Ripon has dedicated the new English church at Tarasp, Lower Engadine. On Monday the Bishop proceeded to Davos-Platz, and dedicated the beautiful English church just erected at that important health resort by the name of St. Luke. The foundation-stone of this church was laid by the Hon. E. Ashley, M.P., in the winter of 1882, and the building has been erected from designs furnished by Mr. W. Barber, of London, at a cost of 3,000l.

Homeless City Companies.—Mr. C. G. Hale, past master of the Armourers and Brasiers' Company, has, the *City Press* states, forwarded a circular to the different City companies who have no halls of their own, calling attention to a scheme which is in contemplation for erecting in a suitable position in the City a public building, one portion of which would be devoted as a hall for their use.

Fatal Fall of a Wall.—On Wednesday a portion of a manufactory fell in the High-street at Hull, and a man named Mercy, employed on some drainage works near, was buried in the debris, and died three hours after being extricated. Two other men were injured by the falling building. It is asserted that the drainage excavations had weakened the foundations of the manufactory.

TENDERS.

For the erection of a group of three cottages in Pelham-road, Gravesend, for Mr. Henry Smith, Messrs. Wadmore & Baker, architects. Quantities supplied:—
W. H. Black, Barking £2,517 15 8
T. Blake, Gravesend 2,360 0 0
G. R. Cobham, Gravesend 2,232 0 0
W. H. Archer, Gravesend 2,240 0 0
H. Martin, Gravesend (accepted) 1,900 0 0

For restoring and altering Queen's-square Church, Brighton, principally stonework, Mr. Arthur Loader, architect, Brighton:—
H. Parsons, Brighton £2,170 0 0
G. R. Lockyer, Brighton 2,170 0 0
Cheesman & Co., Brighton 2,150 0 0
J. Hanes, Brighton 2,119 0 0
J. Bruton, Brighton (accepted) 1,975 0 0

For repairing and redecorating St. Philip's Vicarage, Steyning, Mr. Gordon M. Hills, architect:—
J. Jarvis & Sons (accepted) £278 0 0

For sundry works at the Rectory House, Great Stanmore, Middlesex, Mr. Gordon M. Hills, architect:—
J. Jarvis & Sons (accepted) £385 0 0

For sundry works at 14, Bridgewater-square, Mr. C. S. Aubrey, architect:—
Anley £223 0 0
Ellis & Turner 215 0 0
Thomson & Son 210 0 0
Oxley 182 0 0
J. Jarvis & Sons (accepted) 170 0 0

For sewerage, draining, forming, cinderling, &c., Westbourne-road, and a portion of Derby-road, in the township of Urnston, for the Barton-upon-Irwell Sanitary Authority. Quantities supplied by the engineer, Mr. John Price:—
J. Oakes, Kenilsey £667 17 0
T. Wilan, Cheetham 516 3 4
J. Holt, Miles Platting 519 3 0
J. Randall, Westo 493 17 7
W. H. Worthington, Rusholme 487 4 8
E. Bird, Chorlton 470 0 0
M. Naegele, Hulme 437 11 1
G. Unsworth, Moss Side 433 5 0
R. Lomas, Eccles (accepted) 364 19 5

For new church, Piel, Newport, Mon. Mr. E. A. Lansdowne, architect, Newport. Quantities supplied:—
Jones & Co. £2,653 0 0
R. Welsh & Son 2,460 0 0
Stephens & Bastow 2,314 0 0
Bowers & Co. 2,294 0 0
S. B. Moore 2,225 0 0
J. Williams 2,103 0 0
W. Jones & Son, Newport 2,087 0 0
W. Blackburne, Newport (accepted) 2,025 0 0
T. Prosser, Newport 2,000 0 0

For the lecture-hall of East Dulwich Presbyterian Church, Mr. J. M. Brydon, architect, 5, Cambridge-place:—
S. Elliott £1,060 0 0
A. Robb 1,045 0 0
W. Smith, Camberwell (accepted) 945 0 0

For the erection of stabling, West Brompton, Maidstone, Kent, for Mr. F. Pine. Mr. Geo. Friend, architect, Maidstone. Quantities supplied by Messrs. R. L. Curtis & Sons, 15 and 16, Blomfield-street, Finsbury-circus:—
Wood (accepted) £295 0 0

For villa at Sittingbourne-road, Maidstone, Kent, for Mr. R. Troutbeck. Mr. Geo. Friend, architect. Quantities by Messrs. R. L. Curtis & Sons:—
Wallis & Clements (accepted) £1,688 0 0

For repairs and decorations at the New Croydon Club, George-street, Croydon. Mr. James Webster, architect, No. 27, Doughty-street, Mecklenburgh-square:—
S. Morby £114 0 0
F. R. Docking 124 0 0
J. Pegg 105 15 0

For new stables at Holly Lodge, Highbate, for Mr. W. Burdett-Coutts. Mr. H. H. Bridgman, architect:—
H. Wheeler & Sons £1,688 0 0

For further extensions to Café Restaurant, 491, Strand, for Messrs. Gianella. Mr. H. H. Bridgman, architect:—
J. H. Thomas £1,688 0 0

For three pairs of semi-detached villa residences on the Park-road Estate, High Barnet. Mr. H. H. Bridgman, architect:—
Chas. Reed £1,688 0 0

For three pairs of semi-detached villa residences at Arlington Park-gardens South, Turnham-green. Mr. H. H. Bridgman, architect:—
J. Barcham £1,688 0 0

For a terrace of houses at Arlington Park-gardens North, Turnham-green, for Mr. J. T. Bailey. Mr. H. H. Bridgman, architect:—
J. Barcham £1,688 0 0

For fitting up confectionery shop in the Finchley-road, for Mr. James Findlay. Mr. H. H. Bridgman, architect:—
F. Sage (accepted) £800 0 0

For alterations (and additions to No. 100, London-wall, for Mr. Wm. Pope. Mr. H. H. Bridgman, architect:—
Richardson & Sons (accepted) £730 0 0

For new schools, &c., at Church-road, Croydon, for the committee of the Parish Church Schools, Mr. R. W. Price, architect. Quantities by Mr. W. H. Barber:—

Waller	4,130 0 0
Maiden & Harper	3,915 0 0
Burton	3,836 0 0
Marrage	3,869 0 0
Bullock	3,610 0 0
Stewart	3,594 0 0
Levy	3,593 0 0
Ward	3,519 0 0
Page	3,546 0 0
Coles	3,436 0 0
Smith & Sons (accepted) ..	3,416 0 0

For repairs and painting at St. George's Workhouse, Messrs. Wilson, Son, & Aldwinckle, architects:—

Burnan	2,299 0 0
Gibbins	298 15 0
Scharien & Williams	298 0 0
Thompson	298 0 0
Harper	287 0 0
Moyle & Son	279 0 0
Oilly	277 0 0
Stewart	272 0 0
Vigor	255 0 0
Aldridge	238 0 0
Hawkins	233 0 0
Derby	225 0 0
Palmer	210 0 0
E. J. Coombe, St. George's, E. (accepted) ..	195 0 0

For the completion of two houses in the London-road, Croydon, for Mr. E. Hopkins. Mr. F. T. Mullett, architect, 66, George-street, Croydon, and Cornhill-chambers. Quantities supplied:—

	Gross	Allowed for	
	tender.	Materials.	
Barker	21,148 6	2,546	
Maiden & Harper	1,939 0 0	54 0 0	
Smith & Bullock	992 10 0	47 10 0	
Best	981 7 10	38 14 0	
Saker	959 0 0	41 0 0	
Lee & Son	939 0 0	59 0 0	
Dotterill	945 0 0	60 0 0	
Docking	911 16 0	33 0 0	
J. Smith & Sons	817 0 0	47 0 0	
T. J. White	843 0 0	37 0 0	
Pearson	849 10 0	50 0 0	
Legg	835 0 0	47 0 0	

For building the Glengall Coffee-palace, Glengall-road, Cubitt's-down, for the Glengall Coffee Palace Company. Mr. A. Stanton Cook, architect:—

Little	21,430 0 0
Holland	1,335 0 0
Evans	1,318 0 0
Kemp	1,279 0 0
Dye	1,267 0 0
J. A. Taylor	1,239 0 0
Thompson & Tweed	1,236 0 0
Stapell	1,130 0 0

For alterations, &c., at 316, Holborn, for Messrs. Davis & Son, Mr. Harris, Gray's building, architect:—

Emery	21,015 0 0
Waldron	895 0 0
W. & H. Salmon (accepted) ..	775 0 0

For rebuilding Great Western public-house, Hampden-street, for Messrs. G. & W. Bell, Mr. Ernest Shum, architect. Quantities by Mr. J. G. Raynes:—

Wells	21,693 0 0	2,335 0 0
W. & H. Salmon	1,672 0 0	343 0 0
Carter	1,635 0 0	330 0 0
Patman & Fothering- ham	1,567 0 0	330 0 0

For the erection of an infants' school at Chiswell Heath, Essex, for the Dagenham School Board, Mr. J. H. Halsey, architect, 80, Leman-street. Quantities supplied:—

C. Death, Chadwell Heath	1,762 10 0
W. H. Martin, Upton	1,602 0 0
W. J. Hack, Poplar	999 0 0
J. & H. Cocks, Mile End	963 0 0
W. Wood, Chalmers-street	937 0 0
J. Brickall, Manor-park	945 0 0
Parish & Hawker, Limehouse	915 0 0
C. Barnes, Ilford	912 0 0
S. W. Hawkins, Mile-end	912 0 0
T. Russell, Forest-gate	9 0 0
A. J. Johnson, Commercial-road ..	535 0 0
A. J. Smith, Forest-gate	812 0 0
F. Ward, Croydon	823 0 0

* Accepted subject to the sanction of the Education Department.

For repairs, additions to, and re-seating Ravenstone Church, Derby. Mr. William C. Street, 4, Westminster-chambers, architect:—

Claron & Sons, Tamworth	21,367 6 0
A. Mills, Ashby-de-la-Zouch	1,933 2 6
J. Stanford, Ashby-de-la-Zouch ..	1,297 10 0
R. Yates, Shiffhall	1,205 0 0
A. Lerner, Walsall	1,121 3 0
H. Bland, Leicester (accepted) ..	1,049 0 0

For new roads and pipe drains at Beach-hill-park, Hadley, near Barnett:—

Mariott, Tottenham	26,439 0 0
Milson, Walthamstow	6,262 0 0
Dunmore, Hornsey	6,060 0 0
Jackson	5,880 0 0
Harris, Camberwell	5,320 0 0
Lloyd, Kilburn-lane (accepted) ..	4,788 0 0

For pipe sewers at Highgate-hill, for the Hornsey Local Board:—

Dunmore, Hornsey	21,398 16 0
Dixon, Highgate-road	1,272 19 6
Pizzey, Hornsey	925 0 0
Jackson, Finsbury-park (withdrawn) ..	899 0 0
Nackenzie, Williams & Co., London* ..	682 0 0

For the erection of a detached residence in Holmesdale-road, Haddon Wick, for Mr. R. Bruce. Messrs. Bray, Webb, & Co., surveyors:—

W. Harris, Old-street, St. Luke's* ..	21,574 10 0
---------------------------------------	-------------

For the erection of a terrace of houses, for the labouring classes, in Albert-street, Shadwell, to be known as Queen's terrace. Mr. Charles R. Peters, architect:—

Moyle & Son (accepted)	24,650 0 0
------------------------------	------------

TO CORRESPONDENTS.

C & B—W. R.—W. D.—J. S. & Son.—J. A. F.—W. & H. S.—F. J. M.—D. C.—B. A.—J. W. H. F.—W. A. E.—P. H. S.—E. E. M.—T. W.—E. J. F.—E. T. J. C. H.—Mr. N.—A. H.—J. W.—E. H. R.—O. B. K.—E. C. R.—F. P. O.—R. H.—J. P. H.—(R. P. W. P. send particulars)—H. H. B. (data should be sent)—E. W. H. (shall appear)—A. For Mason (must look to his books)—R. H. C. (thanks).

Correspondents should address the Editor, and not the Publisher, except in cases of business.

All statements of facts, lists of tenders, &c., must be accompanied by the name and address of the sender, not necessarily for publication.

We are compelled to decline printing out books and giving addresses.

Notes.—The responsibility of signed articles, and papers read at public meetings, rests, of course, with the authors.

NOTICE TO ADVERTISERS.

Persons advertising in the Builder may have REPLIES ADDRESSED TO THE OFFICE, 46, Catherine-street, Covent-garden, W.C.,

FREE OF CHARGE.

Letters will be forwarded if addressed envelopes are sent, together with sufficient stamps to cover the postage.

CHARGES FOR ADVERTISEMENTS.

SITUATIONS VACANT, PARTNERSHIPS, APPRENTICESHIPS, TRADE, AND GENERAL ADVERTISEMENTS.

Six lines (about fifty words) or under

Each additional line (about ten words)

Terms for Series of Trade Advertisements, also for Special Advertisements on front page, Competitions, Contracts, Sales by Auction, &c., may be obtained on application to the Publisher.

SITUATIONS WANTED.

Four lines (about thirty words) or under

Each additional line (about ten words)

PREPAYMENT IS ABSOLUTELY NECESSARY.

* Drugs must not be sent, not all small sums should be remitted by Cash in Registered Letter or by Money Order, payable at the Post-office, Covent-garden, W.C. to

DOUGLAS FOURDRINER, Publisher.

Advertisements for the current week's issue must reach the Office before THREE o'clock p.m. on THURSDAY.

The Publisher cannot be responsible for DRAWINGS, TESTIMONIALS, &c. left at the Office in reply to Advertisements, and strongly recommends that of the latter COPIES ONLY should be sent.

TERMS OF SUBSCRIPTION.

"THE BUILDER" is supplied gratis from the Office to residents in any part of the United Kingdom at the rate of 12s. per annum. Payment. Remittances payable to DOUGLAS FOURDRINER, Publisher, 46, Catherine-street, W.C.

Best Bath Stone.

WESTWOOD GROUND,
Box Ground, Combe Down,
Cireham Down,
And Farleigh Down.
RANDELL, SAUNDERS, & CO., Limited,
Corsham, Wilts. [Advt.]

Bath Stone.

Facilities for selection and quality unequalled, having upwards of
350,000 Feet Cubic
In Stock of all known descriptions.
PICTOR & SONS, Box, Wilts. [Advt.]

Douling Freestone and Ham Hill Stone of best quality, in blocks, or prepared ready for fixing. An inspection of the Douling Quarries is respectfully solicited; and Architects and others are CAUTIONED against inferior stone. Prices, delivered to any part of the United Kingdom, given on application to CHARLES TRASK, Norton-sub-Hamdon, Somerset.—Agent, Mr. E. WILLIAMS, 73, Charlotte-street, Portland-place, W. [Advt.]

Douling Freestone, Of best quality, supplied from their own Quarries and Kins by STAPLE & HAWK, Stoke, Lincolnshire. Agent, Mr. H. MICHESSE, 5, Augusta-road, Hamersmith, London, W. [Advt.]

Asphalte.

Seyssel, Patent Metallic Lava, and White Asphaltes.
M. STODART & CO.
Office:
No. 90, Cannon-street, E.C. [Advt.]

Asphalte.—The Seyssel and Metallic Lava Asphalte Company (Mr. H. Glenn), Office, 38, Poultry, E.C.—The best and cheapest materials for damp courses, railway arches, warehouse floors, flat roofs, stables, cow-sheds and milk-rooms, granaries, tan-rooms, and terraces. [Advt.]

Immense quantities of
DRY WAINSCOT,
DRY MAHOGANY,
DRY WALNUT,
in all thicknesses.

B. J. HUDSON & SONS,
Whitfield-st., W., and Great Peter-st., S.W.
London. [Advt.]

J. L. BACON & CO.,

MANUFACTURERS OF IMPROVED
STEAM AND HOT-WATER
APPARATUS,

FOR WARMING AND VENTILATING
Private Houses, Churches, Schools, Hospitals,
Manufactories, Greenhouses, &c.

OFFICES AND SHOW-ROOMS:—
No. 34, UPPER GLOUCESTER PLACE,
DORSET SQUARE, LONDON, N.W.

And at DUBLIN, BELFAST, and NEWCASTLE.

Illustrated Pamphlet on "Heating" post free.

CHAPPUIS' PATENTS FOR REFLECTING LIGHT.

DAYLIGHT REFLECTORS OF EVERY DESCRIPTION,

ARTIFICIAL LIGHT REFLECTORS.

WHY BURN GAS?—CHAPPUIS' REFLECTORS DIFFUSE DAYLIGHT.—They are exclusively adopted by and fitted at Buckingham Palace, all H.M. Government Offices, Houses of Parliament, H.M. First Commissioner of Works, the Metropolitan Board of Works, British Museum, South Kensington Museum, Royal Institution, Guildhall Museum, on board H.M. Ships, also Railway Companies' Offices, Hospitals, Institutions, Banks, Insurance Offices, Manufactories, Private Houses and generally from Noblemen's Mansions to Artisans' Work-shops. 30,000 in use in London alone. Patronised by leading Architects, Engineers, Contractors, &c., &c.

N.B.—For Prospectuses and Diagrams, address Stamped Envelope to

P. E. CHAPPUIS, Patentee and Manufacturer, 69, FLEET-STREET, LONDON.

NOTICE.—The POLYGONAL REFLECTOR (Latest Patent) FOR ARTISTIC and PICTURE GALLERIES.

Its construction allows of the angle of light being readily altered so as to reflect in any desirable direction.

ILLUSTRATIONS.

The Foyer, Dagmar Theatre, Copenhagen. (Double-page engraving).....	384
The "King's Arms," about to be Erected, Edgware-road.—Messrs. Kales & Son, Architects.....	388
New Post Office, Aldershot.—Mr. Mulley, Architect.....	390
Details of Roofs, Plaster-work, &c., in Buildings visited by the Architectural Association.—York Exhibition, August, 1883.....	392
The New Offices for "Truth," Westminster.—Mr. Henry S. Legg, Architect, Christ's Hospital.....	393
Dwelling-house at Westgate-on-Sea, Thanet.—Mr. C. N. Beazley, Architect.....	397

CONTENTS.

Architecture in Central Asia.....	373	The Dagmar Theatre, Copenhagen.....	399	The Teaching of Domestic Economy in Schools.....	402
The Roman Baths at St. Barbara, Treves: A Discovery and a Restoration.....	374	The "King's Arms," Edgware-road.....	399	St. Cuthbert's Church, Darlington.....	402
Improved Construction of Theatres.....	375	New Post Office, Aldershot.....	399	Buildings for F or Low Abatement.....	402
A Photographic Library of Reference.....	376	"Truth" Office, Westminster.....	399	Tests for Builders in France.....	403
Wells and Caissons.....	377	House at Westgate-on-Sea.....	399	Improvements in London Wall.....	402
The Association of Municipal Engineers and Surveyors: District Meeting at Rugby, Leicestershire.....	377	Dumchisons and Restorations at Lincoln's Inn.....	399	Art-Exhibitions in the Provinces.....	402
The Proposed New Admiralty and War Office: Conditions of Competition.....	378	Workmen's Dwellings in Plymouth.....	400	"Coal-Yard".....	403
Railway Pioneering in the United States.....	379	Chertsey Vestry Hall.....	400	Plumbers.....	403
The New Railway Station at Strasburg.....	379	Care of the Public Health.....	400	Plans of Gasli.....	403
Saxon Architecture.....	380	Free Library Buildings.....	400	The New Town-Hall, Vienna.....	403
Restorations at the Government Offices.....	380	Prepared Section of a new Fever Hospital at Coventry.....	400	Books: Pollard's "Guild Merchant of Preston" (Oskey); Vetch's "Professional Papers of the Corps of Royal Engineers" (Stanford).....	403
Domestic Architecture in Somerset: At Yeovil and Blandford.....	381	The Transmission of Electric Power.....	400	Various.....	403
About.....	381	Hotel Building in the City.....	400	The Restoration of Peterborough Cathedral.....	404
		The Trade Union Congress at Nottingham.....	401	Miscellaneous.....	404
		The Church Congress Hall, Reading.....	402		
		Tapestry at the National Exhibition of Fine Arts at Paris.....	402		

Architecture in Central Asia.



SOME contributions to our knowledge of the architecture of that little-known part of Asia which lies to the east of the Caspian Sea and to the south-

and south-east of the Sea of Aral may be picked out of a book published not long ago by Messrs. Allen & Co. on the subject of the Russian movement on Merv and Herat. It would be a great

advantage to the study of architecture if travellers in little-known districts made a point of giving the best and plainest account within their power of the structural features of the countries which they traverse. In our present state of education, however, it is useless to expect this, except in the rare cases where some kind of technical knowledge has been previously acquired by the traveller. So we must be thankful for what we can get, especially when we remember that poor photographs or even rough sketches will often tell us more than pages devoted to what is, perhaps, intended for descriptive writing.

Outside of the new Russian province beyond the Caspian lies a region, more or less unexplored, which has provoked the curiosity of enterprising Russians. In 1881 a Russian railway from the Caspian to Kizil Arvat was opened for traffic; the distance from Michæevsk, on the Caspian, over steepes unfit for the support of human life, being 144 miles. The fertile and well-watered oasis of Akhal commences at Kizil Arvat, and there is no doubt that a continuation of the railway through the district in a south-easterly direction, to Askabad, Sarakhs, Herat, Candahar, and Sibi, is perfectly feasible. The distances are, from Kizil Arvat to Askabad, 135 miles; Askabad to Sarakhs, 185½ miles; Sarakhs to Herat, 202½ miles. Total length from the Caspian shore to Herat, 667 miles. The cost of a railway for the unfinished portion (523 miles) of the route, is estimated at 2,192,000.

The district between Askabad and Sarakhs is known as the Atak, which means "The Foot of the Mountain." The people of the Atak dwell partly in clay structures and partly in *kibitkas* or tents. The number of tents, however, is on the decline. Formerly every settlement consisted in a fort, or *Kala*, inside of which were clay buildings, and outside tents, that could be removed into the fort at any moment. At present the structures erected outside the forts are also of clay.

At a distance of 8¼ miles from Askabad lies Annau, an old half-raided fortress on a hill, with an *aul* or village of 200 huts, half a mile

from the fort, which is surrounded by extensive ruins, and stands on the banks of a stream. Annau is the first locality, proceeding from Michælovsk Bay, where there are traces of art. The ruins of a mosque here exist. Many of its towers have fallen, and all the arches and walls are cracked, but the elaborate and graceful façade is still perfect. As far as Giaux, some 18 miles to the south-east of Annau, the Tekkes live mostly in *kibitkas*. Advancing towards Askabad, 135 miles from Kizil Arvat, there are ruins of clay homesteads, but in small numbers. Tombs, built of unburned brick, are more numerous. They are ugly quadrangular buildings, surmounted by domes, and plastered over with clay. The façade of one of these tombs, near Artchman, is figured in the book. A plain wall, about 20 ft. high, is divided into vertical panels by four pilasters, two more being placed at the outside angles. In the centre panel is a square opening, some 4 ft. 6 in. in height, the sill of which is about 3 ft. above the ground; and there is a sort of window, some 2 ft. high by 1 ft. 6 in. wide, above the opening, near the top of the wall. A rude string-course runs along the face of this wall, at about 2 ft. 6 in. from the top, and the swell of the dome which covers the quadrangular interior rises some 10 ft. above the latter. The building appears to have been formed as a cube, with the springing of the dome, at about two-thirds the height of the façade, concealed by the carrying up of the plain external walls, which leave only the top of the dome visible from the ground without.

At Durun and Parau, near Kizil Arvat, are ruins of small mosques in a bad state of preservation; and on the banks of the old channel of the Oxus are parts of the walls of four monumental edifices, still standing. They are not said, however, to possess any architectural features of interest; nor can the inhabitants give any account of their history. Some of these tombs recall to mind the Makams, or "High Places," of Eastern Palestine. The Mosque at Annau is said to have been built in honour of some Moslem saint, whose memory has perished. His tomb is pointed out near the mosque,—a mere mound of earth dressed with stone, and surrounded with a stone wall, the only entrance being one through which it is necessary to crawl in order to pass it.

At Giaux there are three fortifications, of which one is occupied by forty Tekke families, living in mud hovels within the inclosures, and one is in ruins. It may be as well to take such an account as can be given of Merv itself as generally descriptive of both the fortifications and the residential buildings,—or rather construction of hovels,—in this wild part of Asia. The northern front of the fortress of Merv appears as thin blocks of plain massive walling, nearly perpendicular, retiring at right angles towards the interior, and without any embasements or openings, although a slight irregularity of outline on the top suggests the

presence, or the former presence, of battle ments. As against an army provided with artillery it is hardly to be thought that any defence is possible, although these fortifications, which as far as we can make out are of the nature of redans, or forts open behind, might be formidable enough as checks on the marauders of the district.

The description given of the erection of these defences is enough to account for their rude and artificial character. After the fall of Khiva in 1873 a rumour reached Merv of an intended attack by the Russians. On this the Khan collected 25,000 labourers, and began to construct a fortress on the banks of the Murghab. After they had been at work for twenty days the news of the retreat of the Russians arrived, and the work was discontinued. In 1880, during the siege of Geok Tepé, it was resumed, by the same number of workmen, and carried on for three weeks. It was then again abandoned, on the intelligence that the Russians were not likely to march upon Merv. The general form of the fort is that of a triangle, and the river runs between it and the market-place of the town. The extent of the works is about 5 miles. The earthwork is nearly 80 ft. high from the foundations, and bears a parapet 35 ft. high. There is no proper ditch, but a wide excavation, both within and without the walls, from which the material for the latter was dug. There are eight gates, the roadway zigzagging behind a projecting fort and passing between two forts in the second line.

A rough drawing that is given of an *aul*, or village, within these rude and massive lines of earthwork, can only be described by saying that it resembles the arrangement of a series of large bee-hives in a hollow square. Round in plan, and curving at top into a sort of pointed dome, these huts are as close to the form of the ordinary straw bee-hive as can be well imagined, excepting that the entrance, which has a head of pointed form, rises to about half the height of the hut. Nothing in the shape of a window is shown, nor much in the way of door. Each row of hovels stands on a sort of dais or platform, elevated about 14 in. above the central part of the square. Rude square towers, each perforated with a single loophole, or window, rise at the corner of the *aul*, and form part of the fortifications of the town.

There is a very remarkable resemblance between the oven-shaped hovels that form the "houses" of Merv, and those circular cells to which we have before now called attention in connexion with rude stone walling and megalithic structures in Cyprus. The same type is perpetuated in the round, conical-topped haystack, or rather wheat rick, which over a wide breadth of our agricultural districts is found side by side with the rectangular form of rick. Of the two shapes there can be little doubt that the circular form is the older, and that for this

reason. In building a single house, less material is required to wall in a circular area, of given extent, than by the use of any other ground-plan. And thus, in point of fact, in Mediæval or still earlier times, the round tower was a great favourite for defence and even for abode. But with the increase of population, and the coincident demand for house-room, the outside corners, wasted by circular plans, assumed an economical importance, which more than counteracted the saving in masonry. A house, cell, tower, or what not, standing alone, might be best built on a circular plan. But build many together, and the rectangular disposition becomes indispensable, or, at all events, becomes the best.

We have a remarkable analogy to these two forms in the nests of the honey-bee and of the humble bee. Of the economy of the hexagonal form adopted for the cells of the former it is superfluous to speak. Theory and practice here so accord that it is alike true to say that the form which is mathematically the best has been selected by the instinct of the "singing masons, building roofs of gold," and that the most convenient disposition that practically would work itself out among a great number of closely-packed fellow-workers had come into natural operation. Both statements are true. But the nest of the humble bee, which is made of a paper (formed by the labour of the insect), very like that which forms the nest of the wasp, is a collection of circular cells, that very closely resemble the clay hovels of Merv, or the round cells of Cyprus. And as, in the order of what we may call insect civilisation, the politic and far-seeing honey-bee holds a rank as much superior to that of his larger and noisier brother as the citizen does when compared to the nomad, so must we hold that the oven-like hovels of Merv are survivals of one of the rudest and earliest forms of house-building.

It is, however, evident that architecture of a higher order has been not unknown in this part of the world. Whether any remains deserving of serious study exist is at present doubtful. The region is in a late stage of that relapse into desert which in so wide a part of once-populous Asia has become so complete. Much of the district, indeed, is yet gifted with extraordinary fertility, under the one main condition of abundance of water. But that abundance can be supplied only by irrigation. Irrigation implies the existence and maintenance of canals, and no such care of the physical needs of the country is possible without a settled government. A sort of No Man's Land, too remote from the seat of Government of Persia to allow of effectual control, that part of Asia is now in a state of transition and of decay. How far the state of the case will be altered by events now in progress, including the main step of the construction of a railway as above described, it is not for us here to speculate.

THE ROMAN BATHS AT ST. BARBARA, TREVES.

A DISCOVERY AND A RESTORATION.

The stranger who wishes to see the sights of Treves, or Trier,* and who would ask for the ruins of the Roman Baths, would be sure, in eight cases out of ten, to be sent to the ruins of the Imperial Palace, whilst he might be once questioned whether he really meant the baths, and not that palace; and only in one case, if he had luck, would he be really directed, without preliminaries, to the suburb of St. Barbara, where the desired baths are actually situate. A German writer who supplies a description of the ruins from which we quote says that this persistent confounding of such entirely different things must be described as a strange peculiarity of a city so rich in rare treasures as Trier, which at the same time supplies a proof of the almost convulsive stubbornness with which a generally accepted designation and an error which had taken root long ago preserve an existence difficult to understand and scarcely justifiable. No excuse can be found for the name "Roman Baths" which attaches to the massive ruins of the large Roman edifice rising in the south-eastern part of the city, and which designation dates from the beginning of the last century, but later researches have shown without doubt that the canals and passages, looked upon as parts of a bathing establishment, did not serve any such

purpose, but that they were merely used for heating. Even if the name of Imperial Palace should finally be questioned, it is on the other hand, fully proved that those ruins were not baths. It is difficult to understand why, in the face of this, the photographic views of that palace, exposed for sale in large numbers in the shop-windows of Trier, should bear almost universally the subscription of "Roman Baths," and why even the latest-published plans of the city should perpetuate this erroneous description. Although the perpetuation of such an error in print cannot be forgiven, there is some excuse for the popular usage, which cares little for archaeological investigation. People have become accustomed, so far as the memory of the present generation reaches, to look upon the lofty massive remains in the Palastplatz,—where in the time of the Romans there was also the Forum,—as baths, combining with this designation, quite correctly, the idea of a splendid building. But it is just on this account that people do not seem to care to drop the popular appellation, and to transfer the name to the lately discovered ruins of the real baths, which scarcely rise above the ground. And yet those ruins are, for him who understands how to read ruins, and who is able to reconstruct in his mind's eye from existing remains what has been destroyed, of a grandeur not inferior to that of the Imperial Palace, and perhaps even grander.

As already remarked, the ruins of the Roman Baths are situated in the suburb of St. Barbara, south-east from the city, and not far from the river Mosel. Several attempts to lay them bare were made as early as the beginning of this century; but operations were soon again abandoned, notwithstanding that several very good finds,—one of them of a very valuable nature—were made, and they were at no time carried on systematically. It is only since July, 1877, when a committee of the Rhenish provincial museums granted a sum of 22,000 marks towards excavations, and since the spring of 1881, when the Prussian Government resolved to acquire the site, to excavate the ruins, and to preserve them for ever, that the works have been prosecuted energetically. Lately the German Crown Prince, who visited the ruins last year in company with the Crown Princess, has also shown his interest in the work by forwarding a subscription of 10,000 marks, so that during this summer additional workmen could be employed, and about two-thirds of the extensive ruins have been laid bare. Dr. F. Hettner, under whose careful supervision the work has been proceeded with, hopes to complete the excavations,—the most elaborate, by the bye, that have ever been carried on on German soil,—by next autumn. When, by that time, the widely-ramified passages, the floors of the halls, rooms, and courts, as well as the remains of the walls, unfortunately very low, have been entirely cleared from earth and rubbish and cleaned, a picture will be unfolded to the visitor which is, indeed, the ground-plan of an immense building, the lines of which, instead of being traced with Indian ink on paper, will be marked by walls on the ground. In order to obtain a better view of this plan, an earth mound has been thrown up in the centre of the ground, from the platform of which a tolerably fair view may be obtained of the whole. But this hill, which takes up too much room in proportion, may be looked upon as only a makeshift, and will probably be replaced later on by a tower of iron framework, placed at a suitable spot. At the present time, the best view may be had from the elevated high-road running along the north side of the site now being excavated, and from this point of vantage the imagination is able to re-erect, with the help of the ground-plan as exposed, the magnificent edifice which once stood there.

The writer above mentioned says:—Right in front of us lies an extensive courtyard, which at its farther end is bordered by a centre building, and to the right and left by two boldly-projecting wings. According to measurements made by *Regierungsbaurath Seyffarth*, those wings project 139 ft. 6 in., and have a breadth of 71 ft. 6 in., whilst the clear space of the courtyard before us, or the breadth of the centre building, is 423 ft. 3 in., which would give for the whole building a breadth of 566 ft. The centre portion, as the most elaborate part of the whole, was richly membered, and contained two principal entrances, each flanked on either side by a niche, two of which may have

contained fountains, the other two being filled by statuary of Barin marble. Before passing through one of these entrances, it is necessary to remark that the ground-plan of the whole building is strictly symmetrical, and that the symmetric axis passes from north to south between the two entrances, which latter are placed 92 ft. from each other. Through the whole centre, from north to south, at a depth of about 330 ft., there runs a series of halls and rooms placed behind each other, on to which join to the right and left the other rooms, exactly corresponding on both sides. Through the two entrances, spanned by barrel vaults, the porch was reached, whence a few steps of a total rise of 3 ft. led into a large hall.

This hall, part of the frigidarium, containing the cold baths, forms a parallelogram of 177 ft. by 66 ft. It formed, as it were, the reception-room of the whole, and was consequently fitted up with the greatest luxury. Being almost a whole story higher than the surrounding rooms, its importance found full expression in the exterior of the edifice; it was also spanned by a massive barrel vault, and received its light from all four sides through windows placed high up. Here the greatest splendour was displayed. The floor was formed of white and black marble slabs; the walls were inlaid with Cipollino and other precious kinds of marble, and the vaulting was covered with mosaic work. The principal hall was surrounded on all four sides by smaller halls, or bull-like enlargements, communicating with it direct, and without separating walls. At each of the two narrow sides, east and west, communication was preserved by a large room; but each of the two long sides was divided by two massive columns into three equal parts. On the north side they opened between the two principal entrances into a semicircular apse, with spherical vault; on the south side, to the right and left of a lobby leading to a large hall placed farther back, into two square rooms. The two latter, as well as the semicircular space of the apse, were entirely taken up by large cold-water basins for public bathing, whilst close to them were six cells for cold private baths. From the principal hall of the frigidarium, through the above-mentioned hall-like lobby, which was closed to the right and left by small semicircular apses, and through two wide doors, the large centre hall located behind them was entered. Both this lobby and the contiguous hall were decorated with great splendour. Glass mosaics, Cipollino, and other valuable stones, covered the walls, which were divided by pilasters with capitals of white marble. These two rooms served as the communication between frigidarium and caldarium, between cold and hot baths. The northern portion of the central hall was accordingly supplied with a hypocaust, or heating chamber, placed under the floor, supplying sufficient warmth to the whole space, which served as an intermediate resting-place to those entering the caldarium from the frigidarium, or vice versa. Behind the central hall the principal hypocausts, or heating apparatus, as well as the rooms for the attendants, were placed, whilst to the right and left were grouped those rooms which served for the warm baths proper. The latter correspond to the perfectly symmetrical arrangement of the whole; as already observed, there are two groups of them, to the right and left of the heating arrangements, which were placed in the centre.

This plan favours the assumption that the warm baths were used by the two sexes separately; the cold baths, on the contrary, in common. The fact, also, of the frigidarium being most luxuriously fitted up, whilst the space included in the caldarium were simpler in their arrangements, likewise supports this view. We also know that, especially during the times of the last emperors, the public baths lost much of their original purpose, and served more as assembly-rooms and places of enjoyment for the fashionable world than as actual bathing establishments, a state of things which prevails in this nineteenth century in many of our seaside resorts. In the centre of each of the above two groups of warm baths there is a large rectangle, rounded out at the narrow southern side into a flat apse. These were the caldaria proper, forming single large basins for the public warm baths. Around them were ranged the various other rooms prescribed by the highly ingenious arrangement of Roman baths and the bon-vivant habits of their builders. There were the apodyteria, for undressing and dressing; the tepidaria, with moderately dry heat as a

* Illustrations of these will be found in our early clumes.

preparation for the bath proper; the unctaria, in which the body was anointed with oil before and after the bath.

The whole building is surrounded on its two outer sides, as well as along the whole length of its rear façade, which, like the front, faces a spacious courtyard,—which, again, is encompassed by a series of cells serving as private baths,—by a broad vaulted tunnel, which likewise crosses the interior of the building in various directions. Narrow stairs lead from the open courtyard and from different other parts of the edifice down to this subterranean passage, which served exclusively as a means of communication for the attendants employed, and for the service and regulation of the heating arrangements, which were mostly underground; it also contained the drains. This large tunnel and a sewer passing right across the whole building are the proportionately best preserved parts of the baths, whilst the caldarium to the left, which has been exposed quite recently, awakens, perhaps, the greatest interest. The floor of the latter, which consisted of a kind of platform made of broken tiles and thin cement, and rubbed smooth at the top, rested upon a hypocaust, a hollow space formed of many columns and heated by hot air, which warmed the water above it. These columns, constructed of tiles loosely piled upon each other, have broken down under the weight of earth and rubbish accumulated during fourteen or fifteen centuries. The floor has been burst open on all sides and tumbled down, and can only be compared at the present day with a shattered ice-field, the broken slabs of which show in their fracture that they were formed of three separate layers, each of which, curiously enough, had been carefully rubbed smooth.

As already remarked, there remains, unfortunately, nothing of the whole splendid building but the foundations, the subterranean spaces, the partly preserved floors of the rooms above them, and low walls, nowhere higher than about 6 ft. Those walls consist partly of small unburnt limestones, at the corners also of massive sandstone blocks, partly of concrete walling with layers of tiles running through it, and faced with carefully-dressed limestone slabs. The grandeur and beauty of the edifice, besides the aids imagination gives us from the remains, may be gathered also from a drawing preserved in the Town Library of Trier. This drawing, contained in Willehm's "*Luxemburgum Romanum*," but unfortunately not very clear, shows the ruins of the side facing the Mosel still preserved to a height of three stories, as they appeared at the beginning of the seventeenth century. The ruins then still displayed a building with circular windows, adorned by pilasters. There exists a record of the ruins also in the so-called Merian plan of the town (dated 1646); and if we accept a verbal tradition, according to which the materials of the ruins were used in building the Jesuits' College, as substantially correct, the statement of Merian may very well be reconciled with this version, for the year of erection given on the college is 1653.

An idea of the former splendour of the building and its various halls may be conceived from the numerous finds, remains of floors, stumps of columns, shattered marble capitals, torsos, glass mosaics, painted stucco, bronzes, and many other smaller objects. With few exceptions, all those finds have a resting-place in the Trier Provincial Museum. The most notable of them is the large marble torso of a female figure, which was discovered in the winter of 1845 in front of one of the niches by the side of the principal entrance, and which was soon recognised as an imitation of the well-known *Mattei Amazone* preserved in the Vatican. But it was found, after careful comparison, that the torso at Trier is far superior to that at Rome, both on account of freer and more unstrained treatment of the drapery and the more natural appearance of the flesh, and that, although less complete than the other, it has claims to higher artistic value. Of other statuary which had served for adornment, there were discovered a small male bust, a plinth with a human foot, a very beautiful female hand broken off short, and a smaller torso of a male figure, all of Parian marble; small figures of clay, among them a couple in an amorous posture, and others of bronze. The architectural remains include a polychromatic cyma of mortar, and fragments of mosaic and fresco paintings. The objects most numerous

found were, of course, those connected with the destination of the building. Amongst them are small pots, bottles, and sigillata fragments, many keys, pins, buckles, a small bronze scale, and, as a matter of course, a very large number of combs, hairpins, lacing needles, ear-prickers, partly of horn, partly of bone; but not a single strigilis,—that article of the toilet principally used by gladiators after their fights, and with which they scraped off in the bath the ointment, mixed with dust and blood, which they had applied to their bodies before they entered the arena. It is surmised that there may have been close to the Roman Amphitheatre, which, situate on the road to Oewig, is some distance from the Baths of St. Barbara, another public bath, intended for the gladiators and less aristocratic visitors generally. But, at any rate, it may be assumed that during the period when the Augusta Trevirorum was raised by the Emperor Diocletian to the rank of western capital of the Roman Empire, and when, in the fourth century of our era, the Emperors Maximian, Constantius, Valentinian, and Gratian took their permanent residence there, whence they directed the destinies of Gallia and Britannia, the most select Roman society was assembled at Trier, and that the splendid Baths of St. Barbara were probably erected for them in the first place.

IMPROVED CONSTRUCTION OF THEATRES.

THE safety of our daily-increasing theatre-going public is a subject which of late has been somewhat seriously forced on the attention of the world, and no small number of remedies have been suggested and in many cases carried out, but still there remains, it must be confessed, much room for improvement. A considerable field for study, it may be observed, is offered by some of the more important of the Continental theatres.

There is one special measure adopted by the Austrian authorities to facilitate the exit of theatrical audiences, a measure to which we would particularly desire to draw attention, as one eminently practical, and easy of application. In the impossibility of isolating existing theatres,—a point which should in the future, we consider, be rendered obligatory on all managers,—the means which have been adopted in Vienna and in Prague, of establishing exterior iron staircases from each story, should immediately be enforced by the Metropolitan Board of Works in every London theatre. The facility with which a window on any floor can be converted into a door, and from it a light exterior iron staircase run down to the street, must be apparent even to the most unpractical mind, and no better argument in favour of the complete success of this system could be adduced than the facility with which an audience finds its way out of the cramped, old-fashioned Burg Theater of Vienna. All who may remember the quaint and famous little house in the past would be astonished to see how simple is the mode of exit now that from each story a light outer iron staircase has added a whole series of additional exits. These exits are, it must be specially observed, used *every night*, and not merely reserved for cases of need. We fail entirely to see the reason why all exits, if exits they be, should not be used every night, and this, not alone on the score of the comfort of the audience, but chiefly that the public may in this manner become perfectly accustomed to the use of more than one or two exits. A curious proof of the necessity of this feature was given not long since in one of the crowded houses of Vienna, the little Theater an der Wien, where a false alarm of fire having caused a panic, it was found that, notwithstanding that the public might have been supposed to have become accustomed to the extra exits, they were used but by only a few persons.

At the Prague Opera-house, not a very large theatre, but entirely isolated, the system of exterior staircases, only just completed, is admirably arranged, a long balcony running round two sides of the house on each floor, the various exits all opening on to the balconies communicating with the street by a series of staircases. Both in this case and in that of the Burg Theater at Vienna, the daily use of these extra exits has singularly served to allay the fears of the theatre-going public. At the Viennese Burg Theater the last few steps of

the iron staircases are, it may be mentioned, movable, and are fixed each night when the doors of the theatre are opened; thus the day traffic is in no way impeded.

This inexpensive and very efficacious system of exterior iron staircases has been adopted in Austria and Germany in more than one of the smaller houses; in the larger theatres, in the principal opera-houses, such measures are unnecessary, the staircases being amply broad and the separate exits numerous from each portion of the house. In the Berlin Opera-house the spectator in the highest gallery finds himself on the piazza before the Emperor's palace, and by a separate staircase, almost before he knows he is in the open air, and on the opposite side of the house, and from each story a similar exit is also provided. In Professor Semper's superb new opera-house at Dresden,—one of the most successfully-designed theatres in the world,—the means of entrance and exit are admirable. It is difficult to imagine the possibility of accident even in the event of panic. At the opera-house at Munich distinctly-marked arrows, beneath the word *Ausgang*, direct the spectator at every turn to the numerous means of exit from the building. At the Vienna Opera-house the double staircases are so broad and easy of ascent and descent, the doors are so numerous, that no panic could, we should imagine, possibly block the means of exit even when the house holds its full complement of 3,000 persons. These, of course, are large houses, in the design of which the economical consideration of space has never been a point such as it has been and is, in the case of most of the theatres of the great cities. But in the future erection of all theatres the Board of Works should, we consider, be far stricter in its requirements than hitherto it has been. Isolation, no matter what the cost, should be made, in all but exceptional cases, obligatory, certainly on two sides of the house. Exterior iron balconies and staircases should be equally obligatory, this latter feature being also enforced in all existing theatres. As for the further measures of interior security those have already been well discussed and require only to be more strictly followed to lessen considerably the chances of danger.

Above all things the confidence of the public must be secured, and we know of no better method than that which is adopted in Munich, of admitting the public on certain days of the week to visit the great opera-house and the adjoining Residenz Theater, before and behind the scenes. When one has fairly seen the admirable system of water-tanks and hose-pipes, the ponderous iron curtain that descends in fifteen seconds, and the general working of the carefully-observed rules which have been drawn up for the observance of all employed behind the scenes, when one has had explained to one the facility with which the smallest commencement of fire can be quenched even amidst such a mass of inflammable matter as is always crowded behind the footlights, it is singular what confidence is established in the most timorous mind. This admirable system of admitting the public to visit during the daytime the mysterious world of the theatre behind the scenes is one the adoption of which we would warmly advocate in England. In Munich, the proceeds of the admission, by cards, go to aid the funds of the *employés*, one of the firemen usually serving as *cicerone*. In a city visited by so many strangers as London, the sums acquired by this means would form no inconsiderable additions to the benefit funds of each theatre, while this unprofessional inspection of the public would serve in no small measure to keep managers up to the necessary standard of care.

If we have not a little to learn from foreign theatres in the matter of modes of exit we have, perhaps, quite as much to learn in the direction of simplifying our modes of entrance, and increasing their comfort. The entrance to the better parts of our houses leaves, doubtless, little to desire; but why the entrance to the pit and gallery of most of our successful London theatres, even those built only within a few months, should be commonly scenes of disgraceful and often dangerous riot is more than anyone who is familiar with Continental theatres can explain. It is not of the absence of the admirable foreign system of the *queue* that we are at present speaking, though that may,—and it would appear has, in one case, been,—ensured by the simplest of police measures. Much of the difficulty is due alone to the primitive nature of the entrance pro-

vided. Why, in the case of the gallery, which in the present day is becoming more and more frequented by the respectable classes, — the price of admission has been doubled within only a few years, — the pay-box, a miserable hole in the wall, should be established, as it is in most theatres, at the top of a risky and winding flight of steps, and after the public are crushed through a veritable funnel, admitting only one person at a time, is a point which no one has yet, we think, been able to explain. Abroad, such absurdities are unknown. The pay-boxes for all parts of the house are generally, — throughout Germany and Austria universally, — established in the principal vestibule on the ground-floor, those for the higher-priced places on one side of the vestibule, those for the lower-priced on the opposite side, though in many theatres there is but one pay-box for all parts of the house; a *queue* is thus inevitably formed, as it is in many of our railway stations, which, indeed, the system resembles. We can understand that in the past there was a necessity for a separation of the various pay-boxes, at least so English managers seem to have believed, though this system of separation is scarcely known on the Continent, certainly not in aristocratic Germany and Austria, while in republican France the plan of first and second *bureaux* is only confined to certain houses. In the present day such distinctions are unnecessary. When our Continental neighbours freely allow to all sections of the community a common entrance, we fail to see why we in England should not do so as well, particularly when no objections have been found to exist in the foreign system.

In Germany and Austria the entrance to the great opera-houses, where all enter at the same doors, and pay at the same boxes, is further facilitated by the house being divided "right" and "left," each ticket being thus marked. This is a point which we warmly enjoin on the architects of all theatres about to be built, — the consideration of admitting the audience generally to the central vestibule which already exists in every house. Abroad, the crowding and crushing and positive danger endured by English audiences are unknown, — in the first place, owing to the existence of the two or three pay-boxes in the vestibule entered by several doors; in the second place, because in Germany and Austria the house is opened an hour previously to the commencement of the performance. In France and Belgium the *queue* system, jointly produced by the aid of the public themselves, the police, and a temporary series of barriers, avoids all unfair crowding and crushing, and insures to those patient enough to wait the place that is too often in England seized by some broad-shouldered jostler, who succeeds in ousting every one from his place.

Now that our public is at length putting aside the puritanical traditions which have so long in our country interfered with a genuine love of the theatre, and now that, as on the Continent, the theatre is entering more and more into our every-day life, it is clearly the interest of managers to do everything in their power to encourage this taste. There are many little features that may safely be adopted that have for years existed abroad; the universal employment of polite and uniform attendants in every portion of the house without distinction; the introduction of the delightful system observed through Austria and Italy of handing round glasses of cold water, — a genuine luxury in an over-heated theatre, after a doubtfully digested dinner, and affording the architect ample field for the design of picturesque fountains.

As for the matter of ventilation, that also requires, in the interests of the public, most earnest consideration. There, at least, we have but little to learn from our Continental neighbours, who suffer in their theatres as much as we do in ours. The electric light has, without doubt, to a great extent, solved many of the difficulties attendant on the use of gas, and to the still greater development of Mr. Edison's wonderful discoveries the theatre-goers must, we suppose, for the present, trust for a future alleviation of the sufferings they so often undergo from heat and from cold draughts. The day that the last grand central chandelier has disappeared from our theatres will be a memorable one in the history of the stage; for then at length a visit to the theatre will cease to be what it at present too often proves, a singularly uncomfortable mode of enjoying one of the most instructive of all pleasurable relaxations.

A PHOTOGRAPHIC LIBRARY OF REFERENCE.

THOUGHTLESS critics are apt from time to time to accuse the officials of our great national collections of a want of respect to the general public, and an indifference to its legitimate claims on their attention. An expression, therefore, of something more than commonplace gratitude is due to the authorities who of late have been so clearly showing an earnest desire to lay before their visitors the treasures under their charge. At the British Museum, since the removal of the Natural History specimens to their new home, the utmost activity has been displayed in bringing forward objects long hidden from the eyes of all but those intimately familiar with the collections, or privileged by acquaintance with their guardians. A certain element of popularity has been introduced in the interesting show of Luther relics, which has been so successfully organised, and one of the immediate effects of which has been, even at this comparatively dull season of the year, to attract a very large number who are far from habitual or even intermittent visitors to Great Russell-street.

In another portion of the Museum the interesting show of autotype reproductions of rare Italian prints, with which the authorities have within a few days past filled the rooms vacated by the collections moved to the Natural History Museum, is of a somewhat different character. To those who may remember Montague House in the remote antiquity of two generations back, such a goodly display of treasures speaks more than all the published statistics of the activity of the department in completing its collections. To the younger frequenters of the Museum these substitutes for the familiar gorilla, the giraffe, the seal, and their somewhat mangy companions, already tend to give the Museum a character in which, it, to a great extent, seemed wanting, — an element of homogeneity in the aspect of the collections, the instructive interest of which has undoubtedly been increased in a most marked manner.

This step of the British Museum authorities in exhibiting the photographic copies of some of the rarest artistic treasures they possess, is one which merits some attention, for it suggests what might paradoxically be termed the existence of a want. All interested in art matters are well aware of the important position which photography has taken within this generation; with no one more than with the true artist has it been received with favour; by some, a plentiful amount of abuse is heaped upon its creations, by others a vast deal of ignorant talk is indulged in respecting its predicted future. In the meantime, its already numerous applications continue to increase, promising shortly to revolutionise the conventional long-established traditions of the engraver's art, and the kindred art of the book-illustrator. Photography has, in fact, entirely overcome the attacks of its detractors, in all but one direction, that of portraiture, in which, for reasons manifest to every person of refinement, it can never hope to advance beyond its present imperfect and unsatisfactory position. But this purely æsthetic side of the matter once dismissed as a subject worthy alone discussion from the commercial point of view, the services which photography has already rendered and still can render to art and to science it is impossible to over-rate. That sad and seemingly inevitable inaccuracy of the draughtsman generally, — still a vice which has not disappeared, — has been greatly corrected by the photograph, which has superseded the necessity for the use of the camera lucida, without the aid of which it was all but impossible previously to insure any trustworthy amount of accuracy. In every direction, the world over, the photographers have been busy; every great monument, every great view, has been fixed on the sensitive collodion, the treasures of the galleries and museums of every country have been and are at this moment being reproduced, and the activity of the photographers, so far from diminishing, promises to be redoubled as the applications and discoveries of science facilitate the working of the various processes in vogue. Through the aid of photography there have been some singular surprises reserved to the artistic world. When some years since the ceiling of the Sistine Chapel was photographed, the real beauty of Michelangelo's long imperfectly revealed work burst on the artistic world as a revelation; and of

many other features, pictorial and architectural, the same might be said.

There exists, therefore, at this moment a mass of artistic material which may, without exaggeration, be characterised as enormous; but the mass is scattered over a very large area; what the scientific student would term its dynamic force is in great measure lost, from the absence of any united action.

The artistic value of the photograph, its use to the painter, the sculptor, and the architect, too candidly admitted by all for any doubts to be even hinted; this value might, by a very small amount of consideration, be rendered even greater. The formation of a permanent photographic exhibition or museum, in which could be gathered together contributions from every possible point of the world, would, we feel convinced, prove to the art student of the utmost advantage. No one who has travelled can say that he has resisted the temptation of expending a not inconsiderable sum in the purchase of photographs. Every painter and sculptor possess a goodly number of studies, views, and copies of pictures, — every architect a show of professional gatherings from the districts he may have visited, and the use of these as objects of reference no one can deny. They serve the artist as books serve the literary student for whose use the past has handed down to our time many a noble library. In these days, when it is at length understood how important a factor art may and should be made in our existence, the aid of the photographer skillfully directed is invaluable.

All the material exists for the formation of such a museum, exhibition, or collection, as that of which we have spoken, material in such abundance and of a nature that would permit of every town possessing, if it chose, as choice a gathering of specimens as the largest cities. Organised with care, such a museum would afford a means of study by that most invaluable of all methods, comparison. The painter and the sculptor would find the studies from nature and from art by means of which he can alone acquire an acquaintance with his profession; the architect would meet with all the elements of study requisite for a familiarity with his difficult and noble pursuit; while to the general public such a show could not but prove interesting. From an artistic point of view, it would, of course, be matter for regret that any commercial spirit should enter into such a scheme; the purely commercial side of photography should of course be as largely as possible kept out; though, in a measure, it might be largely by an appeal to this spirit that the collection could be formed. The contributions of the leading photographers of every great centre should be solicited with a view to starting such a project; we suspect such a mass of material would put in as would require at the outset no small amount of organisation.

It is, however, one of the delightful features of artistic research that, far-stretching as its bearings may be, its study, unlike that of science, is essentially exhaustible. It is in the traditions of the past, and an acquaintance with their teachings, that art can alone exist, and these traditions can be distinctly traced in what is, after all, a very small number of trustworthy examples. It is this fact which renders such a proposal feasible. Invaluable collections of photographs already exist in our museums, and in private hands. All who have travelled, — even the possessors of limited means, — own considerable numbers of photographs which, alas! are sad and unsatisfactory property when they come to fade. But the researches of science lead us to hope that the means are close at hand when this deficiency will be overcome. Already there exists a number of processes which may be said to have completely solved the difficulty and ensured the permanence of the photograph.

Such a proposal as this we foresee might be carried out in a most satisfactory manner, and on a scale which would place it within the means of the smallest communities. It is one of the many advantages of photography that its processes facilitate the production of an indefinite number of impressions; with the engraver's art there is a proportionate deterioration as the number of reproductions increases. This is not the case with photography, while its economy has long placed it within the reach of the smallest means. A photographic library of reference, well organised and indexed, a good catalogue prepared, the more attractive and instructive specimens framed and exhibited,

would, we have no hesitation in saying, prove a most acceptable addition to the educational institutions of every large town.

WELLS AND CESSPOOLS.

DURING the recent dry weather there has been a shortness of water in many places where the only water procurable by the inhabitants is that found in wells upon the premises of the houses. Where this inconvenience,—almost, we might say, calamity,—has been suffered, most of the inhabitants have been convinced that "something must be done" to provide against these frequent recurrences of want of water, and there is an unusual activity in local boards and rural sanitary authorities in places beyond the reach of the fine supplies of water procured by the larger towns. Where water is supplied from storage reservoirs in the hills, the effect of a drought is not so much felt, for the reservoirs are large and usually afford a sufficient supply for all purposes during a long drought, without fear of exhaustion. But in small towns and places in rural districts where the inhabitants procure water from wells on the premises the case is very different in a dry time. In some places the wells are intermixed with cesspools, and while the water in the well lowers, that in the cesspool rises. Where the ground is of a very retentive nature, as is stiff clay, there may be no great amount of leakage from the one to the other, but this is not the usual state of things; where the ground is of such a character as to prevent the passage of water from the cesspool to the well, water is not found in the ground at any shallow depth, but the clay is passed through and the sinking of the well is continued down to a bed of sand or gravel in which the water is found, and the water is not, in such a case, derived from the surface immediately surrounding the premises, but comes from a distance, and may be good water. It may also be sufficiently abundant; the bed of sand or gravel, which, at the place where the well is sunk, is overlaid with clay, sometimes extends over a considerable tract of ground beyond the site of the well, and receives a large quantity of the rainfall, which passes underneath the clay to the well. Such a case as this, where a cesspool is dug in clay and receives the house drainage, and a well sunk through the clay to a water-bearing stratum is the source whence the inhabitants procure water for daily use, is a fortunate state of things, but, so far from its being usual, it is exceptional. It may easily be seen that it is so if it be considered that, firstly, the ground in which the cesspool is dug, and which may be called clay, as being mostly so, is very seldom free from other materials which make it not perfectly water-tight, and, therefore, make it possible that water should pass through it out of the cesspool towards the well when the water there is at a lower level than that in the cesspool; secondly, that the outcrop of the stratum of sand or gravel beyond the well may form a tract which is cultivated as farm land, and the rainfall upon it may carry many impurities to the well; and, thirdly, that this outcrop of the water-bearing stratum may be so small in extent as to afford an insufficient quantity of water.

But the more usual state of things is that the ground in which both wells and cesspools are sunk is not clay, but gravel, or a mixture of the two, mostly consisting of gravel. Here we have that unfortunate facility of accomplishing without much labour two things which must necessarily be done for every house, viz, the provision of a receptacle for the house sewage, and a source whence water may be procured daily. Without thought of the consequences the inhabitant of a town digs his well and his cesspool both on his own premises, whatever the nature of the ground is, and considers himself lucky if he meets with water at no great depth; lucky because it has cost him but little labour. He forgets that in ground consisting of the porous materials which allow the rainwater to percolate so easily from the surface into the well the sewage also percolates into it. If he should think to guard against this by making his own cesspool watertight he may possibly do so, but will find it very difficult and hardly to be accomplished without some engineering knowledge; but even if he have this, and should succeed in making a watertight cesspool, he is not sure that sewage may not come into his well from other cesspools. The fact is that

in gravelly or other porous ground the water and other liquids maintain a pretty uniform level at all times; and although it is not impossible to make cesspools watertight, those who have them made do not always employ the skill necessary to make them so, and consequently the water passes out of them to any lower level. Now, in a dry time, while the water-level in the well is continually lowered, that in the cesspool is as continually raised, temporarily, until it has sunk to the general level which the ground-water assumes; and during a dry time there is the double disadvantage of a lowering of the well-water and a raising of the level of the liquids in the cesspool.

Is it too late to speak of cesspools and wells on the same premises in gravelly and porous ground, all such things being now abolished? Not at all. They exist to a large extent. They are being done away with, certainly, but slowly. How much time it takes for people to be convinced that they cannot adopt the same habits in a town as they could in a desert, where they would have more room! It may be said that, whether they can do so or not is not questionable, because, in fact, they do; but within the plain meaning of what we say there is no question that people cannot live healthily under such circumstances; nor do they, as a matter of fact. And when men congregate in large numbers they cannot individually do all those things which are necessary to health under the existing artificial conditions of life, but they must be done by an appointed authority in a systematic manner. It might seem to follow upon this that it would necessarily be in a more expensive manner, but that is not so. On the contrary, if each individual were to attempt to carry out for himself the work required for the health of his own household in a town, whether big or little, he would soon find that it would cost him more than it could be done for in a systematic manner by the appointed authority.

But what, it may be asked, is it which is so necessary to enable a community of people to live healthily upon ground which is porous, and where the wells and cesspools are intermixed? There are two aspects of the question; either to provide a water supply from an external source and let the cesspools remain, or to provide drainage to carry the sewage away to a distance, and continue to use the water of the wells on the premises. One of these is absolutely necessary; both are advisable. But against the advisability of both stands the objection of the expense. It is argued that if the sewage be taken away from the premises of houses the water of the wells will be restored to its original purity. It may be so. It would necessarily take some considerable time for the impurities which have been soaking into the ground for years upon years to be thoroughly eliminated, which it would seem can only be done by gradual exhaustion along with the water pumped out of the wells; but when that had been done it seems reasonable that the well-water would be good again.

It frequently happens that the ground is not all alike over the whole extent of a town or village, and, indeed, that there are three distinct kinds of ground,—clay, gravel, and rock, the rock being in some places shaly and in others compact. Some kinds of shale are almost as retentive of water as clay is, while compact rock contains fissures which render it almost as unretentive of water as gravel is. It may, indeed, frequently happen in rock that the spot on which a cesspool is excavated is free from any fissure, but although in that case the cesspool might be almost watertight, yet nearly all kinds of compact rock absorb water, and in that way it gradually escapes to a lower level in a filtered state, carrying with it, however, such impurities as are dissolvable in water. Again, faults, or vertical dislocations of the ground, prevent the passage of water through them, being filled with a compact substance, and thus the level of the water in wells on one side of a street is often several feet higher than on the other side. Indeed, it is a common thing to find well-water vary much in quality in different parts of a town or village, and while the medical officer of health condemns some of the wells, he can say nothing against others, judging from the analyses; but seeing how infrequently well-water is analysed, in comparison with the frequency of its use, it does not seem reasonable to depend altogether upon analysis, but rather upon the broad facts of the surroundings of the

wells. But whether or not a supply of water may be necessary in a place where wells and cesspools exist on the same premises, there does not seem to be a possibility of doubt that the sewage should be taken away clear of the town as quickly as possible, and also from villages; and the inhabitants of small towns and villages may congratulate themselves on this, that it is much easier and less expensive per house in these places than in large towns to take away and satisfactorily dispose of the sewage. Numerous difficulties stand in the way of doing this in large towns, which do not exist elsewhere, and although where a large amount of work has to be done there is some saving in individual items, yet the better room to work in and the absence of the complications of old sewers and gas and water mains, make sewerage works in these places less costly on the whole than they are in large towns, and in the disposal of the sewage the advantage is very much greater. Farmers are now almost generally throughout the country eager to have town sewage on their land where it can be delivered to them in suitable places and in something like regular quantities, without too much rain-water. Its temperature is higher than that of the land during the growing times of the year, and it makes the growing season earlier. Then the manurial value is considerable. Water alone, if it could be had of the temperature of town sewage, would be advantageous, but there is abundant proof of the superiority of sewage over water in the growth of crops. It is usual now to exclude heavy rainfalls from the sewage delivered upon land, and so enable the farmer to use it without difficulty, and to divide the land into portions in such way that the sewage can be disposed of at all times of the year.

THE ASSOCIATION OF MUNICIPAL ENGINEERS AND SURVEYORS.

DISTRICT MEETING AT BURY, LANCASHIRE.

ON the 9th inst. a district meeting was held at Bury of the Association of Municipal and Sanitary Engineers and Surveyors. There was a very large attendance of members. The meeting was held in the Council-chamber, which was kindly lent for the occasion by the mayor, and the arrangement of the details of the meeting was in the hands of Mr. J. Cartwright, the Borough Surveyor, on behalf of Mr. R. Vawser, of Manchester, who is the district secretary.

The chair was occupied by Mr. W. H. White, M.Inst.C.E., City Engineer of Oxford, and president of the Association.

A paper on Bury and its public works was read by Mr. Cartwright. He observed that Bury could not, like some of the towns visited by the Association, boast of many antiquities, but that it existed as a town in early Saxon times there was little doubt, having its feudal castle within a few yards of where they were then met. The Romans, too, had left distinct traces in the district in the great road from Manchester to Ribchester, supposed to have been constructed about A.D. 79. The industries of the people, from causes over which they had not full control, were not so progressive as those of some towns of later birth. Ever since the days of Edward III., when the Flemings established themselves in the town as cloth-weavers, the trade had continued and progressed, and the town now possessed probably a greater variety of trades than any other town in the manufacturing districts of Lancashire, amongst these being woollen and cotton manufacturing, machine-making, bleaching, paper-making, &c. Previously to 1846 the town had, strictly speaking, no form of local government save the parish vestry. In that year, however, the Bury Improvement Act was obtained, which gave the Improvement Commissioners great powers over lighting, paving, and scavenging the streets, &c. The town was under that Act and the Acts incorporated with it until 1872, when an Improvement Act giving greater powers was obtained, including power to purchase the waterworks, the markets, the manorial rights, &c., and extending the boundary. In 1876 it was incorporated, with five wards, and ten aldermen and thirty councillors. It is situated on the banks of the rivers Roach and Irwell, which bounded the town on the east, west, and southern sides, the drainage area being about equally divided between the two rivers. The borough included 3,389 acres, and had a population of 52,000, with a rateable value of

226,000l. Referring to the waterworks, which were acquired by purchase from the companies in 1872, he said that the total expenditure on capital account on the works was 367,561l. 8s. 8d., and the revenue last year was 25,281l. 1s., and the expenditure about 27,000l., showing a loss of about 25,000l. in last year's working. The market-hall, built in 1839 by Earl Derby, lord of the manor, was covered in 1868, and bought by the town in 1872, with the manorial rights and a plot of land, on which had been erected fish-market, piggeries, and slaughter-houses. The cost of the market and manorial rights was 26,500l., and of the land 24,750l., and there had been since spent on the market-hall, 344l.; fish-market, 821l.; piggery, 680l., a portion of the latter being converted into a slaughter-house, at a cost of 304l. The total capital expenditure was 52,400l., and the revenue was about 2,200l., the expenditure, with sinking fund, being 3,600l.—a loss of 1,400l. The gasworks were established by a company in 1828, and they were transferred to the town in 1839. Notwithstanding that additions had been made from time to time, in 1877 the committee reported to the Council that the works had become quite inadequate to meet the demand, and pointed out the desirability of securing a new site in juxtaposition to the railway. Several sites were selected, but the landowners not being willing to fix a price, the idea of a new site fell through, and the committee set about erecting condensers, scrubbers, exhausters, &c., and a new holder. When the lighting season of 1881 arrived the demand was again found to have overtaken the make of gas, and the question of extension, both of carbonising and purifying, again forced itself on the attention of the committee. About this time the statement was made that the electric light for public purposes was established beyond dispute, and the committee visited the Electric Exhibition at the Crystal Palace to satisfy themselves. They could only admit the electric light to be an experimental success, and proceeded with the carbonising and purifying plant, adopting the best known plans. Instructions were given to proceed with the new retort-house, purifier, and meter-house, which are now approaching completion. The old retort-house covered an area of 11,450 ft. with 280 mouth-pieces, capable of producing a million feet of gas per day; the new house covers 20,470 ft., and has 312 mouth-pieces, capable of producing 2,600,000 ft. per day, which is expected at the present rate of increase to provide for eleven years. The retort-benches, &c., were supplied and erected by West's Gas Improvement Company, Maidstone, the mouth-pieces being fitted with Holman's patent self-sealing lids. The charging and drawing machines are also supplied by the West Gas Company. The paper next described the improved Bury Bridge and the tramways, and referred to the widening of Rock-street, plans of which were on the walls. The baths, it was said, were completed at a cost of 35,000l., and were opened in 1864. They are well attended, and it is intended shortly to extend them. The annual outlay was about 520l., and the revenue 400l., so that the yearly loss was about 120l. The necessity of new building by-laws was noticed, as well as the objections to the adoption of the model ones of the Local Government Board in their entirety, the Board by their action hindering, instead of helping to secure sanitary buildings. The Hospital for Infectious Diseases was next described, it being on the pavilion principle, with four wards, and having accommodation for fifty beds, with every modern requirement. The total cost was about 3,000l., or about 60l. per bed. As to the disposal of sewage, nothing had yet been done, but land for purification works had been purchased, and plans for intercepting sewers, &c., were prepared. It was intended to precipitate the sewage in tanks, and then filter it through the land. The sewers were laid in straight lines from manhole to manhole, with ventilation by the manholes; the street grids were all trapped with gullies, to prevent the sewers from being filled with dirt. The length of the sewers was forty-four miles and a quarter. During the last six years twenty miles of sewers and cross-drains had been laid. For the destruction of dust and scavenging one of Fryer's patent four-celled destructor kilns is used. It was completed in November, 1881, and erected in such a manner as to admit of extension without material alteration. The heat evolved from the combustion of the material is utilised for

generating steam in a multitubular boiler used in connexion with a mortar-mill, capable of grinding about 10 cwt. of mortar per hour, for which there is a ready sale at about 5s. per ton. The last year's working is 1,312 tons of mortar sold at 5s. per ton, realising 328l. 4s. 3d., which, after deducting expenses, leaves a balance to the credit of the mill of 52l. 3s. 9d. The arrangement of the flues is such that heated gases can either be utilised through the boiler, or allowed to pass direct to the chimney by a main flue which has been designed, as well as the chimney and other parts, to allow of further extension of the furnaces. The chimney is 180 ft. high. There are an engine-house, store-room, and high-level road, with substantial retaining walls of stone, giving access to the top of the cells, where the rubbish is tipped direct to the charging chambers. The four furnaces are arranged on an inclined plane, charged from the top, and the material after remaining in the furnace two hours is withdrawn in the form of clinker, being reduced to one-third of its former bulk, and these make excellent mortar with one-third lime to two-thirds clinker. The flues require cleaning out once in two months, when about twenty loads of dust are taken out. About sixteen tons of material are treated per day, an average of 4 tons per cell; the total amount for the year ending March last being 4,352 tons in 6,885 working-hours, at a cost of 1s. 8½d. per ton for actual working expenses. The original cost and royalty was 3,500l. Mr. Cartwright concluded his paper by referring to the important question of street pavements. Traffic in the town, he said, had much increased, and the primitive plan of laying down sets of any material which came to hand upon a bed of loose earth and filling the joints with loose sand, to be washed away after rains, did not meet present requirements. Bury had taken up the question in earnest. With one slight exception, it had been determined, under Mr. Cartwright's advice, to pave the whole of the main thoroughfares with granite upon a concrete foundation. After the removal of the old Haslingden sets the underbed is excavated to the depth required. First is laid a layer of roughly-broken stone and shingle, about 3 in. in size; upon this a layer of cement mortar, mixed in the proportion of one to five with clean, sharp gravel, and upon this a second layer of broken stone passed through a 2-in. riddle; the surface is then beaten with large flat iron beaters until the whole is thoroughly incorporated; then another layer of cement mortar, and upon this a layer of stone, which is beaten as before, and so on until the requisite height and curvature are obtained; a thin coating of cement mortar being thrown over the surface, which is beaten and left smooth to stand for about eight days until thoroughly set, before the sets are placed upon it. The proportion of gravel and stone to cement was as ten to one. The joints are filled with pea gravel, and run with prepared pitch. The cement was the best Portland, capable of being sifted through a 6,000 gauge mesh. The sets were 6 in. deep, 3½ in. wide, and from 4 in. to 6 in. long; they were from the Welsh Granite Company, and from the Darbshire Granite Quarries, Penmaenmawr, and were found to be practically limitless in wear. The following estimate of the cost of the different forms of paving was made, the data being the same in each case:—

	First cost.	Maintenance and per year.	Cost per year over 30 years' first cost.
	s. d.	s. d.	s. d.
Granite.....	12 0	0 2	0 7
Haslingden Rock. 7 0	1 0	1 0	1 7
Sand Grt.....	8 6	1 0	1 8½

Taking the first cost of granite at 12s. per yard, minus 1s. 6d. for the old material taken up, gives 10s. 6d. per yard, which might be borrowed at 3½ per cent., and 7 per cent. would in twenty years repay principal and interest; 7 per cent. on 10s. 6d.—9d., with 2d. for repairs, 11d. per year for twenty years, as against 1s. 7d. in perpetuity for Haslingden rock, and after this the granite would still be in good condition, the whole money repaid, and would last another twenty years, with an extra 2d. per yard per year instead of 1s. 7d. for ever. In forming and paving new streets work had been done in six years to the amount of 46,000l.

Mr. Connellor Tuke read a paper in which he compared at some length the cost of various

modes of excreta disposal. The cost of what is known as the pail system in Bury was, he calculated, 20s. 6d. per pail per annum. He advocated a trial of the "slop-water carriage system," introduced into Salford some years ago by Mr. Fowler, and which is now also in use in Bristol and Hyde. This was much more economical in working, costing only 3s. per closet, although against the saving effected must be set the extra expense of treating the effluent by some system of sewage purification. The change was also advocated on account of the nuisance caused by the removal of the pails.

In the discussion which followed, Mr. Fowler said that London in 1832 was visited by a great plague of smallpox. At that time the midden system was in operation, but an Act was passed to do away with that system. It was done promptly, and from that day to this London was the most healthy city in the world. It did not fluctuate in its death-rate like other towns. He strongly commended the Manchester system, and said they should try to do away with the pestiferous receptacles which were the result of it.

Mr. Allison said that Mr. Fowler in speaking of the midden and privy system and water-carriage system had not given Manchester fair play within 100 per cent. The great danger was from decaying vegetable matter, which was thrown into the sumps and allowed to accumulate for three, six, or nine months in the large towns.

Mr. Jerram said that they found that the cost of the pail was 20s. 6d. per closet, whereas they knew that a pound a closet would go a long way towards providing a sewerage system in any district they had to deal with. The quantity of sewage collected by the pail system was comparatively small, because there was the greasy water from the slopstones, which, if the Rivers Pollution Act were carried out, would have to be provided for; and why could they not deal with the whole subject at one place? It was, therefore, in his opinion, gratifying to find that the pail system had been a failure: it was indecent and not conducive to health.

Mr. Spencer said that with water-closets the difficulty was how to get rid of the ashes, and they must not suppose that in establishing a water-closet system they had got rid of that difficulty. In many cases the water supply was inadequate and the charges exorbitant, and they must not forget this in estimating the cost of water-closets. As an improvement on the horrible privies he welcomed the water-carriage system as a step in the right direction, but they must guard themselves from jumping to the conclusion that that solved the question. He thought they might have both systems side by side if they had an efficient system of collection.

Mr. Lobley said it was well known that the Rochdale pail system was an expensive one. At Hanley they had adopted Turner and Robertshaw's modification, by which the liquid and solid excreta were separated. The liquid matter by a syphon ran into the sewers. He found there was no objection to that, and the cost of collection was greatly reduced. At Hanley they had gone back to the barbarous system of collecting in nightsoil carts.

Mr. Tuke, having briefly replied on the discussion,

Mr. R. Vawser, C.E., Manchester, one of the engineers to the Tramway Company, read a paper on the tramways. In conclusion, he said: The road and rolling stock on the tram-cars will be found to embody the most recent improvements, but the subject of traction power is certainly not yet solved. I have every reason to believe that great advances in the engines will shortly be developed, and, judging from recent experiments, there is every reason to believe that the cars will at no distant day be propelled by electricity.

Preservation of Neville's Cross, near the City of Durham.—The monument which marks the site of the famous battle of Neville's Cross, fought in 1346 by the English army, commanded by Ralph Lord Neville, against the Scots under the command of their king, David, is in a state of dilapidation. A committee, represented by Mr. Edward Castle and Mr. Henry Dodd, assisted by the Rev. William Greenwell and Mr. J. W. Barnes, has undertaken to raise a fund for the purpose of preserving and protecting all that remains of this interesting memorial.

THE PROPOSED NEW ADMIRALTY
AND WAR-OFFICE.

CONDITIONS OF COMPETITION.

A DEPARTMENTAL paper was issued on Monday last from the Office of Works, with reference to the proposed competition of architects for the Admiralty and War Office, and containing instructions and conditions, a schedule of the accommodation required, and plan of the site for the new buildings.*

The following paragraphs are extracted from the "Instructions and Conditions":—

There will be two competitions, the first to consist of sketch designs, open to all, and the second or final one to be conducted as herein-after described.

Before any designs are sent in, the Commissioners will appoint a committee of judges, one at least of whom will be an architect. The judges so to be appointed will select ten designs, or such less number as they may think fit, the authors of which will be invited to compete in the second or final competition.

In order to obviate the possibility of the sketch designs lodged in the first competition being made use of by the competitors who may be invited to enter into the final competition, such sketch designs will not be allowed to be seen by any one except the judges and their officers, by whom they will be returned direct to their respective authors.

In the first competition the designs of the competitors must be exhibited by sketch plans, elevations, and sections, to a scale of 24 ft. to the inch, and must consist of a plan of each floor, an elevation of each of the principal fronts and courts, and at least two complete sections from north to south, and one from east to west.

Each design is to be accompanied by a description of the accommodation (stating the areas) provided on each floor for each department and sub-department; the total cubic contents of each of the two buildings measured from an assumed level of 10 ft. below the basement-floor line up to halfway between the wall-plate and the ridge of the roof; an explanation of the material and mode of construction proposed to be adopted; and an approximate estimate of the cost of each building.

The authors of the designs selected by the judges will be invited to enter into the second competition, for which supplementary conditions will be issued. Those conditions will be in general accordance with the above so far as applicable, but may contain such additions or alterations as shall be deemed necessary by the Commissioners of Works.

In the second competition each of the selected competitors will be required to send in plans, elevations, and sections to a scale of 16 ft. to the inch, together with a perspective view. The competitor shall be at liberty to make such reasonable modifications of his sketch design as he may think expedient. Each selected competitor shall be paid the sum of 600*l.* towards his expenses, provided he shall comply with all the conditions to be hereafter prescribed for the second competition. The whole of the drawings and papers thus sent in shall become the property of the Commissioners.

The selection of the architect to carry out the work will be made from the competitors in the second competition, subject to the approval of Parliament.

Each design in the first competition must have a device or motto marked on each drawing, and be accompanied by a sealed letter bearing the same device or motto addressed to the judges, giving the name and address of the author, which shall only be opened after the selection mentioned in paragraph 3 of the Conditions shall have been made.

The designs in the first competition are to be addressed to the judges, but delivered at the expense of the several competitors, and before twelve o'clock noon, on the 1st day of March, 1884, into the custody of the Clerk of the Works, Houses of Parliament, at the St. Stephen's Porch entrance in Abingdon-street.

* A block plan of the site of the proposed buildings, according to the official scheme, was given in the *Builder* more than a year ago, viz., on July 8, 1882. But the "proposed official residence," the site of which was shown stretching across the triangular space on the right hand as one enters the Mall from Charing-cross by Drummond's Bank, is not now shown on the block plan accompanying the "conditions," although the triangular space in question, as well as a considerable area south of the Horse Guards (including, apparently, Dover House and the buildings in the rear of Downing-street and the Treasury Offices) are indicated as available for "possible future extensions."

who will also take charge of the sealed letters. Any design which may arrive after that time will be set aside.

The designs of unsuccessful competitors in the first competition will be returned to them at the expense of the Commissioners. The selected designs will be similarly returned to their authors for the purpose of preparing the drawings in the second competition.

The remuneration of the architect will be 25,000*l.* for the entire work, including the sum of 600*l.* to be paid to him for his competition drawings, and the services to be rendered in consideration thereof shall include all those usually performed by an architect, except that he shall be relieved of all expense, trouble, and responsibility involved in determining the times and amounts of instalments to the builders, and in making up the accounts connected with the execution of the works, which will be provided for by the Commissioners of Works.

The buildings will be erected in blocks, at such intervals as may be determined by Parliament, and a proportionate part of the architect's remuneration for the entire work will be assigned to each block from time to time by the Commissioners of Works. One-third of the sum so fixed for each block shall be paid to the architect immediately after a contract with a builder for the execution of the works shall have been entered into; one other third part of the same sum shall be paid to the architect as soon as one half the contract sum shall be paid to the builder; and the remaining one-third part of the said sum shall be paid to the architect after the completion of each block.

The plans, drawings, specifications, and other documents relating to the works, whether actually referred to in the contract or not, shall be the property of the Commissioners, and shall be deposited at the Office of Works; and the architect must, at his own expense, make all tracings and copies of plans, drawings, and other documents which may be necessary for the conduct of the works.

Any dispute or question between the architect and the Commissioners shall be referred to an arbitrator to be appointed by the Treasury, who shall have such powers and authority as the Treasury shall think fit to give him, in addition to the ordinary powers of an arbitrator.

No rules of any association or society shall be held binding upon the Commissioners in reference to the works or matters herein referred to.

RAILWAY PIONEERING IN THE
UNITED STATES.

IN our last number we gave a brief abstract of the length, cost, and traffic of the railways of the United States, the construction of which is now proceeding at the rate of very nearly a thousand miles per month. On the very day on which this was published an addition was made to the great total by the completion of the Northern Pacific Railway, with a mileage of 1,980 miles of main line, and an aggregate length of 2,654 miles of main line and branches together. This line is the third great railway across the American continent, and claims to be the longest railway in the world, running across thirty degrees of longitude, and opening a belt of territory 2,000 miles long and 400 miles wide. Extending from Lake Superior to Puget Sound, it flanks for its whole length the southern boundary of the British possessions. For the first 150 miles of its course from the head of Lake Superior, it passes through an almost unbroken forest. It then enters the rich agricultural region of Western Minnesota, and runs through a prairie of from 60 to 80 miles wide, forming an area of 66,000 square miles, the greater part of which is fertile wheat-growing land. It then runs for nearly 300 miles through Dakota, a district containing 153,000 square miles, the active development of which may be estimated from the fact that its population has risen from 14,000 in 1870 to 325,000 in 1882. The average wheat yield of this district is 20 bushels per acre; 25 bushels per acre is not unusual, and the total yield, which in 1880 was 3,000,000 bushels, rose to 12,000,000 bushels in 1882. The territory of Montana is next passed, containing much grazing land, as well as a great silver and copper mining district, of which the yield is exceeded only by that of California. From Montana the line runs through the forests and prairies of Idaho, and traversing Washington territory, enters Oregon near its north-eastern corner.

The western part of Oregon is covered with a dense forest of fir, coming down to the edge of the waters of Puget Sound, which cover an area of 2,000 square miles, accessible for vessels of the heaviest tonnage, and dotted with numerous islands.

The gradients of the line are considered favourable for America, being generally not more than 52 ft. per mile, or about 1 in 100,—a ruling grade on the Metropolitan Railway. But a summit elevation of 5,565 ft. is reached in the Belt Mountains, where there is a tunnel 1,200 yards long. The altitude attained in the Rocky Mountains is 3,925 ft.; and there is a tunnel 1,280 yards long there. The ruling gradient in this district is 116 ft. per mile, or 1 in 46. This is a serious lift to surmount; as it allows of the traction of only one-fifth of the load that an equal power would propel on a level line. But the function of the railway in such districts is that of the pioneer, and the comparison of the advantages that it yields is to be made, not with the railways of the Old World, but with the corduroy roads and un-cleared forest tracks of the New. Hardly a train will run over the newly-laid line that will not be freighted by settlers and their belongings. There is a limit, if it be not yet distinctly ascertained, at which the railway carriage of wheat becomes commercially impossible, and the waterborne wheat of the upper part of the Ganges Valley is now driving the American supply from our market. But as an instance of the rapid transformation of the face of nature by the labour and the migration of man, it is doubtful whether the world can now show a parallel to the Northern Pacific Railway district.

THE NEW RAILWAY STATION AT
STRASBURG.

This structure (recently completed) forms an imposing architectural feature of the city, while its general arrangements tend to facilitate the conduct of the traffic which centres at that spot. The German press speaks of it as being the most extensive building of its kind within the Empire, and approval is expressed of the arrangement by means of which the ticket and other offices are on a lower floor, while the upper portion contains the waiting and refreshment rooms, as well as the railway lines. This form of construction is spoken of as differing from that which is usual in Germany, and is doubtless to some extent connected with an important alteration made, by means of which Strasburg ceases to be a *cul-de-sac* station, the trains passing through it. Two tunnels underneath the platforms allow of the passage of arriving and departing passengers from one part of the station to another. Separate waiting-rooms are also provided for these two groups of passengers.

The station is situated between the White Tower Gate and the Stone Gate, in immediate proximity to the city walls. The front of the building is monumental in character, and has two side-wings. The material used is sandstone with granite basement. Above the front windows of the central portion, facing towards the city, runs an architrave on which the arms of Germany and Alsace-Lorraine are represented with appropriate ornamentation. The façade is crowned by a large dial surrounded by two artistically sculptured reliefs intended to represent the two annexed provinces. The large vestibule contains two colossal figures of Agriculture and Industry, as well as two important oil-paintings on gold ground, which are intended to record contrasting scenes in the history of Alsace. One is the solemn transporting of the imperial jewels to Hagenau by Barbarossa in 1108, and the other the reception of the Emperor of Germany in 1877.*

The steam water-heating system is applied to all the rooms in the station. Electric illumination is used in the building and its surroundings. The cost is stated to be about 760,000*l.* and the entire work is said to have been carried out upon a scale commensurate with the importance of Strasburg as a centre of traffic, and with due regard to its further development.

Burnham Beeches.—The dedication of Burnham Beeches to the public use will take place on Wednesday, October 3, the ceremony being performed by the Duke of Buckingham and Chandos, Lord Lieutenant of Bucks.

* See *Builder*, vol. xiv., p. 411 (March 31, 1883).

SAXON ARCHITECTURE.

We want an exact definition of style for Saxon architecture.

It appears that the Saxons, as they arrived in Britain, were wood-builders; even after their conversion the illuminations to early missals represent a quaint curvature of structural outline inconsistent with stonework,—similar, however, to the wooden survivals of Norway, Switzerland, and Kashmir.

Greenstead, near Epping, has a wooden church that has been enlarged; it is, however, of very late Saxon date, say 1013 A.D., but some earlier churches in stone, ascribed to Saxon times, are mimetic of wooden architecture. In childhood I was told that all pre-Gothic architecture was Saxon, but I now find that these solid castles and cathedrals are called Norman, going on to Early English and Perpendicular. The Romans in Britain were stone-builders, as the remains at Lympne, Richborough, Reculvers, and numerous other places clearly show; countless millions of red tiles were made in Britain, partly by the legionary soldiers, as numerous inscriptions amply prove, but chiefly by the mixed population of Romanised Britons and Celto-Romans of various nationalities, who sprang from the military colonists, i.e., discharged soldiers who ended their lives here as cultivators, landowners, manorial squires. Their children, however, would owe military service and might be drafted abroad; still the main strength of the second, ninth, and twentieth legions must have been Roman citizens of British extraction long settled in the province.

Among this mixed population must have been thousands of stonemasons who, and as I conceive, more especially in specific localities, might continue the practice of brick-making, with a knowledge of stone construction, after the Imperial exodus, the tile latterly gaining in thickness and losing in symmetry as time passed. The undisputed sites of Roman defensive architecture hardly prepare us for the fully developed Norman castle, the stride is too rapid. Pevsey and Portchester, undoubted Roman foundations, have been converted by the Normans; I do not suppose that the Saxons dealt at all with these two structures.

Some favoured townships escaped devastation, admitting Teutonic citizens to a Celto-Roman municipality; such, however, were the towns that survived to suffer most at the subsequent Danish invasions. During the interval there would have been artisans at work on tiling and masonry. Chichester is a city with equivocal records; a Roman settlement fully peopled, taken by Ella and occupied by Cissa, it appears to have resumed its continuity at once. The Saxons were not then town-settlers as a body, but had to scatter and progress; those who did settle at Chichester would need the help and labour of natives to keep things going. I use the word "equivocal" because much of its early history is in dispute. Colchester is a more typical instance; Angles or Saxons were there very early mingled with the Celto-Romans, whom they superseded, not by displacement but by survival, and it appears to have preserved its continuity during the Danish troubles. St. Alban's in its history resembles Salisbury, for the town of Verulam was rather deserted than destroyed, the removal of the clerics to a short distance being followed by a general exodus of the surviving population. By far the most remarkable structure in England is St. Alban's Cathedral, where square tiles are built up into lofty piers and solid walls; it is probably a fair estimate to allot nine millions of tiles for this purpose,—a prodigality unknown to the Romans. The legend recites that the later Saxon abbots, conscious of the decay of their building (dating from 793 A.D. and inferentially of stone), did, for several generations, accumulate building material and hoard treasure for a contemplated reconstruction. It is said that the tiles were collected from the adjoining ruins of Verulam. The treasure, however, vanished in bad times, but the tiles remained, and, as is alleged, were so utilised by Normans. I doubt the power of collecting a sufficiency, considering the well-known tenacity of Roman cement, but think it more probable they were partly made to order on the principle of a surviving art. I have examined many specimens of this local tile, and think it all late, very late.

Let that pass. We know how many battles have been, and still are being, fought about the

history of Colchester Castle; it cannot be called Roman, it is not purely Norman; it has numerous Roman tiles shown in herring-bone fashion and other forms. Colchester is certainly one of those places where Celto-Roman merged into Saxon without a revolution; the subsequent Danish invasion was more violent. We have Roman work in the Tower of London with a Norman superstructure. Was there no intermediary period of style?

There are, it is said, Roman tiles placed herring-bone fashion in Guildford Castle, among many other sites; yet, when Alfred's daughter, the saintly Ethelred, found it desirable to drive a line of forts round the Mercian frontier, A.D. 913, she resorted to earthen mounds with wooden palisades,—a form of defensive architecture ascribed, on high authority, to the Norman barons prior to their settlement in England. Of Ethelred's castles, that most interesting structure adjoining Stafford is a good illustration; but her palisades have been superseded by later stonework. Conisborough Castle is awfully disputatious; its structural peculiarities so closely resemble the burghs or brooks of Shetland and North Scotland, with cellular walls; here the prefix Conan is purely Celtic, a name diverted to kenig by subsequent Teutons. The earliest Norman castles in England show the mound raised artificially where a rock or hill was wanting, as at Oxford, Cambridge, Farnham, &c.

The claim of Saxons to the construction of stone castles has never been fully admitted; what, then, can we say further of Corfe Castle? Yet, in appending a caester, ceaster, or chester to the Celto-Roman town name, as at Wroxeter, Silchester, and many other places, they evidence a full knowledge of the existence of the solid stone walls we now see in ruins. I single out these two because the desolation is so very apparent, the remains so conspicuous and without any apparent traces of Saxon occupation, yet with names of Saxon application. Another case in point is Grantchester, near Cambridge, which Bede, writing of A.D. 660, calls "a small chambered city with wire walls." There are now no traces of stone-walling in the village, but it is named from the equivalent for castrum, and the name remains. I suppose that in 660 there was still a small resident population as at present. In like manner, the Celto-Roman Londinium became Lundencaester, and by abridgment plain London; the affix caester, it is therefore plainly seen, means a walled town, not the structure we now call a castle. There is another equivalent word more purely Saxon which may be thus illustrated: Bamborough, which has a fine old ruin, called part Norman, part Roman; can any one trace real Saxon work in this structure? Scarborough, with a Norman castle; Flamborough, named from a supposed Roman pharos. Brough, borg, bury, burgh, and borough are the "bergh" of Norway, the "beorh" of Beowulf, and the "poor" or "parl" of so many Saterian place-names. Several in England with these terminations have conspicuous Roman remains.

Whitby has no remains of a castle,—the old Abbey was, no doubt, strongly fortified; the terminal "by" is Anglian, and related to "burgh" in a civil sense.

Ireby, in Cumberland, is a supposed Roman site; Lazenby has Roman remains; also Middleby, in Dumfriesshire; so have Overbie and Netherby. "By" may therefore be regarded as a linguistic equivalent to castrum.

II.

Turning to the churches, some writers advocate a revival, effected in part by introducing foreign workmen, a statement supported to some extent by the Chroniclers. In this sense is explained the rise of York Minster,* A.D. 627; Lincoln,* 633; Southwell,* Ripon,* Hexham,* with crypt built of Roman material; Bishopwearmouth, A.D. 674; Jarrow,* 684, with so-called Saxon pillars; Abingdon, 675; York rebuilt, 767; St. Frideswide's, Oxford, 730; Ramsay, Hants, rebuilt, 974; Repton, 660, crypt called part Saxon, part Norman; Barton-on-Humber,* Romsey,* Hants; Brixworth,* Northamptonshire, with Roman tiles; Earl's Barton,* striped stonework to imitate timber; Barnack; Bury St. Edmunds,* 925, 1010; Saxon gateway; Westminster,* rebuilt 1065, Pyx office and gymnasium, called Saxon; Sompting, gabled tower; Bartlow, round tower; St. Michael's, Oxford, Saxon tower; St. Peter's,* Cambridge, Roman tile; St. Benet's, Cambridge, Saxon tower; Canterbury St. Martin's,* 597, Roman

tile; Canterbury St. Mildred's, Roman material; Canterbury, St. Pancras, Roman wall, a supposed basilica; St. Botolph's, Colchester, Roman tile used structurally in large proportions, called Norman work of 1116.

The asterisks, so freely used, indicate Roman pre-occupation and an assumed pre-Augustine Christianity.

Putting all things together we ought to accept the conclusion that stone architecture did survive the Roman exodus in certain localities.

It is not clearly shown why Normans, 600 years after the Romans were forgotten, should seek out Roman tile when they could get Purbeck marble and Caen stone; but I can quite understand why local Celts, if Teutonised, should do so. Then there are the crosses,—what was a Saxon cross? Only a survival of the Celtic monolith. At many places in the North of England we find Celtic crosses with Runic inscriptions, yet figured with Christian emblems: to some extent they are bi-celtic, i.e., they represent a compromise or combination of Pagan and Christian characteristics effected prior to the full conversion of the invading Pagans. The workmen who sculptured such monoliths would be at hand to work on an elaborate gateway or the head of a doorway, in stone, and to make fonts; the earliest appear to have been adapted from some Roman material or utensil found to hand, and there are curious old fonts about, with so-called Celtic ornamentation in the same style as the Irish illuminations,—a style again reproduced in enamels, as in the Alfred jewel in the Ashmolean Museum at Oxford, a survival of Celto-Roman art in Britain.

The choice of such places as the asterisked sites named above for the early reconstruction of churches is perfectly natural, and only the restoration of what, perhaps, was not quite extinct, maintained with difficulty by the hitherto untoured clergy of pre-Augustine England.

The chief characteristic of Saxon church architecture appears to be the tower, with long and short work to the quoins, a supposed imitation of buildings with wooden logs; something also in the lights; a very rudimentary window of two stones mutually inclining, and the later window of two arched openings, with central pilaster. The larger buildings and some castles show round arches and groined roofs; the round arch is purely Roman, and was adopted in all the provinces. Such solid crypts, as at Corfe Castle, may survive many upper structures, and the round arch remained in use with the Normans till an accidental bisection introduced the pointed arch.

We frequently read of Saxon pillars. There are curious banded pillars at St. Alban's, preserved, no doubt, from a former shrine of the local saint; then there is the bulky pillar, with a swelling or so-called entasis: this is of Roman origin.

Much of all these styles is pre-Norman. Will any competent body of authorities draw up a final standard of style for Saxon architecture? A. H.

RESTORATIONS AT THE GOVERNMENT OFFICES.

ALTHOUGH they were only erected within a comparatively recent period, the refacing of the Government offices in Whitehall has become necessary, and preparations for carrying out the works have just been commenced. The buildings extend from Downing-street in the direction of the Horse Guards, and are at present occupied by the Educational, Privy Council, and Treasury departments. Recently it has been discovered that the stonework of the frontage in Whitehall, more especially the main cornice and the carved work immediately underneath it, has been undergoing a process of decay, and is no longer safe. Within the last few days heavy scaffolding has been in course of erection in front of the building, which is intended to be carried the entire length, for the purpose of facilitating the execution of the necessary work, which will occupy a considerable time, and which it is stated will involve an outlay of more than 8,000l. Messrs. Mowlem & Co. are the contractors.

The Spire of St. John's Church, Notting Hill, has been found to be so unsafe that it is being removed.

DOMESTIC ARCHITECTURE IN
SOMERSET.

AT YEovil AND ROUND ABOUT.

In a previous notice of this year's excursion of the Architectural Association (p. 349, ante),* it was stated that further illustrations of the buildings visited would be given. A large number of the well-reasoned conclusions, and, of course, many fancies and freaks, would be found recorded in the sketch-books of the party of between thirty and forty active sketchers, who glanced keenly, albeit rapidly, at this south-east corner of Somerset and the bit of Dorset adjoining; and these studies of the works of our forerunners in the arts would fill a good many plates, and afford plenty of matter for reflections and comparisons. We have made up two plates: one containing four roofs,—two spans, differently treated; a lean-to, which has much painted decoration; and the Cerne Abbas roof, which comes in as a barn-roof and to illustrate a fourth form. For the other plate, several panelled rooms of sufficiently distinctive types have been selected, to show different ways of finishing the interiors of houses.

The relation of towers to the structures to which they are attached, and the design of the towers themselves, have served as the text for some remarks; but there are so many other things, besides the expression of the exteriors of the buildings, which a sense of proportion would lead one not to pass by without notice. Among the church interiors, for instance, the wide nave of Yeovil without a clearstory, but with a tall arcade and great aisle windows, might be pitted against Martock,—which has a remarkable clearstory, as well as many other admirable features. But such comparisons, and such subjects as grouping, light and shade, adaptation to site, proportion, and history, seem to offer much too wide a field for the few words which can be interposed before coming to the text for the illustrations. We therefore prefer to turn from the larger considerations to minor matters, such as rood and other screens, seats, desks, pulpits, panellings, fonts, monuments, tiles, hagioscopes, &c., and to be satisfied with grouping some of a sort together.

The rood-screens at Trent and Queen's Camel, two parishes about four miles apart, are similar in some respects. They are both in fair condition, spread out at the top after the manner of fan tracery, with larger traceried panels above, and plainer lower panels. That at Trent is, however, much the better of the two,—better proportioned and finer in detail. The screen which was under the chancel arch, in the grand church of Martock, is said to ornament several gentlemen's houses in the neighbourhood. The screen in the tower arch at Huish, removed from Emmore Church when both churches were undergoing restoration, would deserve notice on its own account; and as leading to the mention of the handsome and admirably-preserved Norman south door, which is only a few steps away from it. There is not much Norman work such as this in the neighbourhood. The red colour is considered another instance of the admirable effect to be obtained by scorching Ham Hill stone. The seating at Yetminster, some plainly moulded and some with buttresses, is all thoroughly good and suitable. At Stoke-sub-Hamdon the old seats are much richer and more varied as well; there are also old seats at Somerton; those at Trent are rude in character. The most noteworthy pulpits were put up in the first half of the seventeenth century. There is one at Stoke, and another at Brympton: that at Somerton is dated 1615,—it is not improved by the too vigorous colouring put upon it. The table at Somerton is dated 1626, and the walls of the chancel are lined to some height with good wood panelling of about the same date. The pulpit at Huish is dated 1625; that at Bradford Abbas, dated 1632, has a sounding-board; and that at Cerne Abbas, which resembles it in many respects, is dated 1640, but has none. The carving of the Mildmay pew at Queen's Camel is of Jacobean character. Near to it is the memorial to the Mildmay who was wounded at Newbury fight, and died 1690: the house of the St. John Mildmays is about a mile to the north of the village. Yetminster has some carved wood panelling of the same date,—very little of it, but superior in its kind.

The font at Queen's Camel is of an unusual

form, and that at Bradford Abbas, though not identical, resembles it strikingly. There are four detached panelled piers at the angles, each 6 in. square, and figures in the niches over them which are joined on to the font. The font at Yetminster is attached to the pier it adjoins, and having the same base mouldings, it seems pretty clearly to be in its original position. The fonts at Huish and Langport are much like one another; that at Hinton St. George is composed of parts of several dates, including Transitional. At the same church the very noteworthy collection of Poulet monuments should tempt every visitor there who has reached Crewkerne. The Daubeny monuments in the south transept of South Petherton and the fine brasses there, one a really magnificent double brass; the Strangewaies effigies at Melbury Sampford; the Elizabethan monument in the chancel of Stoke-sub-Hamdon, are a few others which make a strong impression on the memory. In the room over the vaulted gateway at Cerne Abbas, forming the flooring of the bay-window, are a number of tiles from the abbey and its buildings. Machelney is wonderfully rich in fine tiles, as those readers know who call to mind Mr. Sheldermine's drawings given in the *Builder*, Sept. 27, 1879, p. 1,075. At Cerne Abbas there is a brass chandelier with many burners, bulbs, and twisted arms, and a good deal of character. Brympton has two, each with two tiers of lights. Somerton has three large ones of later date (1786), which also deserve notice. This brass-work is of the kind which has furnished models for some useful modern work, free from so-called ornament, the ornament being found in the pleasing form alone. As being good brass-work, the stately sixteenth-century lectern at Yeovil should also be named.

Hagioscopes naturally have the look of being afterthoughts, or of being but poorly thought about at the best. There is a neat modern one in the much, but well, restored south transept at Brympton,—the transept with a beautiful window. Canted corners and well-proportioned narrow archways, throwing open the chancel to the transept, would have done what was wanted more neatly than the tunnels,—rather like badly-shaped drains, scooped through walls and shafts at Stoke-sub-Hamdon. That from the south transept must be about 8 ft. long. Of course such archings would have involved considerable reconstruction. The church is situated under the slopes leading up the Hamdon Hill,—now furnishing the beautiful Hamhill stone so largely used for at least a dozen miles round the quarry,—which had on the top a British camp about three miles round that the Romans took to. There is in Stoke Church work of all dates, from the very earliest Norman to Jacobean; there is, indeed, later work than that, for it has been carefully restored by Mr. Ferrey, who has dealt with many churches in Somersetshire. Huish Episcopi has a remarkable hagioscope in the south pier, and at Langport there is one in the north pier of the chancel arch. The "Hanging Chapel,"—a little Perpendicular building standing on an arch which spans the road just by Langport Church,—is now used as a Quekett Museum, for Quekett, the microscopist, was educated in it when it was used as a school. Local tradition is not certain whether there were executions after the defeat of Lord Goring at Langport in 1645, after which Charles's people gave up struggling in Somerset, or whether the chapel got its name in the grim days after Sedgemoor forty years later, or whether it is not merely an agreeable reminder that all the walls of the ivy-clad chapel do not start from the ground.

Among the roofs over church naves near about Yeovil, the splendid roof of Martock would take the first place, as, indeed, would the church itself in most respects. In this roof the spaces above the tie-beams are filled in with rich tracery; the whole of the surface of the roof between the principals and the intermediates is panelled; the king-posts and the intermediates have good angels at the ends of them; under each principal is a large corbel, and the line of support is carried down by columns and angels to the spandrels of the arcades. The cornice is of great size and appropriately enriched; there are carved bosses at the intersections and large pendants to the intermediates,—and all in sound condition, for the church has been thoroughly repaired. The nave-roof at Somerton would probably deserve the next place: it has frequent principals, is

richly panelled, and has large carved bosses. A grotesque monster, very vigorously executed, occupies the space on the side of each king-post,—making altogether a very individual roof. Tennis-balls were found in it, and sent to the Taunton Museum, and prisoners from Sedgemoor have been credited with playing at tennis in the church. A fringing,—an ornament like screen-brattishing turned upside down,—occurs along the lower edges of the tie-beams; a similar decoration appears in a similar position in the roof-loft at Queen's Camel. The roof over the nave at Queen's Camel, which we illustrate, is a very good specimen of the same kind of roof as those at Martock and Somerton, with tie-beams and brackets under them, strong principals, panelling by the purlins, columns as king-posts, brackets from them to a moulded ridge;—and rich and appropriate decoration throughout. The sub-divisions of the ceiling unfortunately only exist now in the bay next to the chancel arch. Decay has set in, parts are being lost, and the whole will soon be endangered.

The roof over the chancel at Queen's Camel is a fair example of the cradle form of roof. Many readers will call to mind the wonderful roof in an arched form over the nave at Shepton Mallet, about nine miles on the east of Wells. There are, it is said, 350 panels in it, all differing in design. At Martock, the wealth of design in the panels should also be noted. There must be this sort of fertility,—the evidence of a power of doing a large number of things admirably,—if a piece of architecture is to give more than a temperate satisfaction; and Martock gives more. The chancel roof at Queen's Camel cannot, indeed, vie with Shepton Mallet, but it is a meritorious work. Mr. Cole A. Adams, the president of the Association, gave the roof credit for many good points,—in the course of one of the pleasant little addresses which he delivered outside the buildings visited,—assisting the members in a few words to the results of much previous study on the spot. In the porch at Queen's Camel attention was called to "the extraordinary variety in the bosses, the skill displayed in the carving of them, and the clever treatment of figures and draperies in the angels at the feet of the principals,—all points worthy of careful study." The chancel is treated similarly for the whole length, which is divided into six panels.

The nave of Bradford Abbas is covered by a roof which is panelled, as some of the other roofs mentioned already, and as others to be mentioned; there are, however, happily, few instances of such careful decoration upon such unsatisfactory construction. The principals simply lean against each other, and have no tie or brace of any kind, till some iron collar-ties were put in recent times. Mr. Carpenter would have done much more eighteen years ago if he had been permitted, and things must have been getting worse in the interval. The beauty of the angels and of the few bosses which remain may be noted; and that the painted angels, which carried painted and gilded coats of arms, were grained and varnished by the rector's orders. The roof over the south chapel at this church,—of course, and fortunately,—differs in type from that over the nave; the eastern-most bay is more richly panelled than the rest, and there are remains of colour decoration. The external doorway of the chapel is original in form,—a gabled stone-covered projection. There are thus two notable doorways to the church,—the west door has been previously described. Near the west end is a large churchyard cross; of its original form a good idea can be obtained,—there still remain parts richly sculptured with figures. The stone screen to the south chapel is ancient, though somewhat modernised: formerly it carried a solid wall, as in the church at Thornford, the village halfway between Bradford and Lillington Hill,—the wooded headland which replies on the north side of the Yeo to Babylon Hill on the south. The hill does good duty in the landscape seen from the central tower of Sherborne,—part of the rich "garden of England,"—one of the happy valleys of the "Felix" division of Dorset. Among stone screens, that now moved to the east side of the lower at Stoke-sub-Hamdon should not be forgotten, nor that under the chancel arch at Brympton; the first of these has much character, but was harshly treated at some time.

In classing span roofs the nave of Yetminster would go with the Abbot's Hall, now the nave of the chapel of Sherborne Grammar School, and

* For notice of Sherborne Abbey Church, see p. 208.

with that of the Guesten Hall, now the School Library, as they all have curved ribs to their rafters finishing below collar-beams. At Yetminster the ribs are about 18 in. from centre to centre, there being a curved rib to every rafter; in the others there are four or five common rafters between each pair of principals. None of these roofs are of much size, but they are all very pleasing examples; and the same may be said of the roof of the hall on the opposite side of the road from the church at Martock,—now a cooper's store and workshop. The two tiers of curved braces to the purlins at the Guesten Hall and the four tiers at Martock may be compared, to the advantage of the latter elegant variety. The roofs of the hall and chapel at Lytes Cary would go into the same class,—only it seems a duty to give them and the house to which they belong a separate mention. The house is a rarity,—being a good residence, built in the first half of the sixteenth century, which has not been thoroughly inhabited recently enough to be much altered, and has not been willfully injured to any great extent. Thus, if the dirt and dust were removed, and the holes in the floors mended, it might be possible (by making believe a good deal) to imagine it ready for a new tenant,—under a covenant to put the place in repair,—entering into possession in the early years of the seventeenth century. It must be fully six miles from a railway, being situated in a happy trapezium of a goodly size, into which the shriek of the steam-whistle only penetrates from the margin. It is, however, not half a mile from the Fosse Way, the remarkable Roman road which ran from the Humber into Devonshire. Between Cirencester and Bath the old road is now almost disused. Except for about three miles on the north of Shepton Mallet, where a new piece of road supersedes the old one, it is still the road from Bath to that town. Between Shepton Mallet and Ilchester there has probably been no important change, and the old road crosses the river Cary at Popple Bridge, not far from Lytes Cary, where it did sixteen centuries ago. North and south of Ilchester the road is about as straight as a line ruled on the map. The Cary takes a bold bend at the Fosse Way, and runs along the narrow valley on the east of Kingdon Hill,—the hill of the great prospect to east, south, and west,—on its way to Sedgemoor, the Parrett, and Bridgewater Bay.

The Lytes, of Lytes Cary, built the house, putting arms and the date 1533 on the fine bay window in the centre of the south front, and seem to have practised the art of being country gentlemen steadily for many generations. Henry Lyte was something more, for he published in 1679 one of the earliest works on scientific botany put forth in England, and he formed a botanic garden at Lytes Cary. Thomas Lyte, who was buried in 1638, was the sixteenth of the family in recorded lineal descent. The roof of the hall, a very perfect work, has well-moulded principals, ribs starting from angels bearing shields, plate, upper plate, and tracery between them; three sets of curved and cusped traces to the purlins. The hall has been shortened at the north end to make a passage to the modern residence, which has been added to the north side of the hall. The old house is only used for storage, but it might be converted to more dangerous uses. Cider-presses and rough work in the old rooms may be threatened any day, and would soon work damage at a different rate from the neglect, not wholly unkindly, which has long been their portion. The chapel probably belonged to a house which was pulled down, before that finished as far as the parapet in 1533 was commenced. It is of the Decorated period, and has a little doorway, a three-light east window, and two two-light windows with square heads in the side walls. The architects of that date believed in square heads, well filled with tracery, when limited height made them desirable. The chapel is about 11 ft. wide, and small every way to match. It has round the walls, under the plates inside, a row of shields with armorial bearings in colour.

The roof over the chapel at Lytes Cary is an example of ribs to principals and collars on a very small scale, but that over the great barn at Cerne Abbas is an example of the same construction with a span of a little over 30 ft. The barn has four bays on each side of the transepts, the principals being 12 ft. 6 in. from centre to centre, about the favourite distance. In the transepts are the large gateways. The level-bedded ashlar of the fine buttresses is continued

through to the inside face of the wall. As the filling-in between the ashlar is of split and squared flints, built in level courses both inside and out, the buttresses are treated to quoins returning from the internal angles. The barn may be classed in many respects with such great barns as Douling, Pilton, Preston, and Glastonbury. The flints, however, give it a special expression. Naturally in this chalk country the flints are largely used. In part of the monastic building still remaining two courses of split, but not squared, flints (5 in. or 6 in. for the two courses) are alternated with one course of rubble (3½ in. to 5 in.), an extremely effective walling in buildings of comparatively small size. The splendid gate-house is of Hambill stone; the vault of the gateway should, by the bye, have attention speedily. A number of the buildings seem to have been destroyed about 1740.

The main idea of the roof over the north aisle at Yetminster,—illustrated in this number,—is not rare outside Somerset and Dorset. The principals are about 12 ft. from centre to centre, and each has an arched rib coming down to a moulded cap, with a shaft under it which runs down to the floor; the intermediate principals have no brackets. There are four common rafters in each space, and these, as well as the other timbers, are decorated with six colours cleverly applied. The effect at the present time is rich and sober; seen with our eyes in the early days, it would certainly have seemed harsh and "loud,"—unlike the modern work by Mr. Crace at Sherborne, just by. Yetminster was associated with Sherborne, and in the fifteenth century, when its nave, aisle, and tower were rebuilt, the builders of the chapelry of All-hallows were probably employed. At All-hallows only the side walls and respond piers now remain, but the columns, bases, caps, and the wall shafts, which take the ribs of the aisle roofs, are similar; it would, perhaps, be fair to conclude that the aisle roofs had resemblances too. The church is oppressed by three ugly galleries, and a lot of pewing of much meanness. In 1870 it was proposed to remove the eyeseores, and do a little more, but the church is still wholly unrestored. Crosses enclosed in circles are carved on the fronts of some of the buttresses, and on the jamb of the south window of the chancel; crosses of the same kind were found also in the adjoining church of Thornford. The north aisle roof at Queen's Camel is not so elaborate as that at Yetminster, and there are no visible common rafters. The painted decoration is in blue and black, red and white, with white fillets, gilt bosses with red in the undercuttings. At Somerton the roof over the north aisle is also similar, but there are, among other variations, no wall shafts. This roof has visible rafters, well-moulded timbers, and everything in accordance; it is thus enabled to play up well to the fine nave roof.

Roofs must not beguile us further. The panelling from Trent is a piece of rich work in oak, with much delicacy in the details, now on the walls of the hall of the manor-house. The house has been added to a good deal, the old parts remodelled and made into and fitted up as a good modern residence. Many visitors go to the house to peer into the hiding-place into which Charles II. was put when the house was being searched. He was concealed in the house for more than a fortnight. The hiding-place is a dark space between a ceiling and the floor over, apparently constructed intentionally, not high enough for standing upright. It was evidently a good place for concealment from enemies not too intelligent nor too much in earnest. A loose board lifted from the joists gave access to the space. Nowadays a separate stair from the garden to the landing is used by visitors, so that the surroundings are not what they were. Charles made his unsuccessful attempt to escape from Lyme under the guidance of Colonel Wyndham, his host at Trent Manor, who was rewarded for this and for services in the field, with a baronetcy and a pension.

The panelling from Lytes Cary is in the ground-story room on the south front, and is a carefully designed and very complete piece of work. The room is not a large one, and only 10 ft. in height; the details are consequently small. The cornice is about 4 in. deep, and the bottom of the plinth of the pilaster 1 ft. 9 in. above the floor. The "die" under a projected column resembled, and consequently got its name, from the die used in gambling. The die in architecture (dado in Southern languages)

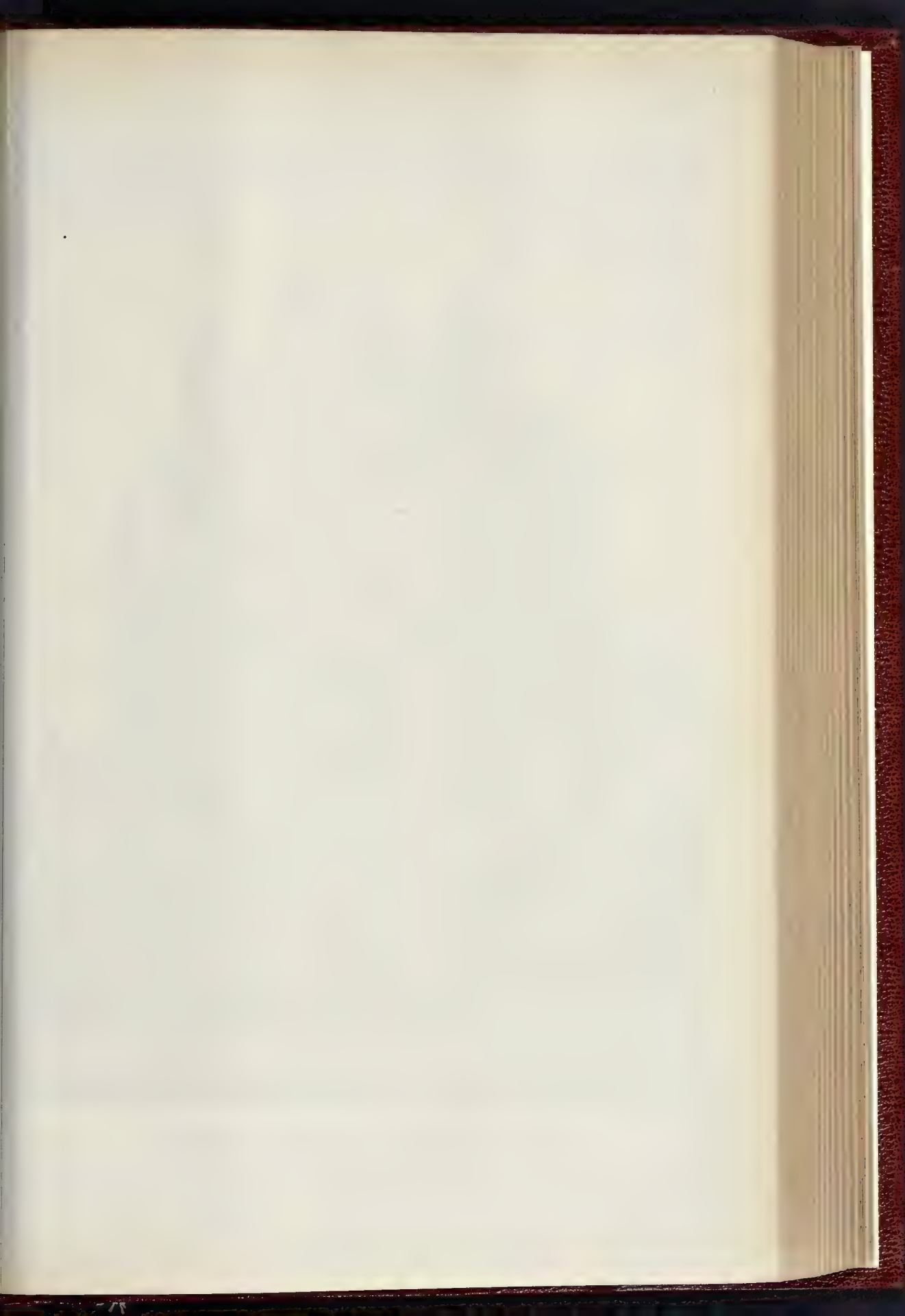
soon ceased to be necessarily a cube; between the base and subbase mouldings there was a space, and that became a dado anywhere. This article of faith,—strange sacred emblem, the theme of joyful hymns by the elect,—is thus a kind of survival. The fireplace is a good piece of work of its date, albeit tenacity is carried to an extreme at the bottoms of the pilasters. There is some oak panelling, apparently of earlier date, in the upper room.

The room at Barrington Court has new panelling, of later date than the work at Trent and Lytes Cary. There the dado is seen in a purely modern form, there being no pilasters. The room is about 12 ft. by 13 ft. At Barrington there are some other pieces of decorative work, but not what might be looked for, considering the size of the house and the admirable design of its exterior. In its external aspect it is now much as it ought to be,—the look of ordinary practical use without state suits it and us well. It is four miles west of South Petherton, and consequently about five miles from Martock Station, and is used as a farmhouse by a most obliging tenant. Not being a "seat," the 1-in. Ordinance does not take note of it. The idea of using so fine and complete an old house as a modern residence may naturally flash across people's minds from time to time; but its situation, with our modern preferences for wide, downs overlooking good landscapes, would be considered disappointing. The work of adaptation to suit modern habits would be heavy besides. In the result a very perfect thing would probably be nearly spoiled in the attempt to make something more or less imperfect. Barrington was the home of the Phelps family before Sir Edward Phelps built Montacute, between 1580 and 1601.

In the room at Lytes Cary above the panelled room with the Ionic pilasters,—the upper room being 17 ft. by 25 ft.,—is an interesting plaster ceiling. The flat portion of the ceiling is 10 ft. wide, and each slope is 5 ft. Thus the figure, which is based on a square of 5 ft. repeats itself five times in the length of the room, twice on the flat portion of the width, and once on each slope. The setting out is extremely simple, although in the effect it avoids seeming so simple, which is a good point. Several of the ceilings at the delightful Newton Surmaville are of much merit,—that in the drawing-room is especially good. The old and the new,—old walls and windows, old furniture, and the spirit and appliances of refined modern life, make up a house full of charm. The boudoir ceiling at Melbury is boldly designed with large pendants; and there are other ornamental ceilings there, some of them comparatively modern,—the spaces filled in with ornament in low relief, which, like much else at Melbury, are good for living with. Several of the plaster ceilings at Sherborne Castle are very pleasing,—that house will always be looked at owing to Raleigh's connexion with it, and the view of it from the pretty walks among the wood on the other side of the water is very "taking"; on a nearer view there is a good deal of the common place.

The plaster decoration from Montacute occurs in a bedroom on the south front of the splendid house. It is doubtless part of a design for panelling the whole of the walls of the room,—which is about 14 ft. high. A panelled dado rises about one-fourth of the height of the room; there was probably plain panelling above that, and there is the deep plaster frieze about 4 ft. 3 in. deep in all,—composed of panels surrounded by ribs and filled in with leafage modelled with much delicacy,—the whole is well in scale and very refined. Mr. J. D. Sedding, relieving the President from one day's guidance, read a paper on Montacute from the steps at the front entrance of the mansion,—the members being grouped round the beautiful porch. This porch and the walls on each side of it were part of the spoil torn from poor Clifton Maybank in 1760. Those who spared no pains, in order that a profitable week might be spent, bear in spirit the pleasant motto over the Montacute doorway,—“And yours, my friends.”

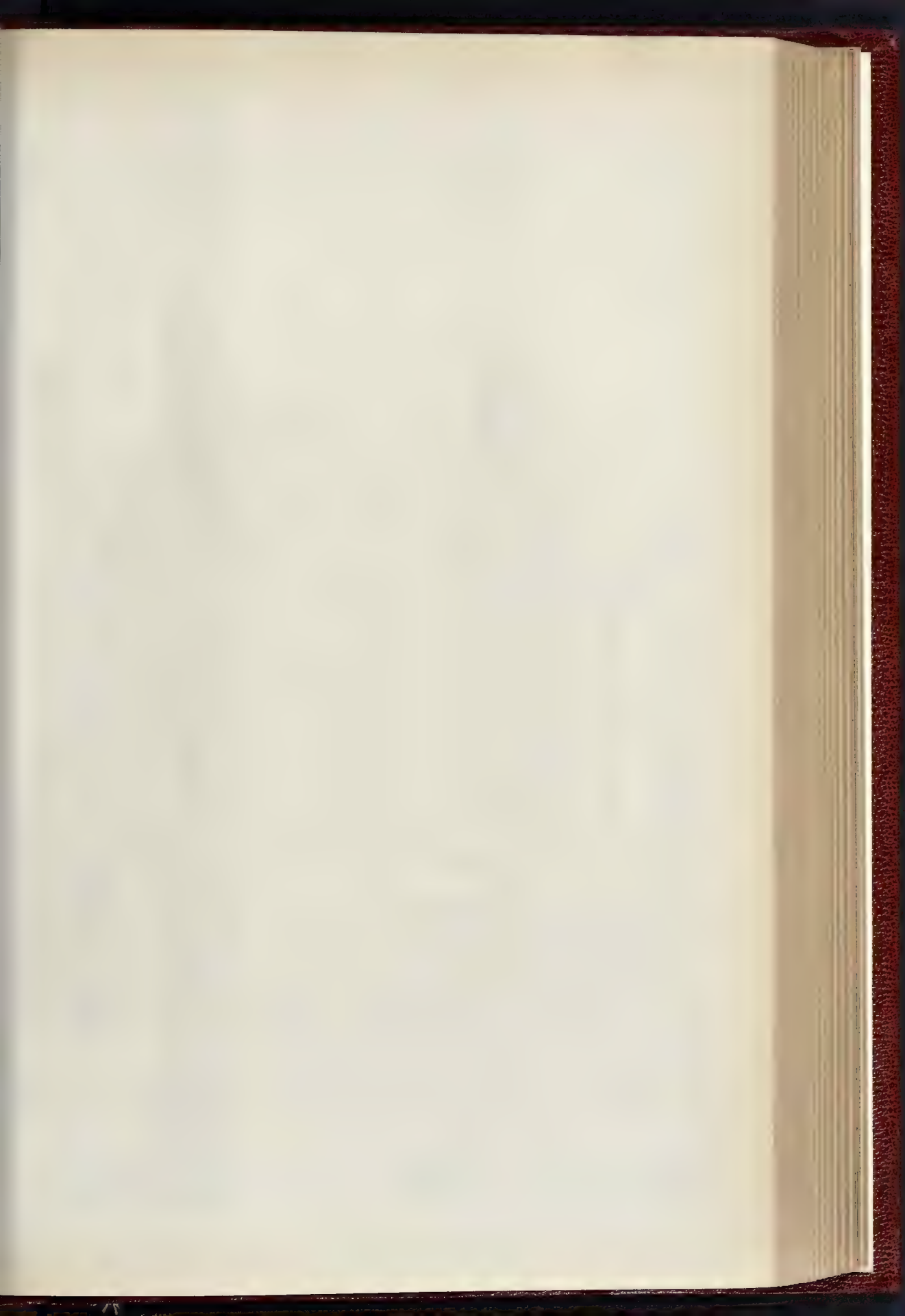
New Market Buildings, St. Martin's-lane, Birmingham.—With reference to our notice of these buildings, in our last issue (p. 369), it is only fair to add that the terra cotta of which they are built, and which seems to be very good, was made and supplied by Mr. J. C. Edwards, of Ruabon.





THE "KING'S ARMS," ABOUT TO BE ERECTED, EDGWARE-ROAD.

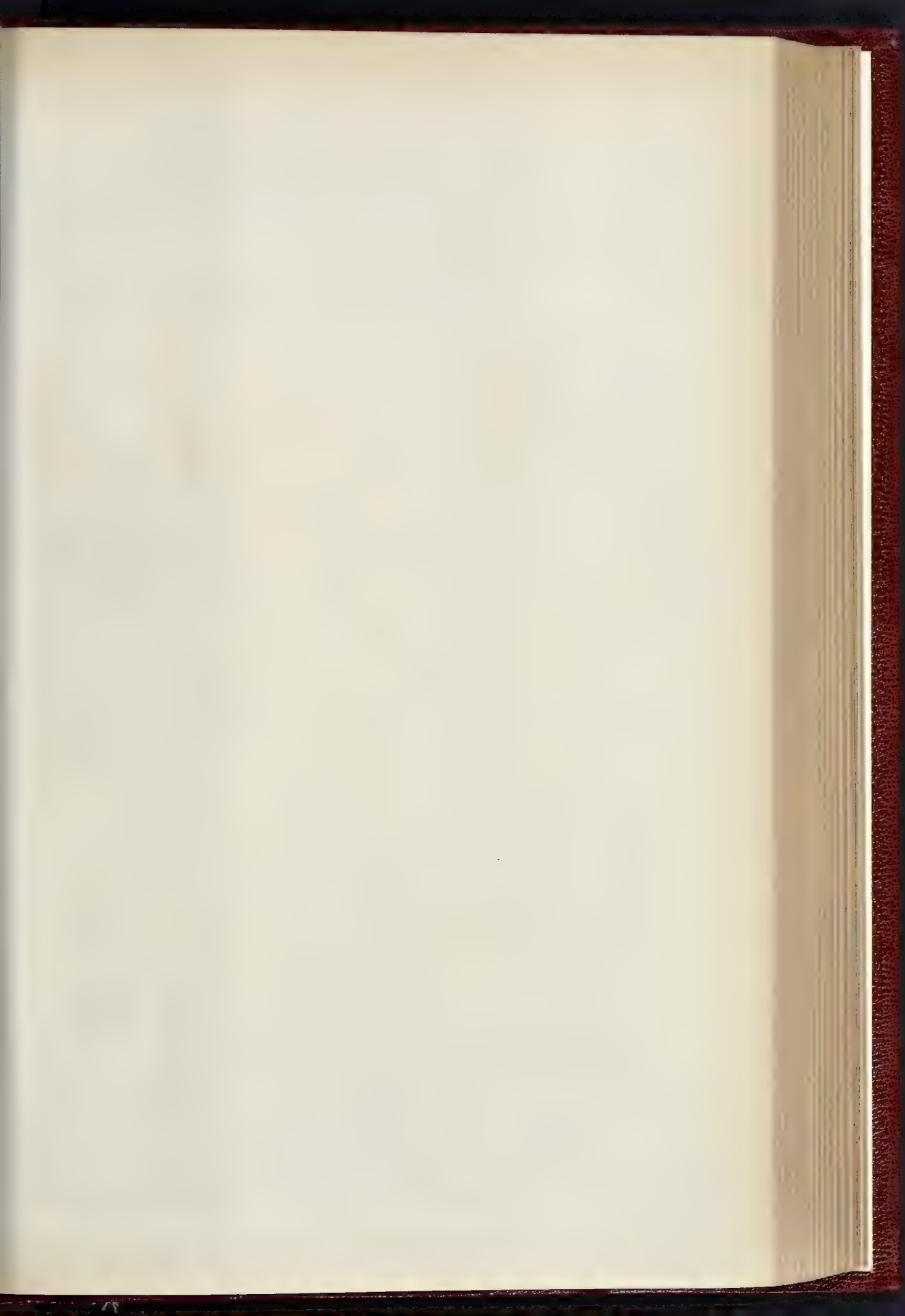
MESSRS. EALES & SON, ARCHITECTS.





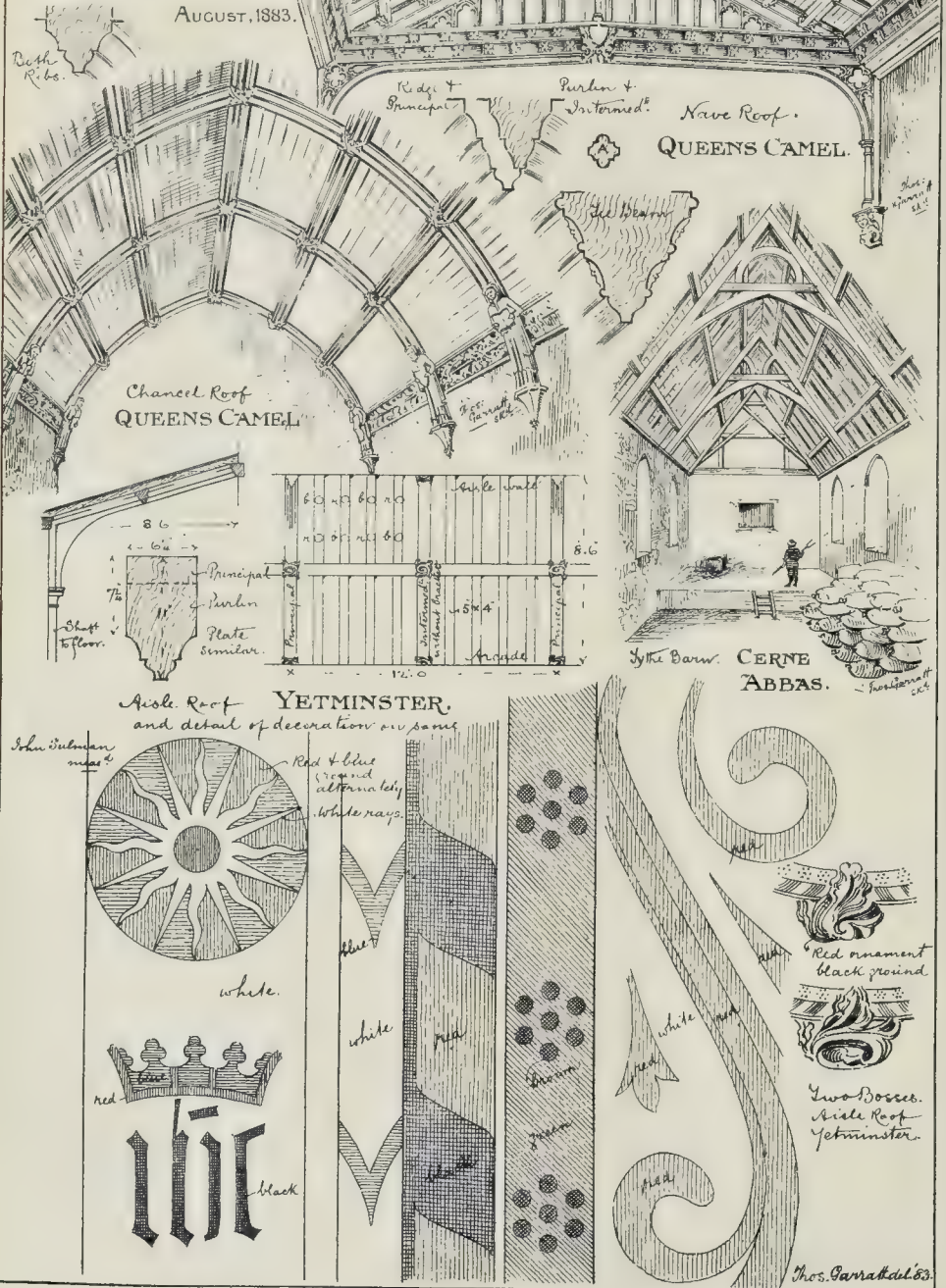
NEW POST OFFICE, ALDERSHOTT.

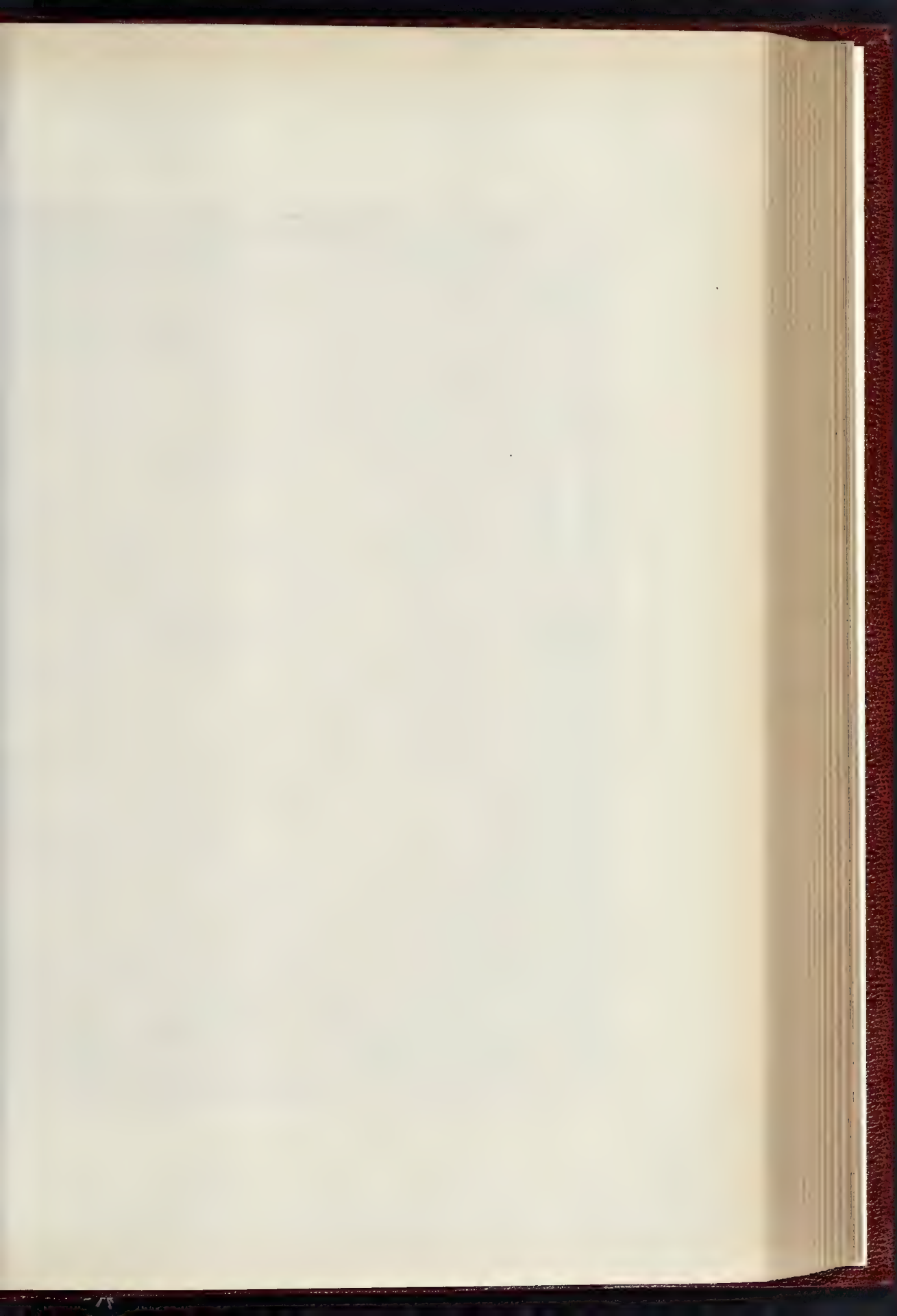
MR. MULLEN, ARCHITECT.



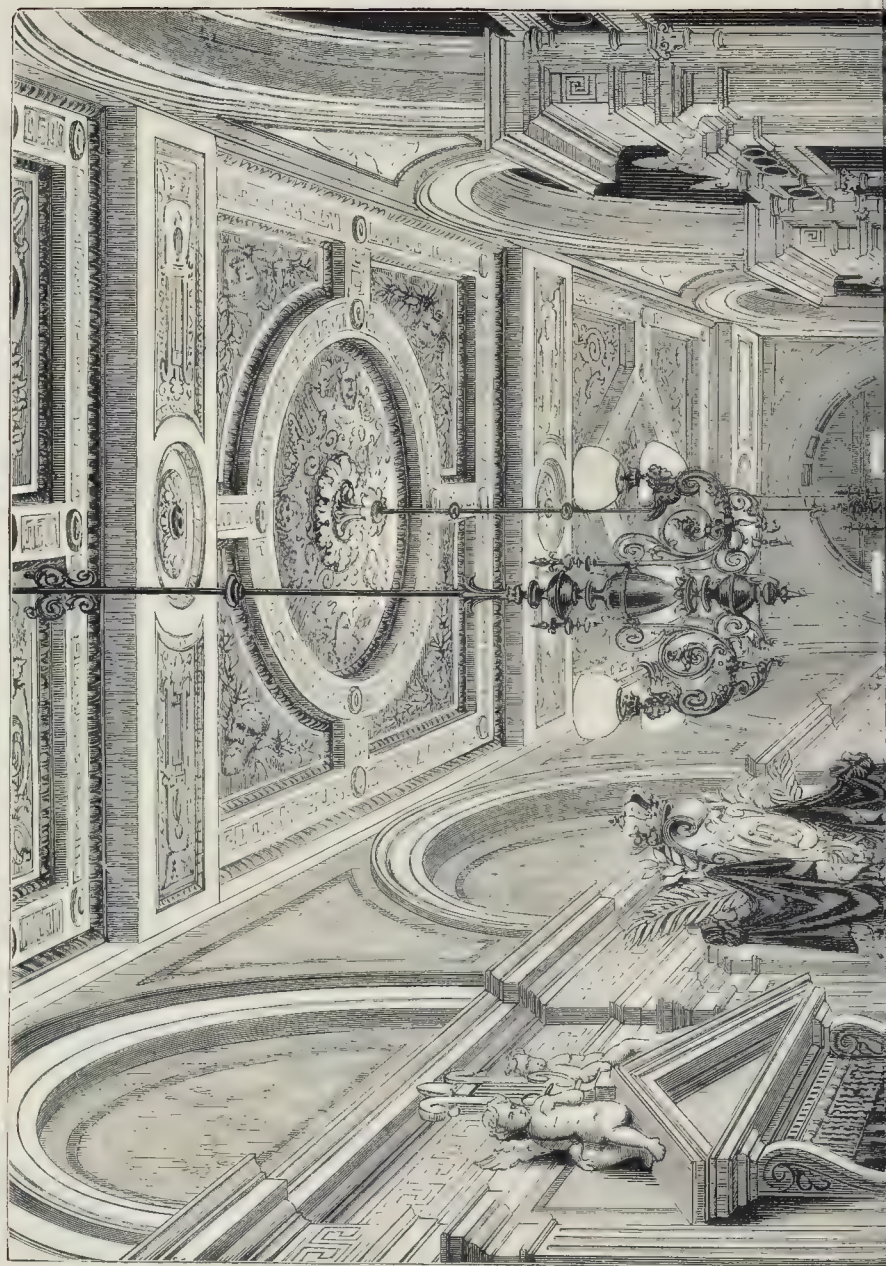
ROOFS IN BUILDINGS VISITED BY THE ARCHITECTURAL ASSOCIATION.

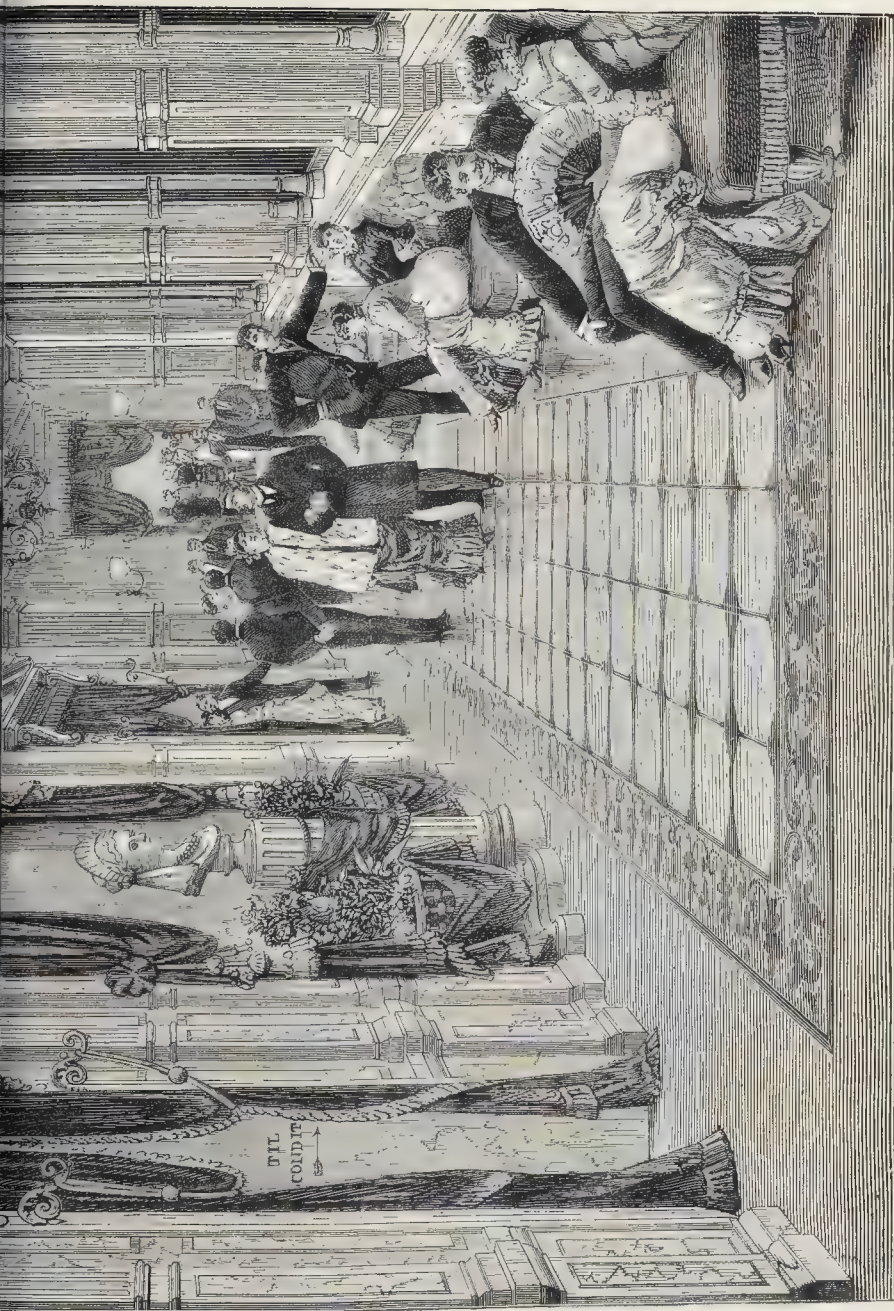
AUGUST, 1883.





THE BUILDER, SEPTEMBER 22, 1883.





THE FOYER, DAGMAR THEATRE, COPENHAGEN.

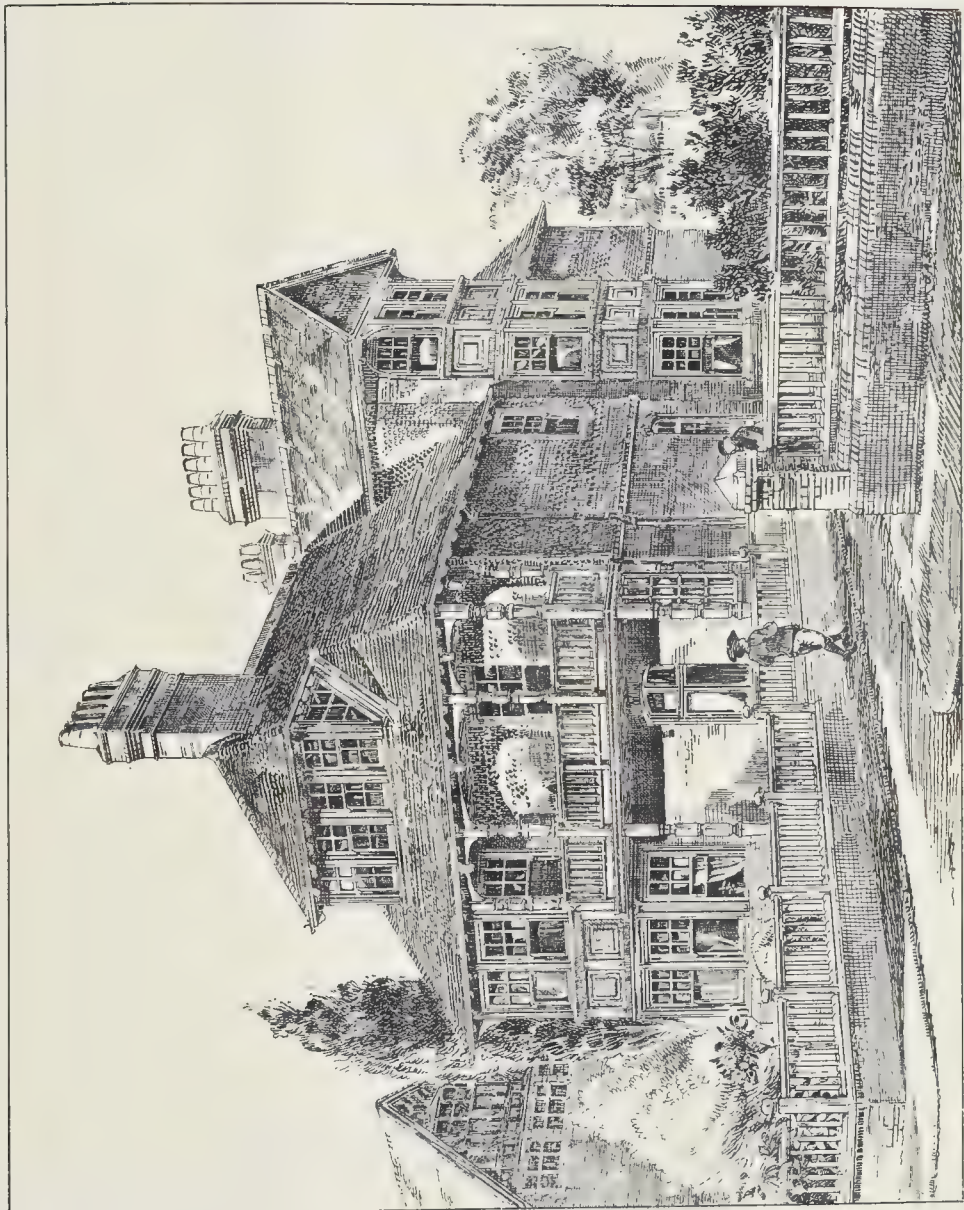
Wood and Plaster-work in Somerset.





THE NEW OFFICES FOR "TRUTH"—WESTMINSTER.

MR. HENRY S. LEGG, ARCHITECT, CHRIST'S HOSPITAL.



W. H. P. 1883

DWELLING-HOUSE AT WESTGATE-ON-SEA, THANET.—MR. C. N. BEAZLEY, ARCHITECT.

THE DAGMAR THEATRE, COPENHAGEN.

This theatre, which is the latest addition to the playhouses of the Danish capital, now four in number, was recently opened, the *début* of Copenhagen crowding every part of it at the first performance. The size of the new theatre is not too large, the whole of the interior being easily scanned by the eye. With the exception of the cloak-rooms, which are too small and inconveniently placed in the entrance corridor, the whole building is considered very convenient. The defect in question, we understand, is to be remedied. The auditorium is harmoniously decorated in various colours, and picked out with gold. The ceiling contains medallions representing Music, the Drama, Literature, and Painting. There is a large openwork chandelier. There is only one private box, which is reserved for royalty, at the stage end of the first tier. The theatre has two tiers, and a gallery above. The ground-floor contains stalls and pit. A good view of the stage may be obtained from every part of the house. Along the first tier are placed plaster medallions, containing, in relief, portraits of well-known Danish playwrights, authors of farces, light comedies, and national historical dramas. These, together with operettas, are the plays which will be performed. The name of each author is inscribed under the medallion. The faces of the tiers are, besides, adorned with scroll and leaf ornaments in white stucco relief picked out with gold.

The foyer of the theatre, of which we give a view in our present number, is an interesting part of the building. It is readily entered from the auditorium by two openings merely screened off by curtains. The opening at the end leads to the refreshment-room. One entire side of the foyer is lined with couches, placed under the windows overlooking the Jernbane-gade. It is in every respect a luxurious lounge. The ornaments consist of carved wood and stucco. The ceiling is also carved in wood and panelled, and adorned with allegorical figures and symbols of the various arts. The chandeliers, depending low from the ceiling, are in bronze, and of handsome design; the globes are supported by winged heads. In a niche in the centre of the foyer, opposite the windows, and between the two openings leading to the auditorium, has been placed the plaster bust of Princess Dagmar of Denmark (Empress of Russia), after whom the theatre has been named. The present bust is to be replaced by one in marble. It is surrounded by exotics, and the niche in which it stands is hung with drapery, the whole being surmounted by an imperial crown and palm-leaves, and the letter "D" in relief on a shield below.

THE "KING'S ARMS," EDGWARE-ROAD.

This design has been prepared for the reconstruction of these premises, with a view to the re-arrangement of the frontage lines. The present building stands upon the site of an ancient hostelry, which existed at the time when the Edgware-road connected Tyburn with Harrow and Edgware.

The work is to be finished in red Farnham bricks, Broseley tiles, with dressings of terracotta, the ground-story being in red and grey polished granites.

The architects are Messrs. C. Eales & Son, Welbeck-street.

NEW POST-OFFICE, ALDERSHOTT.

The old office in Wellington-street being found quite inadequate to the steadily-increasing demands upon it, a new building has been erected in the Victoria-road, which, with the Soldiers' Institute adjoining, forms quite an architectural feature in the leading thoroughfare of this rising town. The upper portion of the front is faced with red brick, pointed in dark blue mortar, divided by narrow pilasters and boldly-moulded stringcourses, the panels above the windows being filled in with rose-pattern diaper bricks. The lower part is in Portland cement, with bold cornice and frieze, divided by pilasters into three bays, of which two are filled in with light mullioned windows and the sashes above the transom glazed with stained glass. On the ground-floor ample accommodation has been provided for the public. The telegraph department is placed in rear of the counter, with side

entrance for messengers, &c. The clearing and sorting room is ventilated and lighted from above, and the parcels-room is provided with fireproof safe, &c. At this office Government pensioners are now paid their pensions monthly instead of quarterly,—a great boon to a large class of deserving and needy public servants. The upper floors are devoted to the official quarters of the post-master. The work was carried out by Messrs. Martin, Wells, & Co., Aldershot, from designs by Mr. John St. C. Mulley, architect, of that town.

"TRUTH" OFFICE, WESTMINSTER.

ONE of our illustrations represents the new building just now completed in Carteret-street, Queen Anne's-gate, Westminster, and which has been erected for the offices of the publication known as *Truth*. The ground-floor contains the advertisement and general office, with public entrance on the right side of the building; the left entrance leads to the upper part of the premises, which contains the editor's private offices and other rooms. The whole of the front portion of the ground-floor, including the pediments over the doorways, is executed in carefully-selected Bath stone; the cornices and bands to the upper part of the front, as well as the architraves round all the windows, are also in stone. The remaining portion of the front is in dark red brick; hence the building is rather more effective in execution than the engraving represents it. The whole of the work has been carried out in the best manner. The staircase and most of the joiner's work are in pitch-pine varnished, the fittings of the advertisement-office being in mahogany. No contract was entered into, but the work was carried out under a schedule of prices. The architect is Mr. Henry S. Legg, of Christ's Hospital, London, and the builder was Mr. Thompson, of Camden-town, the carving having been executed by Messrs. Daymond & Son, of Vauxhall Bridge-road. The design has been somewhat fettered by the necessity of the cornices having to range with those of an adjoining building northwards.

HOUSE AT WESTGATE-ON-SEA.

This house has been erected facing the sea, at Westgate. The materials used are red brick hollow walls to the first floor, then solid brick walls covered with weather tiles; wooden bays, and red tiles for the roofs. The architect is Mr. C. N. Beazley.

DEMOLITIONS AND RESTORATIONS AT LINCOLN'S INN.

THE completion and opening of the Royal Courts of Justice have been followed by the taking down of some of the old courts at Lincoln's Inn.

The block of buildings nearest to the approach through the gateway from Chancery-lane, formerly known as Vice-Chancellor Bacon's and Vice-Chancellor Hall's courts, has already disappeared, and the block on the west side, facing the hall of Lincoln's Inn, formerly occupied by Mr. Justice Fry and other equity judges, is now being taken down. The large court which was occupied by the Lord Chancellor and the Lords of Appeal, and formerly used as the dining-hall of the Inn before the new hall was erected, is not intended to be disturbed, but will remain as one of the most ancient memorials of the Benchers and the Honourable Society of Lincoln's Inn. The private rooms at the north end of this court standing between the court itself and the chapel of the Inn are, however, to be removed, so as to give a better view of the chapel than at present exists, and when all the buildings intended to be demolished have been cleared, the old dining-hall and Appeal Court will stand as a central and prominent structure, and the sites around it which are now being cleared will be ornamentally laid out and planted.

Simultaneously with the work of demolition, extensive reconstruction is in progress at several points within the boundaries of the Inn. The chapel has just been enlarged by the erection of an additional bay at the west end, whilst the roof, which was found to be decaying and insecure, has likewise been entirely reconstructed. The whole of the interior of the chapel has also been renovated and decorated.

Mr. Salter, architect, of Woburn-place, furnished the designs for the additions and other works carried out at the chapel, Messrs. Longmire & Burge, of Osnaburg-street, being the contractors.

One of the heaviest portions of the works in progress is the entire reconstruction internally of the east side of Stone-buildings, and the erection of an additional story, architecturally uniform with the existing buildings. The south block is now almost completed. With the exception of the main outer walls, the structure may be said to have been entirely rebuilt. Amongst other portions of the work has been the formation of a basement floor. In the old building the ground-floor rested on walls in the basement, the intervening space between the walls having been filled up with earthwork. In carrying out the work which has just been executed the whole of this earthwork was removed, and during its removal a large quantity of the bones of animals was found at a depth of between 15 ft. and 20 ft. below the ground level. After clearing away this earthwork and bones the basement floor was formed by a layer of concrete 6 in. in thickness in the first instance, and upon this a wooden flooring was constructed. Internally the building has been completely re-arranged, new interior walls, corridors, and stone staircases having been erected in connexion with the several floors. The work throughout appears to be of a very substantial character, whilst the sanitary and ventilating arrangements have not been forgotten. The building as reconstructed contains four floors, thus doubling its capacity as compared with the old structure, namely the basement and additional upper floor. Each floor contains four sets of barristers' chambers, each set containing a barrister's office, an office for his clerk, and a third office for the barrister's pupils, the entire number of offices in the block being fifty-two. Each set of offices has its own lavatory and other conveniences. The north block is about to be similarly reconstructed, whilst the central block is also to undergo extensive alterations and improvements.

The plans and drawings for the works were prepared by Mr. Kaberry, the permanent Clerk of Works to the Honourable Society of Lincoln's Inn, and were approved by Sir Edmund Beckett and the other benchers of the Inn, Mr. Kaberry personally superintending the whole of the works, which are being executed by Messrs. Longmire & Burge.

WORKMEN'S DWELLINGS IN PLYMOUTH.

ABOUT a couple of years since the Plymouth Workmen's Dwellings Company started the erection of their first block of model dwellings on a site abutting on Sutton-road; and this week the fourth and last block has been completed, and the colony of ninety-six families of artisans and labourers fully established in their cleanly, convenient, and healthy homes. Each block is a solid rectangular building of limestone, with brick dressings, and the four sets form two parallel streets facing in opposite directions. Though the blocks are not all of the same size, their general arrangement is similar, and a description of one will be a description of the whole. The buildings are divided into four stories, and each story into sets of apartments, consisting of two or three rooms to suit the size or pockets of the family who may become their occupants. There are no means of egress at the back of the blocks, and each "home," whether comprised of two or three rooms, communicates by a single door only to a balcony which runs along the outside. When this door is closed all communication with the set of rooms to which it forms the entrance is cut off, and the occupants are thus able to realise the privileges and advantages of a separate dwelling far more completely than in an ordinary house let out in tenements. Each dwelling includes a living-room, 14 ft. by 15 ft., fitted with a good cooking-stove, a large cupboard, and a receptacle for coal. The bedrooms average 10 ft. by 11 ft., and in the centre of every room is a brick ventilator 12 in. square. All the interior walls of the buildings are of brick, plastered in each room to the height of 7 ft. with Portland cement, and above that with cement of a commoner quality. Each story is reached by a staircase built in a recess, both staircases and galleries being constructed of Caithness stone. But it is in the sanitary appliances and arrangements that the advantages

of these dwellings are said to be conspicuous over the crowded and unhealthy surroundings of the slums and back streets of Plymouth. In the centre of each story is an open space about 12 ft. by 20 ft., which is intended for clothes-drying and similar purposes. Contiguous to each of these spaces are two water-closets and a large wash-house. The latter is fitted with trays, a furnace with water laid on above, and a pipe to carry off the waste water. In addition, there is a large metal shoot, through which ashes and house refuse may be thrown from each story to a bin underground, which will be regularly emptied. Each block has been completed before another was commenced, and the apartments have been let as soon as they have been fit for occupation.

CHELSEA VESTRY HALL.

The Chelsea Vestry had a long deliberation on Tuesday, the 11th inst. It would appear from the Surveyor's report that the south wall is fractured in several places, and has bulged out towards Manor-gardens to the extent of 5 in. at one point, and the north wall near the ante-room is 3 in. out of the perpendicular.

The cause of the building falling into this dangerous condition, according to the *West Middlesex Advertiser*, seems to be the result of the roof having been badly constructed and made too heavy for the strength of the walls. "That a building which is only twenty-two years old, and which cost about 6,000*l.*, should threaten total collapse, reflects discredit on both the architect and the builder. Several references were made to the original cost of building the hall, but it should be remembered that both labour and material were much cheaper then than now; and, further, that as little as possible was done for the money."

If the hall must be pulled down and re-built as the only effectual cure, the step should be taken at once, and a larger and handsomer building erected.

CARE OF THE PUBLIC HEALTH.

THE Public Health Act, 1875, made it compulsory upon every Local Authority in England (metropolis excepted) to appoint fit and proper persons to be medical officers of health and inspectors of nuisances, and the said Local Authority may also appoint such assistants and other officers as may be necessary and proper for the efficient execution of the above Act.

The duties of these health officers have been fully set forth in order memorandums and instructions issued from time to time by the Local Government Board, and these, too, are not unfrequently found supplemented by certain Local Sanitary Regulations,—the whole aim of such orders and regulations being, in a word, inspection,—inspection of the most practical and trustworthy kind, embracing all matters appertaining to the public health,—the reporting on all circumstances and conditions of life likely to affect it, so that the sanitary regulations made in the interests of the public health may be observed or their breach punished by appropriate orders, penalties, and costs, as in such cases provided; that nuisances and the like, causing injury to health, may be suppressed, and their recurrence prohibited, scavenging duties properly enforced, and cleanliness in both house and person maintained.

In addition to the powers vested in the Local Authority and their health officers by the Sanitary Acts, power is also given to any inhabitant of the district, or to any person aggrieved, who may make complaint to a justice as to the existence of a nuisance under the Public Health Act on any premises, and thereupon the like proceedings shall be had, with the like incidents and consequences as to making of orders, &c., as in the case of complaint by a Local Authority through their officers.

But no one likes to lay such a complaint, and local interests not unfrequently stand in the way of its success when laid. In many cases an unsanitary condition of things dangerous to health is preferred to open conflict with some of the powers that be.

To sanitary authorities have been granted large powers in the interest and care of the public health. The danger is not so much that they abuse their powers, as that they sometimes

fail to exercise them sufficiently; for, however alert or vigilant their sanitary officers may be in the performance of their duties, their best endeavours will avail but little unless their efforts are seconded by the Authority under whom they act, and receive the hearty support, co-operation, and appreciative approval of the public.

FREE LIBRARY BUILDINGS.

AMONG the interesting and useful papers read at the sixth annual conference of the Library Association of the United Kingdom (held last week in Liverpool, under the presidency of Sir James Picton), was one by Mr. Wm. Henman, A.R.I.B.A., on "Free Library Buildings, their Arrangements and Fittings." In the course of his address Mr. Henman said the free library building must provide for far more than a safe custody of books and provision for occasional readers. It should contain at least three distinct departments, viz., the lending library, the reference library, and the reading-room. The free library must hold a central position, otherwise its benefits would not be taken advantage of to the full. If possible, the buildings should be detached, in order that all parts might be well lighted, and to lessen the risk of damage by fire. Many buildings had been erected on what the speaker considered entirely wrong principles, and even where the general scheme of buildings had been well conceived, he had sometimes noticed that in detail important matters had been either overlooked or ignored. Mr. Henman then dealt with the administrative details of a free library, contending that the two important adjuncts to such an institution were a good catalogue and single indicator, and submitted plans showing his ideas of the arrangements of buildings suited for free library purposes. With regard to library fittings, the bookcases were the most important. In conclusion, the reader said there were at least three methods in use of arranging free library buildings. There was what might be called the single room; secondly, the simple division of the library and reading-rooms; and thirdly, the complex division. His object was to advocate the middle course as the best, but at the same time he was far from desiring that stereotyped plans should in all cases be followed. In this, as in every other class of buildings, the intimate knowledge of the requirements and a careful study of details were essential. With such, an architect might, in conjunction with authors and librarians, help forward the good work which the Free Libraries Acts were destined to accomplish.

PROPOSED ERECTION OF A NEW FEVER HOSPITAL AT COVENTRY.

AT the last meeting of the Coventry City Council a report was submitted from the Sanitary and General Works Committee, and also a report from Dr. Fenton, the Medical Officer of Health, dealing with the objection that had been raised by a number of memorialists to the site selected for the above hospital, and who had petitioned the Council thereon. This site, it appears, has for two years past been openly discussed before the public, and has received the sanction of the Council as the Urban Sanitary Authority and also the approval of the Local Government Board.

We gather, too, from the reports (which were approved) that the site, which is situate off the Stoney Stanton road, is in every respect a very suitable and proper one for the purpose intended, and that whilst paying all due deference to the memorialists, the Council have seen no reason for abandoning it. From the practical experience that has been gained during the past eleven years from the present Fever Hospital, which is near the proposed site, it has been found that although there have been several severe cases of small-pox, scarlet fever, typhoid fever, and measles treated there, no injurious results have accrued to the residents in the neighbourhood. Dr. Fenton, who has had the iron (Fever) hospital under his immediate care since its erection, and has carefully preserved a record of all patients admitted there, states that there is not the slightest evidence in his record to show that disease has existed in the vicinity of the hospital in a greater degree than in any other portion of the district.

Dr. Alfred Hill, the Medical Officer of Health and Public Analyst to the Borough of Birmingham, in his last annual report for the year 1882, also says on this subject:—"It has often been alleged against the establishment of hospitals for the treatment of infectious diseases that they constitute centres of infection and a danger to the neighbourhood, and, though this contention has been disproved over and over again, and is always in process of being disproved both in Birmingham and other towns, it continues, like many other popular errors, to maintain its existence as if it were an established and important truth. It may be well, therefore, to state in reference to the Borough Hospital (Birmingham) which has been so serviceable, that in no instance has any case occurred in the neighbourhood of the hospital which could be traceable to it."

THE TRANSMISSION OF ELECTRIC POWER.

M. MARCEL DEPREZ, the electrician, who is well known for his labours in connexion with the transmission of power by electricity along wires of small diameter, has just concluded a series of experiments extending over two months, the results of which appear likely to prove of considerable practical value. At a distance of eight miles and three quarters, through a wire only two millimetres thick, with the help of a mountain stream at Vizille, which he employed as a motive power to work a dynamo machine of his own invention, M. Deprez was able last week to light one hundred and ten Edison lamps in the Town Hall at Grenoble. Large crowds were present, and appeared greatly impressed with the effects produced.

HOTEL BUILDING IN THE CITY.

WHILST at the West End several monster hotels are at present in course of erection, hotel buildings and extensions are also proceeding at a rapid rate in several parts of the City. Amongst others the City Terminus Hotel in Cannon-street is about to undergo a considerable enlargement, the hotel, spacious as it is, having been found inadequate to the demands placed upon it, not only for the accommodation of travellers and others, but also for the meetings of companies and other like purposes. The intended enlargement consists of a new wing at the east side, which will be uniform in height and architectural elevation with the existing building, and in which it is stated there will be upwards of 100 reception and bed rooms. Mr. Charles Barry is the architect, and Mr. Booth is the contractor, the estimated cost of the building being 22,000*l.* The old and well-established hostelry in Crown-court, Cheapside, known as Kennan's Hotel, is also about to be taken down, and replaced by a new structure of more modern and larger proportions. Mr. J. T. Wimper is the architect, and Messrs. Fish & Co. the contractors. The new building will cost between 11,000*l.* and 12,000*l.* The large and costly hotel for the Great Eastern Railway Company, at the Liverpool-street Station, which has been in course of erection during the last few years is now fast approaching completion, and is expected to be ready for opening about the end of the year. The Bishopsgate frontage of the structure, and the south elevation in Liverpool-street, has been completed for some time past, and last week that part of the structure immediately adjoining the entrance to the station was covered in. Mr. C. E. Barry is the architect of this spacious structure, and Messrs. Bange & Co. are the contractors.

Workhouse Building and Sanitary Work.

AT a recent meeting of the Chelsea Board of Guardians, of which Sir Charles Dilke, the President of the Local Government Board, is a member, Dr. Bridges, Medical Inspector of the Local Government Board, said he wished to take the opportunity of congratulating the Board on the completion of their new workhouse building, which he had had the pleasure of carefully inspecting. It was extremely well constructed and admirably adapted for the purposes for which it was erected. The new buildings are the work of Mr. A. Thorn, builder, and were designed and erected under the superintendence of Messrs. A. & C. Harston, architects.

THE TRADE UNIONS CONGRESS AT NOTTINGHAM.*

MR. FREDERIC HARRISON, in the course of the address to which allusion has been made, reviewed the progress of trade societies since the federation had been effected which had its expression in the Congress. He should think it was as unnecessary to read a paper in defence of trade unions as in defence of railways or any other accepted institution. He reminded them that sixteen years had passed since the sitting of the Trade Unions Commission, which was followed by the Act of 1871 and the legislation of 1875, freeing trade unions from the disabilities which formerly affected them. Now, therefore, the trade unionists could look back and contrast their present position with their past, and ask themselves whether they had fairly used the concessions they had received, while they could point to the fact that since these concessions, during a time of unexampled stagnation in trade, the struggles between capital and labour had been of a less acute character than at any previous time in England. He was not speaking exactly as an outsider, for many years ago he was accepted as a member of one of the great amalgamated societies, hence he was speaking as an old trade unionist. If any one wanted to obtain a view of the progress of trade unions, reference to the paper by Mr. George Howell in the *Contemporary Review* would give valuable information. An investigation of the affairs of the trade unions gave striking facts of the steady progress of the unions in numbers and income. In 1867, for instance, the year of the Trade Unions Commission, the Amalgamated Engineers numbered 33,000, while in the last returns they numbered 44,000, and he was informed that at that moment they numbered 50,000. The Amalgamated Carpenters, who numbered 8,000 sixteen years ago, now numbered 20,000; the Amalgamated Tailors, whose union did not exist in 1867, now numbered 13,000; and the Ironfounders had risen from 10,000 to 11,000. In all, five societies, whose members did not number 60,000 in 1867, now numbered 125,000. Then, as to the income of these societies, he gave statistics showing that the incomes had increased cent. per cent. during the sixteen years which had elapsed since the Congress came into existence, and the trade unions were not only twice as rich as they were, but they were twice as strong, and had vastly increased their reserve. This increase of power, and means, too, had been in the face of great depression of trade and manufactures, and in the face of great expenditure on the part of great societies, for the sum of 2,000,000, had been spent by five societies within six years, and yet a cash balance was left of 360,000, which represented the self-denial, the self-reliance, and the self-dependence of the industrious classes. Some of these societies, too, had existed over long periods, and they had been of vast benefit to the community at large by the support they had afforded to workmen and their families in distress, and the community at large had gained to this great extent. It would be impossible to calculate how much these great trade unions had saved the country in money given in times of distress, and how much they had done to allay the irritation which arose in those times. It was preposterous for persons to look upon the trade unions, as many were disposed to look upon them, as mainly existing for the purpose of dealing with trade disputes; and to show that this commonly-accepted view was altogether wrong, he called attention to the heads of expenditure of the societies, and emphasised the fact that in the whole expenditure on "trade purposes,"—or, in other words, in trade disputes,—had been only one per cent. of the income, while seven societies which had had to meet trade disputes had only spent two per cent. of their income under this head. He did not say that money spent upon strikes was not well spent in some circumstances, but when he found seven societies, whose reserve amounted to 750,000, spent less than one per cent. of their income upon strikes, he could declare that it was a vulgar error to represent the maintenance of trade disputes as the main purpose of trade unions. The working out of the trade unions in these sixteen years showed the faithfulness and weakness of the advice which the Trade Unions Commission offered when that body

proposed that the "trade" and the "benefit" purposes of the unions should be divided.

In concluding his address, Mr. Harrison dealt with social questions, and urged the working men to direct their attention to local self-government, in which, he urged, they should take a part. They were more interested than the rich (who could choose their own district) in the sanitary condition of the localities in which they lived, in the supply of good water, in lighting, the supply of efficient schools, and in lessening the evils which depressed or burdened life, as well as in the means of culture.

Mr. Burnett, of London, in proposing a vote of thanks to Mr. Harrison, urged that the Congress should take some steps to secure from the whole of the trade unions of the country, large and small, reports to the Parliamentary Committee. By this means the committee would be enabled to lay before the Congress annual statements as to the work which was being done by the unions, and the public would see the progress they were making. Mr. Harrison had touched what might be called the sore spot of their organisations,—the subject of superannuation benefits. He (Mr. Burnett) regarded the work of the unions in this direction as among the most useful which they undertook; and there was no doubt that this branch of their organisations required most careful attention, for it was one which they must never give up. The calculations of actuaries were too scientific to be applied to trade unions. They left outside their calculations many little matters of principle which, as well as figures, had a bearing on the case. At any rate, the predictions of those who gave evidence before the Royal Commission of 1867 had been falsified, for had their prophecies been fulfilled the superannuation benefits of their societies would have broken down long ago. He thought that the non-compulsory funds which existed among them would help to obviate the danger of the collapse of their superannuation benefits.

Mr. Cremer having seconded the resolution, Mr. Knight, of London, pointed out an error in Mr. Harrison's figures, and mentioned that the income of the boiler-makers was now 65,000, and not 42,000, as stated by Mr. Harrison.

Mr. Swift, of Manchester, attributed the increase of superannuation expenditure to some extent to the fact that many employers now refused to engage workmen who were somewhat advanced in years.

The resolution was then put, and carried unanimously.

After some time given to the consideration of a resolution (which was agreed to) urging the Government to complete the codification of the Criminal Law, the subject of boiler and steam engine accidents was discussed. In the course of the observations made it was stated that many of these accidents were caused by the boilers and engines being entrusted to young boys and other unqualified persons. On the motion of Mr. Lambton, seconded by Mr. Swift, of Manchester, a resolution was carried instructing the Parliamentary Committee to take energetic steps to obtain legislative prohibition against any but duly qualified and certified persons taking charge of steam-engines and boilers.

Mr. Birtwistle, of Accrington, moved a resolution in favour of the appointment of additional inspectors for factories and workshops, and representatives of the women's trade unions urged that women inspectors were as necessary as men inspectors.

The resolution was, after some discussion, carried in the following form:—

"It is with deep regret that this Congress learns that the Government have not yet seen fit to accede to their often-repeated request for the appointment of an additional number of practical women and men as factory and workshop inspectors. They, therefore, instruct the Parliamentary Committee to renew their exertions to point out to the Government the utter inability of the present staff to maintain a due observance of the law."

On Thursday, the 13th, the subject of extending the hours of polling at Parliamentary and municipal elections all over the United Kingdom was discussed, and a resolution agreed to.

In the evening, at the great Albert Hall, Nottingham, a large audience assembled, on the joint invitation of the Trades Guild of Learning,—a body associated with the Nottingham University College,—and the Local Trades Committee, to assist in the work of encouraging technical education. Mr. Samuel Morley, M.P.,

who presided, said that, as an employer, he was as deeply interested in the subject as any working man, for he considered technical education to be a subject of vital importance. He gratefully recognised the improved tone now prevailing generally between employers and employed. Proceeding to deal with the special object of the meeting, he said that technical education was the means by which the working classes of every English town could qualify themselves for every form of competition. The truth was that competition in manufactures was becoming a competition of intellect, and it was desired that the English workmen should be thorough masters of their trades. The competition from the Continent in the education of the workers was due to the munificent provision for technical education which foreign municipalities had made, and to the acceptance of that provision by the workers. If England was to maintain her position as a manufacturing country the workers must give attention to technical education.

Mr. Summers, M.P., moved a resolution in favour of the adoption of a comprehensive scheme of trade instruction.

Mr. Woodall, M.P., in seconding the motion, speaking as a Royal Commissioner, remarked that, though he would not say that the purely literary education had lessened the handicraft ability of the people of England, yet, looking at the great number of candidates for clerkships, and the increase of technical knowledge abroad, he could not but remind them of Mr. Gladstone's advice, that they should endeavour to elevate handicrafts in place of rushing into the supposed paradise of pen and ink. He also showed that poor districts abroad spent six times the amount spent in England in provision for primary education, which included early introduction to tools.

The motion was carried *nem. con.*, as was another proposed by Colonel Seely, M.P., seconded by Alderman Cropper, thanking the University College for the institution of a technical school, urging working-men to accept the instruction offered, and hoping that employers and trade unions throughout the country would co-operate to encourage such institutions.

On Friday, the 14th, the land question (the discussion of which was opened on the previous day) was before the Congress, on the following motion of Mr. Joseph Arch:—

"That, considering the large number of acres of waste land capable of cultivation, as well as large quantities not more than half cultivated, the Congress is of opinion that radical changes in our land system are immediately required, so that the land may be cultivated for the benefit of the entire community."

To this an amendment, or addition, as it was termed, was proposed by Mr. Rowland, the representative of the London cabdrivers, the addition declaring that "nationalisation" of the land, in favour of which the Congress declared itself last year, was the only means by which the evils connected with the land could be remedied. After considerable discussion, Mr. Rowland's amendment was negatived by 90 to 34.

Mr. Broadhurst, M.P., next brought before the Congress a letter which he had received from Paris, addressed to the Congress, and dated from "Le Comité National, Parti Ouvrier, Socialiste, Révolutionnaire, Français," Paris, August 26. It invited the presence of delegates from English trade unions at an international congress of representatives of workmen's organisations, to be held in Paris next month.

Mr. Broadhurst proceeded to say that, in reply to that communication he had written that the matter should be brought before the Congress, and had asked whether the 15th of October had been permanently fixed as the date of the conference. He had received an answer to the effect that any time between the 15th and 30th of October would be suitable.

After some discussion the matter was referred to the Parliamentary Committee to make the necessary inquiries, and, in case of their being satisfied, that they should recommend the trade unions to appoint delegates, and should themselves be empowered to appoint a deputation to attend the conference. In this shape the resolution was unanimously carried.

The subject of the "Recovery of Wages" was then brought before the Congress by Mr. Thomas Smyth, of London, who moved:—"That in the opinion of the Congress it is desirable that for the recovery of wages a work-

* See p. 366, ante.

man shall have a first lien on the work accomplished by him, and that the Parliamentary Committee take action to so amend the law that he may recover by distraint or otherwise."

Mr. Knight, of Birmingham, seconded the motion, and after a discussion, in which illustrations were given of the operation of the law as at present existing, the motion was adopted.

The places nominated for the next year's Congress were Aberdeen, Stoke-upon-Trent, Hull, and Birmingham. The Congress elected to go to the first-named place.

In the evening the members went to the Castle Museum, where the Mayor gave a *conversatione*.

The Congress was brought to a close on Saturday last.

THE CHURCH CONGRESS HALL, READING.

To meet the requirements of the forthcoming Church Congress (which is to be held in Reading on the 2nd, 3rd, 4th, and 5th of next month), the Building Committee have erected commodious temporary buildings in the Forbury, to supplement the accommodation afforded by the old and new town-halls. These temporary buildings, which are of great extent, have been erected by Mr. T. H. Kinglerle, builder, Banbury, from the plans and under the superintendence of Mr. F. W. Albury, of Reading, hon. architect to the Congress. The large hall will provide accommodation for 3,000 persons. Possession of the site was taken on the 4th of July, and the work was completed in nine weeks. No less than 13,000 cubic feet of timber, 50,000 superficial feet of inch boarding, 40,000 feet of match boarding, 23,000 feet of roofing felt, 4,000 feet of glass, 3½ tons of iron, and 2 tons of nails and bolts, have been used, the total weight of timber being about 400 tons, and forty workmen have been employed in the work, under Mr. Reed, foreman to the contractor. The hall will be lighted by means of a continuous circuit of pipes, having gas jets 9 in. apart, and equal to 5,000 candles, the supply being in duplicate from two large meters. Means of ventilation, and also special means for entrances and speedy exit, have been arranged.

The feeling is already being generally expressed (says the *Reading Mercury*) that it would be a pity to remove such large and convenient buildings, which are so substantially constructed that they would last for years, and could be utilised for many purposes,—indeed, a similar building will be necessary next year for the great Friendly Society's meetings,—the Oddfellows "A.M.C."—which will be held at Reading in 1884.

TAPESTRY AT THE NATIONAL EXHIBITION OF FINE ARTS AT PARIS.

A LARGE number of extremely interesting pieces of ancient tapestry are exhibited in the garden and on the external gallery of the upper floor, as well as the entrance vestibule of this exhibition. Before the Revolution of 1793 there were about 3,000 pieces of tapestry in the different royal palaces in France, the result of various purchases made by Francis I. and his successors, and the produce of the looms set up by Sully in the reign of Henry IV. In 1793 the Convention, who appear to have been unaware of the artistic value of these tapestries, sold them for an insignificant sum, with the exception of some 700 or 800 which were at Versailles and were overlooked. Under the Directory and the First Empire they continued to be neglected, but on the Restoration the Government of the day had them transferred to Paris, where they were used on the occasion of religious festivals and processions. Louis Philippe also employed them as decorations at certain official rejoicings.

It was not, however, until the accession of Louis Napoleon, that these tapestries became fashionable again. The emperor decorated all the Imperial palaces with them in succession, including Compiègne, Fontainebleau, Saint-Cloud, Pau, and the Tuileries. There they remained until the outbreak of the war with Germany, but on the approach of the Prussians they were removed from the country to Paris, and placed in the *Garde-Meuble*, or Royal Furniture Depot. The tapestries at the Tuileries were not removed, but were hidden in the cellars, where they were found in perfect preservation after the Com-

mune. The only things which were not destroyed in the conflagration of the palace were the wine and the tapestries belonging to the Crown.

The tapestries which were formerly in the palaces of Pau, Compiègne, and Fontainebleau have been restored to the positions they occupied before the war; the others, to the number of about 550, are still in the *Garde-Meuble*, and it is from among these last the specimens (most of which date from the seventeenth and eighteenth centuries) have been selected which are now on view at the National Exhibition.

Those which will most interest an Englishman are the tapestries numbered from 19 to 24, which were manufactured at Mortlake, at the factory established there by Charles I., from the cartoons representing scenes in the life of the Apostles, by Raffaele, portions of which cartoons are preserved at South Kensington.

A large number of these tapestries were executed at the royal factory at Gobelin, from the designs of Giulio Romano, Le Brun, Coypel, and others, which excite only a moderate degree of interest in the present day, although the drawing and manufacture are equally accurate in execution.

THE TEACHING OF DOMESTIC ECONOMY IN SCHOOLS.

THERE is, says Mr. Fitch, one of H.M. Inspectors of Schools, in his report on the East Lambeth Schools, "a little pathos and a slight *souçon* of absurdity in the written answers of poor little girls who come from the dingy and squalid alleys of Lock's Fields, and who tell me in their papers that 'a dwelling-house should be built on rising ground, with a southern aspect, and on a sandy soil.' On the whole, the answers to questions on clothing, health, and ventilation are generally much better, and more likely to be turned to useful account, than those on the properties and composition of food. These last consist, not infrequently, of mere verbiage, and cannot be made practically intelligible without more knowledge, not only of elementary chemistry and physiology, but also of the art of cookery, than can possibly be acquired by such young scholars."

Doubtless, as this extract shows, the difficulties of teaching "domestic economy" in schools are very great, chiefly on account of the largeness of the subject and the varying capacities and the limited opportunities of the scholars for giving practical effect to what they are taught. All the more necessary is it that the well-meant efforts of the School Boards should be supplemented by the voluntary help of ladies, clergymen, medical men, nurses, and others, who might in many localities combine together in a work of real philanthropy by holding meetings or classes for the dissemination of the first principles of sanitary science and domestic economy.

ST. CUTHBERT'S CHURCH, DARLINGTON.

A MARBLE monument has been erected in the south transept of this church, to the memory of the late Mr. R. H. Allan. The design is in the form of a canopied "altar-tomb," adapted to suit its position against a blank wall, built about 1375, to strengthen the building when the tower was raised. The monument is designed in the "Decorated" style of that period.

Two angel corbels support buttresses surmounted by elaborately-carved pinnacles at the angles, between which a richly-carved cornice carries the intermediate portion of the structure. Above this is the "altar-tomb," in the front of which very ornate tracery and canopies surround eight panels, which contain shields emblazoned with the numerous quarterings of Mr. Allan. Over this "altar-tomb" is a large panel of black marble, containing a long inscription, and it is surmounted by a very elaborately-carved ogee canopy, covered with crockets and finials, and having its spandrels filled with elegant foliage.

With the exception of the large panel of black marble, the whole of the monument is of the purest white statuary, and though only about 6 ft. by 8 ft., has cost 500l. It has been executed by Mr. Harry Hems, sculptor, of Exeter, from the design and working drawings of Mr. J. P. Pritchett, architect, of Darlington.

BUILDINGS FOR POOR-LAW ADMINISTRATION.

Holywell.—Considerable alterations are in course of being made at Holywell Workhouse, in order to enable the guardians more efficaciously to apply the "house test." For the purpose of appropriating additional space for the inmates, large vacant wards on the "cell" principle are being built, and a spacious chapel is to be erected on the lawn at the side of the workhouse. The plans of Mr. Douglas, architect, Chester, have been adopted, and the contract for the buildings has been let to Mr. T. W. Gibson, of Holywell.

Newington.—At the meeting of the St. Saviour's Guardians on the 13th inst., the clerk read a letter from Messrs. Jarvis & Son, architects, stating that, in accordance with instructions from the Guardians, they had made an estimate of the fair marketable value of the land and houses adjoining the Newington Infirmary, Waltham-common, which it was proposed to acquire in order to add to the present buildings. The estimated value of the land and houses was 17,962l. 1s, but Messrs. Jarvis added that if the property had to be acquired under the Lands Clauses Act, 10 per cent. would have to be added, and the total cost of acquiring the buildings would, therefore, probably be 19,758l., exclusive of law and other expenses. The letter was referred to the special committee appointed to consider the matter.

TESTS FOR BUILDERS IN PRUSSIA.

A STATISTICAL return has been published in the German technical press which deals with the results of the examination held between 1878 and 1883 in various cities for testing the capacity of persons for conducting building operations. In Berlin, Hanover, Aix-la-Chapelle, there have been, during the five years in question, 1,568 candidates examined, of whom 1,075 were approved, while 493 failed to arrive at the required standard.

IMPROVEMENTS IN LONDON WALL.

HOUSE and shop carpenters and joiners are just now very busy in London-wall. The footpath on the north side of that thoroughfare between Moorgate-street and Blomfield-street has been lowered to the extent of between 2 ft. and 3 ft., in connexion with the laying down of asphaltic pavement along the carriage-way. The lowering of the footpath has rendered necessary extensive alterations to the houses and shops along the line of route, upwards of 100 in number. In many cases the houses have been underpinned, and the basements carried to an increased depth corresponding with that to which the footpath has been lowered. New shop-fronts have likewise been placed in the various places of business along the road, carried to a greatly increased depth, and imparting a considerably improved appearance to the shop architecture of the locality, whilst it has at the same time greatly increased the value of the several properties in this business centre. The lowering of the footpath extends into Circus place, and also into a portion of Blomfield street, and at the corner of Circus-place it has involved the entire refronting of one of the houses from the foundations upwards.

ART-EXHIBITIONS IN THE PROVINCES.

Nottingham.—The third autumn exhibition of pictures in Nottingham, opened on the 8th inst., is spoken of by those who have seen it as in some respects in advance of previous exhibitions, the number of pictures being up to the average, while the general quality is higher than usual. When it is remembered that two of the largest provincial exhibitions are being held at the present time,—Liverpool and Manchester,—the fact of so many good works having been secured argues hard work on the part of Mr. Wallis and the Castle Museum Committee, for the two Lancashire cities have a reputation as selling exhibitions second only to the great London shows themselves. In all, there are about 450 pictures hung in the water-colour gallery.

Birmingham.—The exhibition of the Royal Birmingham Society of Artists, now open at the Society's rooms in New-street, while con-

taining a great many meritorious pictures by local artists, includes several noteworthy pictures from recent Academy and other exhibitions. Among these may be mentioned the "Phryne at Eleusis," by Sir Frederick Leighton; Mr. Alma Tadema's "Oleander," from this year's Academy exhibition; Mr. Millais's portrait of Mr. Hook, R.A.; Mr. Frank Dicksee's "Harmony," which was bought by the Royal Academy with the Chantrey bequest; Mr. Albert Moore's "Dreamers"; the "Spanish Letter-writer" of Mr. Burgess; Mr. Logsdail's picture of the Piazza of St. Mark's, Venice; the study of "Clytemnestra," by Mr. John Collier; Mr. Brett's sketch of sunlit sea and rocks, entitled the "Welsh Dragons"; Mr. Frank Topham's scene from Florentine history, "A Messenger of Good Tidings"; and the "Love Birds" of Mr. Sant. Altogether some twenty members or associates of the Academy are represented on the walls.

"COAL-YARD."

SIR,—Having been rusticated for a short holiday I did not see the issue of September 1st, in which your contributor replied to mine re Coal-yard, until returning to the great town of smoke and wealth. I certainly cannot accept map-makers as authorities for correctly naming places, as my experience is that they are extremely faulty in that respect. I could give several instances of this. The fact of Roques's naming an approach to Coal-yard without the prefix, and the yard itself with it, is slightly in my favour, showing that no established rule had been laid down regarding it. Smart's Buildings may have been called "Cole-yard" in 1736; but forty years after that date I have an account of an execution of three persons taking place at the north end of the buildings for a murder and robbery in them. But that is of little moment. The question is: Was this place ever used as a store for coals? If so, the *The* can be understood. No one seems to know anything about it. One of the inhabitants that I questioned some time since has a legendary notion that a Lord Cole had a residence here in a house superior to its surroundings, of about Charles II. or William III.'s time, demolished for the purpose of the School Board, and of which I have preserved a pen-and-ink sketch. Parton does not mention any such titled resident in his History, so the name remains as obscure as it is old. I acknowledge that the parish books lean to your contributor's view, as the following extracts show:

1548. Pd. the Coroner his fee for viewing one Farmer's child in the Coal-yard, drowned in a tub of water..... 6 8

And during the Civil War:—

— Recd. from Isabel Johnson, at ye Coal-yard, for drinking on the Sabbath..... 7 0

But then "the" is generally prefixed to Seven Dials by persons when speaking of it, both near and at a distance (locally abbreviated to "The Dials"), the same as it is to Broadway, Westminster.

F. A. CHART.

PLUMBERS.

SIR,—I notice the Turners' Company are offering substantial prizes for competition in the various branches of the trade they represent. My venture, as a working plumber, to suggest to you the benefit our trade would receive if a similar undertaking could be promoted by the Plumbers' Company? I think it would at once become popular, and would prove as successful as others of the kind. Our craft sadly needs the encouragement an exhibition would give, and I am confident there would be no lack of competition amongst the journeymen of London, the majority of whom would be glad to do something towards removing the unfavourable impression the plumber generally creates wherever he goes. J. R. FAOST.

PLANS OF GAOLS.

IN the report of H.M. Canadian Inspector of Prisons, the reporter, speaking of Goderich Gaol, says:—"The most serious defect is what was at one time looked upon as structural perfection, namely, the radiation of the wards from a common centre. The principle is faulty and exceedingly insecure, inasmuch as it affords such a number of rooms, nooks, angles and yards, where plotting and scheming amongst the prisoners can be carried on with much greater impunity, and to a larger extent, than in a gaol constructed on modern principles, where skulking places are reduced to a minimum."

The Crystal Palace.—The directors have completed arrangements for holding an International Exhibition of Arts, Manufactures, Science, and Industry, during 1884. It is intended that the exhibition shall be opened on April 3, and close at the end of October, 1884.

THE NEW TOWN-HALL, VIENNA.

ON the 12th inst., the second day of the bi-centenary festival in celebration of the relief of Vienna from the besieging Turkish army by John Sobieski, king of Poland, the ceremony of laying the finishing stone of the new Vienna Town-hall was performed by the Emperor Francis Joseph, who ten years ago laid the foundation stone of the building, which has now grown into the most magnificent of all the palaces on the Ringstrasse. It stands facing the new Burg Theatre, between the new Parliament House and the new University buildings. It is rectangular in form, and covers an area of 18,700 square metres, with a frontage of 152 metres in the Ringstrasse. The principal tower is 100 metres high, being only fourteen less than St. Stephen's Tower; and the four smaller ones are 61 metres each. The whole building has cost 14,000,000 florins. In his plans the architect, Herr Friedrich Schmidt, has endeavoured to combine the Gothic style with the Renaissance, but the former prevails.

A general view of the buildings appeared in the *Builder* volume (xxxv.) for 1877, p. 980; and more recently we gave another and larger view, with portions of the interior (vol. xli. (1881), p. 516).

Books.

The Guild Merchant of Preston, 1882. By WILLIAM POLLARD. Preston: H. Oakley.

PRESTON is the only town in the United Kingdom which can boast of the periodical observance of a ceremony which was at one time universally observed, and, even at Preston, little is left of its Ancient Guild but the name and an occasional bout of miscellaneous revelry. The Guild dates from 1328, and, in the earlier portion of its existence held, at uncertain intervals, meetings half religious, half mercantile, on a large scale, one feature of which was a vast trades' procession, with their emblems and banners, religious and secular. Since the year 1500 these meetings have been held with scrupulous regularity every twentieth year, that celebrated in 1882 being the twenty-fourth of the series. It says much for the good old Lancashire town and for the Lancashire constitution that in one parish there were to be found last year no fewer than twelve persons who had each witnessed five of these celebrations. It is customary to make the meeting the occasion of inaugurating some work of public utility, and at the last the foundation stone of the Harris Free Library and Museum was laid with extraordinary éclat. The good people of Preston were disappointed of the presence of the Prince and Princess of Wales, and their substitutes, the Duke and Duchess of Albany, were prevented from filling their places. At the last moment the Duke of Cambridge, at the Queen's personal request, did the honours, and all went merrily as a marriage-bell.

The book before us is apparently for the most part a compilation from newspaper reports of the week's doings (our own pages having been laid under contribution for an architectural description of the new library), and it will in future years have an antiquarian interest, preserving, as it does, a more than usually copious, and no doubt quite faithful record of a pageant which must in the natural course of things dwindle and die. What the Dryasdust of the future who peruses the mayor's *menu* will make of the "Ochelos" and "Desdemonas" amongst the dessert we cannot pretend to say: they are mysteries to us. There is an odd misquotation of Macaulay at p. 127. The book is avowedly a "descriptive narrative," and nothing more, and as such it well fulfils the promise of its title-page.

Professional Papers of the Corps of Royal Engineers. Edited by Major VETCH, R.E. Vol. viii. 1882. London: Stanford.

THIS volume comprises eleven papers on varied subjects, and has something for every taste. The editor calls special attention to Col. Maquay's contribution on Field Railways, which brings within a narrow compass the lessons learned in our recent "little wars." Captain Abney's name is a guarantee for the excellence of his paper on the Organic Compounds of the Sun, and the interest attaching to Captain Browne's description of the bridges constructed over the Kabul river is not limited to military readers.

But Captain Clarke's paper on Provisional Fortification has perhaps the widest claims to notice. It is a continuation of a paper by the same author contributed to vol. iii. of the series, and was inspired by a lecture delivered to Engineer officers at Berlin by Captain Von Wittenburg, who found his theme in the remarkable defence of Plevna in the late Russo-Turkish war.

Military architecture is a thing of the past; it has ceased to be, and one field in which the architect has won some of his greatest triumphs is henceforth closed to him. The mason disappears before the navy, and in "the whirligig of time" the spade once more asserts its old supremacy. The modern breechloading rifle has altered the whole course of defensive warfare, and the deadly nature of its fire has in respect to works of defence "diminished the importance of their trace and even of the necessity for the provision of flanking fire." It is probable that the engineer's object henceforth will be to delay an attacking force on the glacis of a fort under a murderous fire from its parapets rather than to secure it against capture, by the interposition of vertical scarps and ditches enfiladed by musketry, and on this assumption the plans for provisional forts which illustrate Captain Clarke's paper, based upon German models, have been framed. The gist of his paper is that such "type-plans" should be thought out to their minutest detail in times of peace, so that they may be constructed without hitch, and at great speed, in times of emergency. Two months he estimates as the extreme time required for the construction of such a work to accommodate a garrison of 300 defenders. The relief is low, some 7 ft. or 8 ft., and the parapets thin, not more than 20 ft. The front faces are flanked by a Caponier at the salient, but the flanks are only "more or less defended" by direct fire from the parapets. In place of the escarp there is a slope or sort of inner glacis, which is swept by the fire from the crest; the ordinary terreplein is narrowed, and in its rear, in place of the bomb-proof casemates of customary plan, is a gun slope or bank to facilitate the interchange of guns and the removal of those which may become disabled.

Cover for the garrison is provided by timber blindages in earthen traverses running right and left across the interior of the work, and the magazine, shell stores, &c., are similarly accommodated. The parade so occupied is no longer an open space, and the whole area of the fort is filled with accessories. The traverses on the line of parapet are to be kept down to the crest level in order that no indications as to the dispositions of the work may be afforded to the enemy and the whole is deflated by a principal traverse dividing the work on the capital. Such a work is intended for the strong independent positions in rear of an army, to secure its communications, or to protract the resistance of a discomfited and overmatched force, and as so designed and equipped could only be taken, the author thinks,—if taken at all,—at a very heavy sacrifice of life.

The figured dimensions to the plates are in metres, while the scales drawn on them are scales of feet. These scales are not always accurately figured, and hence difficulties arise in reading the plans. The paper closes with a reference to the advantages and disadvantages of works with circular and elliptical traces and some practical suggestions for an "Aide Mémoire" which should "presuppose an engineering education," and instead of consisting of crowds of figures and dimensions, should contain "type-drawings," exhibiting the principles which should control the design and construction of provisional forts, drawings which should bear upon the face of them the necessary written instructions for carrying out the work.

Captain Clarke's paper shows how keenly every move in the great game of war is watched, and what a number of highly-trained intellects are enlisted in the arts of destruction and their antidotes.

VARIORUM.

"Water Supply," by Wm. Ripley Nichols (New York: Wiley & Sons. London: Tribner). Such is the title given to amplified reprints of lectures delivered at the Massachusetts Institute of Technology, and they deal with the subject from a chemical and sanitary standpoint. The chapter on drinking-water and disease is not only full, but candid, and by no means shirks the difficulties which lie in the way of connecting the two. The work is illustrated,

and the subject is one in which all are interested,—in the chapter on household filtration of water (e.g.) if in nothing else.—“Riveted Girders and Curved Roofs,” by Thos. Timmins (published by the Author, King’s-road, Peckham). The object of the writer is to determine by diagrams the strains in iron structures, excluding all algebraic and other calculations. The present volume is one of a series, and deals not only with the design of iron structures, but has much useful information on the qualities of iron adapted for various uses, on the sizes obtainable most readily, and on the mechanical processes, such as punching, drilling, &c., to which it is subjected. The plates are, of course, “of the essence” of the work, and they are full and clear, while tables of weights and safe loads complete a useful book.—“Professional Papers—Indian Engineering,” edited by Lieut.-Col. Brandreth, R.E. (Roorkee: Engineering Coll. Press). These papers, published quarterly, deal with the same class of subjects as their English counterpart, adapted to Indian experience. Architects will find the greatest interest in the paper on the Mayo School of Art at Lahore, designed and constructed by Rai Bahadur Kunkya Lall, M.I.C.E. This building is sensibly illustrated by plans, elevations, and sections on a good scale, and is highly creditable to its author. The design is based on local traditional styles, and the construction exhibits some familiarity with modern methods. In a short specification which accompanies it there are a few points which read oddly. The brickwork, for instance, is to be “in English bond, without chipping in first-class mortar,” and under the heading of painting and glazing there is this,—only this,—“All visible woodwork of roof, doors, and windows is varnished with two coats of varnish. The ends of timbers are coated with coal-tar to preserve them from white ants” *voilà tout*. Editing is sometimes a process of uncertain execution; and when well done involves more trouble than some persons are aware of.—*L’Art*, July and August (Remington, Bond-street). As usual the etchings are the most attractive part of this publication. The woodcuts are not of very high quality, and the matter is cut up into short lengths, too short for serious use. In an article on the English water-colour school but bare justice is done to the qualities which distinguish it,—and although a drawing, and a very good one—of Mr. Robson’s Galleries in Piccadilly graces the work, no notice of the building is forthcoming. The get-up of the periodical is everything that could be wished.—Cassell’s *Saturday Journal* appears to be designed on something like parallel lines to those on which the *Family Paper* was founded, making due allowance for the enormous development in popular taste which has been effected during the last twenty-five years. There will be an abundance of fiction and amusement in its pages, as well as entertainment of more substantial kind, and as it will not be illustrated, all the available space will be filled to the advantage of its readers. Being a weekly, moreover, correspondents and others will be brought in closer contact than if separated by a wider interval of publication. Messrs. Cassell have, in so many directions, shown themselves to be accurate judges of popular taste, that a weekly journal of this kind coming from them is almost certain to command success.

Miscellaneous.

Birmingham Architectural Association. On Saturday last this Association took an archaeological ramble to Clent and the neighbouring heights, the scene of the great stand made against the Romans by the Britons, who were led to the field by Caractacus. Later history tells us that Kinvor and Wichbury, adjacent places, were outposts of Henry IV., when, in 1405, he pursued Owen Glendower. During the afternoon the Church of St. Clement, at Clent, was visited, and also the ancient chapel dedicated to the murdered infant King Knelm. After dining together at Hagley the members returned by train to Birmingham.

Commercial Enterprise.—Messrs. G. B. Kent & Sons are announcing to the trade that one of their firm is about to go round the world with samples of their brushes. Mr. Harold Kent will start early in November for the Calcutta Exhibition, thence to Australia, New Zealand, China, Japan, United States, and Canada.

The Restoration of Peterborough Cathedral.—A correspondent writes:—The actual restoration of the condemned parts of the cathedral has just been commenced, in the shape of the laying of the foundations of the two eastern piers. When these eastern piers were demolished it was discovered that they had been standing on no foundation whatever beyond the common surface, composed chiefly of loose rubble. While the excavations to allow of proper foundations for the new piers have been going on, the Dean and Chapter, two architects, and the contractor, have satisfied themselves that the western piers have not been built in the same unsubstantial manner, but though they have not shown signs of giving way as the eastern piers did, their capacity for supporting a higher and weightier tower is doubtful. The removal of about 8 in. of the common surface at the base of these standing piers revealed the startling fact which the demolition of the corresponding piers brought to light, namely, that they are void of foundation. Only the restoration of the eastern piers was included in the contract, therefore it is seen that if the western piers must be replaced, it will be at a considerable additional outlay. Within the past few days the work of laying the foundation has progressed. The strata of rock having been arrived at, it is washed, and 6 ft. 3 in. of barrow concrete laid on. Upon this come three courses of Peterborough stone, and then the actual piers, which, at every fifth course, have “through-bonders” to insure stability.

The Woes of “House Hunters.”—We are being poured forth in the correspondence columns of the *Daily News*. In the course of the discussion “A Suburban House Agent” has written to say that “There never was a time when houses to let were so superabundant as they are now.” “This,” says another correspondent (“J. T. B.”), “unfortunately, is quite true, but what does it prove? Does it prove that they are houses well built, with convenient rooms, sound roofs, concrete foundations, good drainage, water secured from the frost, and with a respectably-sized garden attached, at a reasonable rent, say 50l. or 60l. per annum?” The writer adds, “I would suggest that the first step to stop the erection of further shameful fabrics that now desecrate the fairest parts of suburban London should be to impose a licence fee upon all builders, so as to test their substantiality and sincerity; the second, the appointing of a practical and experienced staff of Government inspectors to see that proper materials are used, and houses not scamped in structural requirements.”

Fire in Holyrood Palace.—Shortly after eleven o’clock on Saturday night a sentinel on duty in the gardens of Holyrood Palace, Edinburgh, had his attention attracted to a refection of fire from one of the cellars at the south-west corner of the building. On the alarm being given it was found that several bags of shavings stored in the cellar had caught fire, and the flames were extinguished with little difficulty. The portion of the building in which the fire broke out was that which is occupied by Royalty on visiting Edinburgh, and the cellar was under the Throne Room. Inquiries which have been made as to the cause of the fire lead to the conclusion that it was the result of an accident. The fire brigade was called out, and the flames were extinguished before any further damage was caused than the destruction of the shavings. Who is responsible for the storage of shavings in a building of such historical interest?

Institution of Civil Engineers.—It is announced that the number of members of the Institution on the 20th of August last was as follows:—

Honorary Members.....	20
Members.....	1,370
Associate-Members.....	1,713
Associates.....	520
Students.....	765
Total.....	4,388

Architecture, University College.—Professor Roger Smith will give his usual public introductory lecture on resuming his courses of Architecture, Construction, and Modern Practice, at University College, London, on Wednesday, October 3rd. The subject will be “The Column as an Element of Construction and Design.” The lecture will be given at the College, Gower-street, at six p.m., and admission to it will be free. The classes commence the following Monday.

A Hint to Turnstile Makers.—There has been some correspondence in the papers as to the size of the turnstiles at the Fisheries Exhibition at South Kensington. “A Stout Lady” having written to complain that she had difficulty in getting through, “Another Stout Lady” writes:—“The complaint of ‘A Stout Lady’ is one which will stir thousands of minds. Though I have never been actually ‘stuck’ in a turnstile, I never pass through one without much discomfort. The reason is that the regulation of all such matters is in the hands of men, and in designing turnstiles men naturally adapt them to the dimensions of their own sex. Men carry the bulky portion of their bodies at a higher level than women. A man of ordinary figure is widest about the shoulders, whilst a woman of ordinary figure is widest about the hips; consequently the turnstile which will let a man through easily will just catch a woman inconveniently. Even a stout man will pass easily through a stile which obstructs a much smaller woman, because the greater length of his legs lifts his bulk above the narrow part of the stile.” There should be no difficulty in redressing this, the latest-discovered of “woman’s wrongs.”

The North Wales College.—The constitution of the College for North Wales, which is to be founded at Bangor, having been approved by the Education Department, arrangements are actively progressing for its opening in January, in order to secure the annual grant of 4,000l. which has been promised by the Government. Temporary premises will be acquired, and possibly the Masonic Hall, a commodious building recently erected by Major Platt, will be utilised. Nothing definite is arranged as to the site, but it is understood that Lord Penrhyn, who has from the outset evinced an active interest in the movement, and to whom will probably be offered the presidency of the college, will afford every facility to the executive committee. About 30,000l. has been promised in subscriptions towards the building fund, the Duke of Westminster, Lord Penrhyn, Mr. W. Rathbone, M.P., Mr. Richard Davies, M.P., Mr. Hudson, and Mr. John Roberts, M.P., being severally donors of 1,000l. In Montgomeryshire and Merionethshire public meetings are being held in furtherance of an agitation to secure a grant of 4,000l. for the University College of Wales and Aberystwith.

A Memorial is to be erected in Coventry Cemetery over the remains of the late James Starley, the inventor of the bicycle and tricycle. The competition was open, and sixty-five drawings were sent in. The one submitted by Messrs. J. Whitehead & Sons, sculptors, of Rochester-row, Westminster, London, was selected by the committee and family. It takes the form of a pedestal surmounted by a figure. In the centre is a portrait medallion in bas-relief of the deceased. The memorial will be composed chiefly of granite and Sicilian marble, and will, when completed, stand 20 ft. high.

Improved Middle Class Dwellings.—By reference to our advertising columns (p. xxix.) it will be found that the trustees of St. Mary-le-Strand Estate, situate in the Old Kent-road, are prepared to receive offers for a portion of their estate upon which to erect fifteen blocks of Improved Middle Class Dwellings, each containing ten suites of apartments. Mr. Albert Vickers, of No. 151, Strand, is the architect. At the request of the Charity Commissioners these dwellings are designed so as to meet the requirements of clerks and others of a similar class.

Medals.—At the fifty-first annual exhibition of the Royal Cornwall Polytechnic Society, at Falmouth, on Tuesday, Mr. Harry Hens, ecclesiastical sculptor, of Exeter, was awarded the silver medal for his life-size group, in English alabaster, of “Christ and the Child.” The *Plymouth Mercury* comments very favourably upon the work.

Sudden Death of an Architect.—Intelligence has reached us of the sudden death of Mr. James Allsop, a Worcester architect, lately residing in Birmingham, who was discovered lying dead on a seat in Hagley Park. He had just previously been visiting his wife’s grave in Hagley churchyard. Death is believed to be due to natural causes.

Surveyorship, Market Harborough.—There were eighty-four applications for this appointment. The gentleman appointed is Mr. F. D. Clark, of Chesterfield, engineer and surveyor to the Newbold and Dunston Local Board.

Fire at Cortachy Castle.—Cortachy Castle, the seat of the Earl of Airlie, but temporarily in the occupation of the Earl and Countess of Dudley, was on the night of the 14th inst. discovered to be on fire, and before the flames could be subdued they had reduced the whole of the new portion of the building to ruins. Of the rooms destroyed the oak room was regarded as the most valuable. It was a mass of elaborate carving in oak, and contained a quaint bedstead of oak, richly carved and gilded,—a piece of furniture very highly valued by the Airlie family. The chapel has also been totally destroyed, along two very fine rooms above it. On the other hand, the dining-room has been to a large extent saved, and its fine ceiling remains almost intact. Another valuable room which has been saved from extensive injury is the library; the books were saved. The main staircase, which was the feature of this portion of the castle, though considerably damaged, may be said to have been saved, and a room known as the King's room is likewise comparatively uninjured. As to the origin of the fire, it appears that the fire leading from the kitchen runs up the wall between the old and the new building. Whether it had been in fire is not precisely known, but the fire was discovered near the mouth of this chimney. It is supposed that some burning soot had fallen from it down a channel in the roof, and, after having accumulated, set fire to some woodwork in the roof of the room in which the fire was first observed. It is stated, however, that there was no room in this part of the building in which a fire had been lighted for a considerable time. The servants, on discovering the presence of the fire, forced open a door behind which it was burning. One of them seized the rope of the alarm-bell, which immediately snapped. He scrambled up through a window and got at the bell, with which he sounded an alarm. The castle had a complete water system for use in case of fire supplied from a cistern erected at Dykehead, a rising ground beyond. The printed regulations for the manipulation of this apparatus were exposed on the walls, but none of Lord Dudley's servants, it seems, made themselves acquainted with their details. The fire was thus allowed, comparatively unchecked, to travel along the roof of the building. The old castle has narrowly escaped destruction.

Basinstoke Archaeological Society.—On the 13th inst. the members of this society visited the old historical mansion, "The Vyne," by the kind permission of Mr. and Mrs. C. W. Chute, who conducted them over the house. Mr. Chute giving much interesting information as they proceeded from room to room. Among the objects inspected were some pieces of sculpture in the long West Gallery, while in the Lower Gallery, formerly used as the "Orangery," were seen numerous plaster busts brought from Italy by Horace Walpole. Passing into what was called the Strawberry Hill Room, a number of paintings, chiefly hunting scenes, were looked at, also the tapestry hangings which were brought from Italy by John Chute, an ancestor of the present family. In a mausoleum adjoining the chapel is a marble monument adorned by a recumbent figure, the work of Banks, R.A., of the date 1760, and on one side is the following inscription:—"To the memory of Chaloner Chute, a lawyer of the first practice, who became the purchaser of the Vyne in 1653, the seat of Lord Sandys, built in the reign of Henry VIII. He was Speaker of the House of Commons in the Parliament of Richard Cromwell, 1659."

Infringement of Sanitary By-Laws at Hornsey.—At the Highgate Police Court last week Mr. Thomas Prior, a builder, was summoned for infringing By-law 97 of the Hornsey Local Board by allowing two houses built by him at Wightman's road, Turnpike lane, Hornsey, to be occupied without having given notice to the surveyor of their completion. Mr. R. C. C. White, Clerk to the Board, informed the magistrates that when these dwellings were inspected by the sanitary inspector he found them both occupied, and no water was laid on in either, besides which the sanitary arrangements were incomplete. The defendant was fined 40s. and 6s. 6d. costs.

Artisans' Dwellings for Liverpool.—At a special meeting of the City Council, on Tuesday last, the tender of Messrs. Hughes & Stirling, of Bootle and Liverpool, was accepted for erecting thirteen blocks of five-story buildings, forming 272 tenements, the contract sum being 53,722l.

TENDERS.

For sundry repairs to the vacant and other houses of the Licensed Victuallers' Asylum, Old Kent-road. Mr. W. F. Potts, architect.—

J. Bull, Westminster	£173 0 0
T. Taylor, De Beauvoir Town	169 0 0
E. Perkins, Gt. Fitchfield-street	133 0 0
E. T. Dwyer, King's Cross-road	143 0 0
B. Cook, Stonecutter-street	133 15 0
W. Whyte, Dalston (accepted)	132 6 0
C. Deering & Son, Islington	130 0 0
W. Walls, Paddington	125 0 0
F. Davies, Peckham	117 8 0

For new buildings at Odama's Wharf, Victoria Docks, for the Nitro-Phosphate, &c., Manures Company. Mr. John Slater, architect.—

General Builder's Work.

G. S. S. Williams & Son	£3,570 0 0
Grover	3,580 0 0
Holland	3,601 0 0
Sharpe (withdrawn)	2,470 0 0

Wrought-Iron Girders.

Patent Shaft and Axletree Company	£1,451 5 0
Butterley Iron Company, Alfreton	1,330 0 0

Cut-Iron Columns.

Stanton Ironworks Company, near Nottingham	£777 0 0
Clay Cross Iron Company, Clay Cross	698 0 0

For new Pastegering chamber at the Austro-Bavarian Lager Beer Brewery, Tottenham. Mr. John Slater, architect.—

Sharpe, Bow	£348 0 0
Reed, Walthamstow	342 0 0

For sundry works at St. James's Rectory, Piccadilly. Mr. Gordon M. Hills, architect:—

J. Jarvis & Sons (accepted).

For sundry works at No. 6, Cow Cross-street:—

J. Jarvis & Sons (accepted).

For sundry alterations, and new shop-front, at No. 100, Hoxton, for Mr. T. Pearce:—

J. Jarvis & Sons (accepted).

For erecting a new farmhouse and buildings at Fleet, Lincolnshire, for Mr. W. Christie, M.P. Mr. W. Mills, architect.—

Davison	£517 0 0
Gilder	537 0 0
Levesley	500 0 0
J. Moore, jun. (accepted)	485 0 0

For alterations and additions to Severn Valley Carpet Works, Stourport, Kidderminster, for Mr. J. B. Worth. Mr. John Moscop, architect, Kidderminster. Quantities by Mr. Geo. Kenwick:—

Allow for Old Materials.

J. Binns & Son, Kidderminster	£2,650 0 0
R. J. Thompson, Kidderminster	1,884 10 0
J. Howard & Sons, Kidderminster	1,700 0 0
T. Vale, Stourport (accepted)	1,683 0 0

For the construction of certain drainage works at Southminster, Essex, for the Rural Sanitary Authority of the Maldon Union, consisting of about 1,649 ft. of 9 in. and 6 in. stoneware pipe drains, together with manholes, ventilators, straining-tank, and other works in connection therewith. Quantities supplied by the surveyor, Mr. Alfred B. Brady:—

J. Newman, Maldon	£165 0 0
R. C. Frim, Hersham	149 0 0
H. Gozzett, Woodham Walter	145 0 0
J. W. Beeton, Hunstanton St.	137 17 6
J. W. & J. Neave, Stratford (accepted)	137 10 0

For the construction of works of main sewerage at Burnham, Essex, consisting of about 4,728 yards of 15 in., 12 in., 9 in., and 6 in. stoneware pipe sewers and drains, together with manholes, lamp-holes, ventilators, flushing-tanks, gullies, settling and filter tanks, and other works in connection therewith, for the Rural Sanitary Authority of the Maldon Union, Essex. Quantities supplied by the surveyor, Mr. Alfred B. Brady:—

C. Read, Burnham	£2,798 0 0
J. Newman, Maldon	2,554 10 0
H. Gozzett, Woodham Walter	2,575 12 8
Cook, Bennett, & Thew, Lowestoft	2,510 0 0
J. W. Beeton, Hunstanton St.	2,495 10 0
S. Redhouse, Baldock	2,386 0 0
H. Bingham, Redcross	2,319 11 4
J. W. & J. Neave, Stratford	2,279 0 0
F. H. Colepeper, New Cross	2,207 15 0
W. Wood, Chelmsford	2,189 0 0
R. C. Frim, Hersham	2,197 0 0
G. Smit, Newmarket-on-Tyne	2,175 0 0
A. J. Catley, London	2,160 0 0
J. Cardus, Acton	2,124 0 0
G. G. Rayner, Bootle	2,115 0 0
Woodham & Fry, Greenwich	2,097 0 0
A. Matthews, Dover	2,076 9 11
R. Nicholson, Southend	2,072 0 0
W. Armstrong, Chiswick	2,050 0 0
J. W. Steward, Southend (accepted)	2,009 7 2
G. Cowdery & Sons, Newent	1,991 15 10

For the erection of thirteen blocks of five-story artisans' dwellings, Liverpool, containing 272 tenements. Mr. Clement Dunscombe, M.A., city engineer of Liverpool, architect. Quantities supplied by the architect:—

Hughes & Stirling, Liverpool (accepted)... £53,722

For paving the carriage-way, Commercial Dock-road, Rotherhithe, for the Rotherhithe Vestry. Mr. Edward Thomas, surveyor. Quantities supplied:—

Mowlem & Co.	£1,871 0 0
Carey	1,854 18 0
Turner & Sons	1,780 0 0
W. Etheridge	1,775 0 0

For erecting a gardener's cottage at Morden Hall, Morden, Surrey, for Mr. Gilliat Hatfield. Mr. R. M. Chart, surveyor.—

G. Howard, Mitcham	£289 0 0
H. Knight, Morden	250 0 0
T. Lawrence, Mitcham (accepted)	235 0 0

For sewerage works, York Town and Camberley, Surrey.

Contract No. 1. Mr. James Lemon, C.E.:—

Cooke & Co., Battersea	£4,350 0 0
Nicholls, Wood-green	3,999 0 0
Geo. Smith, Newcastle	3,923 3 7
R. & W. Iles, Wimbledon	3,750 0 0
Botterill, Reading	3,675 0 0
G. Kemp, Aldershot	3,457 0 0
Stevenson, Chesterfield	3,431 0 0
Bingham, Ashford	3,369 0 0
H. J. Sanders, Southampton	3,190 0 0
Whitman, Weymouth	3,069 0 0
Martin & Wells, Aldershot	3,027 0 0
S. & E. Collier, Reading	2,760 0 0
Crook & Smith, Southampton	2,745 0 0
R. C. Trimm, Walton-on-Thames	2,678 0 0

For making up new roads (carriageways only) for the Hornsey Local Board. Mr. Thomas de Courcy Meade, surveyor:—

Name of Road.	F. A. Jackson & Son.	Waddingham.	Dunmore.	Pizey.	McKenzie, Williams, & Co.
Lothair-road, N.	£. s. d. 383 4 0	£. s. d. 414 10 3	£. s. d. 376 2 3	£. s. d. 406 3 4	£. s. d. 389 3 6
Lothair-road, S.	324 3 8	508 0 0	539 6 50	3 6 581	3 6 581
Lynton-road	277 3 6	288 0 0	289 15 270	16 4 253	16 4 253
Cornwall-road	427 6 0	427 0 0	433 4 19	19 0 417	19 0 417
Topsheld-road	227 7 0	255 0 0	235 0 223	16 3 222	16 3 222
Connaught-road	480 16 0	535 8 10	515 0 517	12 9 541	12 9 541
Venella-road	200 0 0	234 12 8	235 0 237	1 2 210	1 2 210
Tancred-road	188 0 0	200 10 9	197 0 192	7 0 204	7 0 204
Coningsby-road	155 13 0	175 0 0	165 0 163	4 3 160	4 3 160

* Accepted.

For erecting coach-house and stabling at Clissold-road, Stoke Newington, for Mr. H. J. Aldred. Mr. H. E. King, architect. Quantities by Messrs. King & Sanders:—

Devereux	£2398 0 0
Palmer & Sons	345 0 0
Watson	322 0 0
J. & H. Cocks	312 0 0
Jackson & Todd	270 0 0
Brightwell	185 0 0

For alterations at the Carnarvon Castle Hotel and Railway Refreshment-bar, Hampton Court, for Mr. T. E. Dunn. Mr. H. I. Newton, architect, 27, Great George-street.—

Stirling	£2288 0 0
Walker (accepted)	262 11 0
Whitely & Sons	252 0 0
Mora & Sons	187 11 10

Peunter's Work.—Heath (accepted).

Gassitts.—Winn (accepted).

For rebuilding the Horse and Groom public-house, Westminster Bridge-road, for Mr. J. T. Sewell. Mr. H. I. Newton, architect:—

Beale (accepted)	£2,127 0 0
------------------	------------

For kerbing and making up Simpson's-road, for the Bromley Local Board. Mr. Hugh S. Creggan, surveyor:—

Davis & Attwood	£235 10 0
K. Pull & Sons	247 0 0
S. Lansbury (accepted)	227 0 0

For the supply of road materials to the Bromley Local Board:—

Guernsey Granite.

John Mowlem & Co. (accepted).

Kentish Ragstone.

W. H. Bensted & Sons (accepted).

Surface Flints.

Thos. Wood (accepted).

A. & E. Bath (accepted).

E. Pull & Sons (accepted).

For the erection of two houses, South Parade, Skegness. Mr. B. Douglas Hoyland, architect, 15, Maze-hill, Greenwich:—

G. Dunkley, Skegness	£1,088 0 0
J. Holmes, Wainfleet	1,026 0 0
J. Cravshaw, Skegness	943 0 0

For erecting mills at Whitechapel, for Messrs. Wallis & Drysdale, under the superintendence of Messrs. Parbrother, Ellis, Clark, & Co.:—

S. J. Scott (accepted).

For the erection of new warehouse, West Ferry-road, Millwall, for Messrs. Bullivant. Mr. G. Vigers, architect:—

Salk	£2,974 14 9
Newall	2,777 0 0
Colls & Son	2,768 0 0
Slimson & Co.	2,709 0 0
Lime	2,650 0 0
D. D. & A. Brown	2,603 0 0

For the erection of two dwelling-houses at Halliwell, for Mr. Edmund Brown. Mr. M. Robinson, 10, Acrefield, Bolton, architect:—

Dougill, Bolton	£454 7 8
Magnias, Bolton	453 0 0
Debie & Sons, Bolton	417 0 0
Roberts, Bolton (accepted)	414 14 11

For alterations in sanitary arrangements at the Royal Surrey County Hospital, Guildford. Mr. William George Lower, architect:—

J. Woodman, London	£425 0 0
A. Frank, Guildford	354 0 0
W. Smith & Sons, Guildford	331 0 0
G. Crapper, Chelsea	289 0 0
J. B. Woods, Clapham Junction	285 0 0
A. Higlett, Guildford	281 0 0
Edmond & Sons, Guildford	285 0 0
J. Smeaton, Ludgate-circus, London	227 10 0
Burman & Sons, Enfield	217 0 0
J. Knight, Westminster	207 0 0

For roadway bridge across the River Ouse, at Bedford, with north and south approaches. Mr. John J. Webster, engineer, Stephenson-chambers, Lord-street, Liverpool.

Contract No. 1.—*Masonry, Brickwork, Earthwork, &c.*

W. J. Botterell, London	£6,993 0 0
H. Young & Co., Pimlico	5,629 0 0
Maynard & Cooke, Westminster	5,550 0 0
G. Moss, Liverpool	5,64 0 0
G. Griffiths, Gloucester	5,018 8 0
T. Smart, Nottingham	4,980 0 0
B. Cooke & Co., Battersea	4,840 0 0
S. & M. Pattinson, Rushington	4,217 0 0
G. Smith, Newcastle-on-Tyne	4,182 15 5
P. Navill, London	4,069 0 0
B. W. Ward, Leicester	4,039 13 4
Pilling & Co., Manchester (accepted)	3,637 18 3

Contract No. 2.—*Ironwork.*

Head, Wrightson, & Co., Stockton	£4,764 8 0
W. Bland & Sons, Bury (Limited)	4,477 7 6
G. Moss, Liverpool	4,064 0 0
Eastwood, Swingle, & Co., Derby	3,966 13 1
Heenan & Woodhouse, Manchester	3,900 0 0
Handyside & Co., Derby	3,836 4 6
J. Butler, Leeds	3,832 6 0
G. Smith, Newcastle-on-Tyne	3,759 0 0
Pilling & Co., Manchester	3,636 2 4
P. Navill, London	3,571 0 0
W. Richards & Sons, Leicester	3,564 7 0
Russell & Robertson, Worthington	3,529 2 5
Coalbrookdale Company (Limited), Coalbrookdale, Shropshire	3,499 19 0
G. Griffiths, Gloucester	3,492 15 1
Gimson & Co., Leicester	3,446 19 6
H. Young & Co., Pimlico	3,440 0 0
Maynard & Cooke, Westminster	3,200 0 0
S. & M. Pattinson, Rushington	3,160 0 0
Goddard & Massey, Nottingham (accepted)	3,150 0 0

For alterations and additions at High-street, Finchley, for Messrs. E. & C. Ironside, Mr. F. D. Thompson, architect.

D. D. & A. Brown (accepted).

For nurses' day-room, at the Wandsworth and Clapham Union Infirmary, for the Guardians of the Union.

W. T. Aldwinckle, architect, 2, East India-avenue, Leadenhall-street	£475 0 0
Jewell	464 0 0
Aires	445 0 0
Pain	438 0 0
Arts	410 0 0
Turle & Appleton	395 0 0
Dean	350 0 0
Lorden & Son	347 0 0
Hancock	352 10 0
Hammond (accepted)	245 0 0

For the erection of new front, Staffordshire Bank, at Wolverhampton. Mr. W. Doubleday, 67, Colmore-row, Birmingham, architect. Quantities supplied by Mr. George Kenwick, Birmingham.

W. Trow & Sons, Wednesbury	£1,012 10 0
P. Horsman & Co., Wolverhampton	996 0 0
G. & F. Higham, Wolverhampton	922 15 0

* Accepted.

For alterations to bar, &c., at the Woodman, High-street, Sydenham, Kent, for Mr. G. T. Crookford. Mr. Henry Roberts, architect, 113, Lewisham-road—

Cabinet, Bar-fittings, &c.

G. W. Sly, Greenwich	£260 0 0
H. L. Holloway, New Cross	380 0 0
Hubbell & Trott, Deptford	358 0 0
M. Redman, Brockley	355 0 0
J. W. Taylor, Camberwell (accepted)	350 0 0

Picture, Gas-fittings, &c.

H. Lane, Peckham	£20 0 0
Banks & Co., Deptford (too late)	89 10 0
Ruse, Bermondsey (accepted)	84 10 0

For sewerage works, Great Yarmouth. Mr. Jno. Wm. Corke, architect, Norwich.

J. Downey & Son, Norwich	£5,105 0 0
Grinwood & Son, Sudbury	4,996 0 0
E. Howes, Yarmouth	3,850 0 0
Botterell, London	3,786 0 0
Cook, Bennett, & Thew, Spalding	3,690 0 0
Smith, Newcastle	3,571 0 0
J. F. Bray, Yarmouth	3,228 0 0
Hayward, Eastbourne	2,773 0 0
Went, Yarmouth (accepted)	2,412 0 0

For the construction of filter-beds, for the Waterworks Committee of the Oxford Town Council. Messrs. Hawksley & Bursall, engineers.

Brick.	Stone.
C. Chamberlaine	£10,995 17 11
H. Hilton & Sons	10,230 0 0
W. Hill & Co.	10,070 0 0
G. Smith	9,851 10 8
B. Cook & Co.	9,275 0 0
C. Baines	9,073 5 0
H. Kinginger	8,869 10 8
G. Moss (accepted)	8,610 19 0
* Cement and extra brick, 122; stone, 120, 2s.	

For almshouses and villas to be erected at Turvey, Bedfordshire, for Mr. Jas. Barton. Mr. Joseph S. Moye, architect. Quantities by Mr. Arthur F. Wrightson.

Hall, Biddall, & Co.	£26,070
Higgs & Hill	5,699
J. Grover	5,543
Lawrence & Sons	5,439
Martin, Wells, & Co.	5,200
Brown, Son, & Blomfield	4,755
S. Foster (accepted)	4,619

For the erection of a new packing-room at the Wimborne Sanitary Laundry, Cranbrook-road, Worpole-road, Wimborne. Messrs. Ebbetts & Cobb, architects, Savoy House, 115, Strand, and Colchester.

H. Harner (accepted) £298 0 0

For the erection of new parish church, Addington. Messrs. T. D. Barry & Son, architects.

Winnard, Wigan (accepted).

For the erection of new church, Greenway-road, Hunston. Messrs. T. D. Barry & Son, architects.

Beckett, Hartford (accepted).

For the erection of a new Presbyterian Church and Schools, Ramsey. Messrs. T. D. Barry & Son, architects.

Boyd Bros., Ramsey (accepted).

For additions to, and remodelling of, St. Barnabas Church, Trammere. Messrs. T. D. Barry & Son, architects.

Bratt, Rock Ferry (accepted).

For additions to St. Paul's Church, Trammere. Messrs. T. D. Barry & Son, architects.

Willet, Rock Ferry (accepted).

TO CORRESPONDENTS.

R. V.—J. & Sons—J. J. & Sons—F. B.—G. N.—T. E. K.—H. R.—B. E. C.—A. W.—R. W.—H. A.—F. W.—Y. & H. T.—D. B. & S.—W. F. J.—N. C.—F. F. J.—H. J. M.—N. C.—D. B.—R. A. W.—E. L. B.—J. W. & Son—F. R.—J. T.—A. B.—R. N. C.—A. N.—L. W. G.—N. E. T.—H. F. K.—E. F. A.—B.—F. A. C.—S. J.—H. A. C.—C. A. M.—J. B.—T. R.—A. V.—W. T.—F. D. H.—S. J. B.—W. G. L.—H. C. V.—J. I. N.—W. E. M.—B. A. (will be considered)—B. & W. (yes)—H. B. (not seen).

Correspondents should address the Editor, and not the Publisher, except in case of notices.

All statements of facts, lists of tenders, &c. must be accompanied by the name and address of the sender, not necessarily for publication.

We are compelled to decline pointing out books and giving addresses.

Not.—The responsibility of signed articles, and papers read at public meetings, rests, of course with the authors.

CHARGES FOR ADVERTISEMENTS.

SITUATIONS VACANT, PARTNERSHIPS, APPOINTMENTS, TRADE, AND GENERAL ADVERTISEMENTS.

Six lines (about fifty words) or under

Terms for Series of Trade Advertisements, also for Special Advertisements on front page, Competitions, Contracts, Sales by Auction, &c. may be obtained on application to the Publisher.

Terms for Series of Trade Advertisements, also for Special Advertisements on front page, Competitions, Contracts, Sales by Auction, &c. may be obtained on application to the Publisher.

Terms for Series of Trade Advertisements, also for Special Advertisements on front page, Competitions, Contracts, Sales by Auction, &c. may be obtained on application to the Publisher.

Terms for Series of Trade Advertisements, also for Special Advertisements on front page, Competitions, Contracts, Sales by Auction, &c. may be obtained on application to the Publisher.

Terms for Series of Trade Advertisements, also for Special Advertisements on front page, Competitions, Contracts, Sales by Auction, &c. may be obtained on application to the Publisher.

Terms for Series of Trade Advertisements, also for Special Advertisements on front page, Competitions, Contracts, Sales by Auction, &c. may be obtained on application to the Publisher.

Terms for Series of Trade Advertisements, also for Special Advertisements on front page, Competitions, Contracts, Sales by Auction, &c. may be obtained on application to the Publisher.

Terms for Series of Trade Advertisements, also for Special Advertisements on front page, Competitions, Contracts, Sales by Auction, &c. may be obtained on application to the Publisher.

Terms for Series of Trade Advertisements, also for Special Advertisements on front page, Competitions, Contracts, Sales by Auction, &c. may be obtained on application to the Publisher.

Terms for Series of Trade Advertisements, also for Special Advertisements on front page, Competitions, Contracts, Sales by Auction, &c. may be obtained on application to the Publisher.

Terms for Series of Trade Advertisements, also for Special Advertisements on front page, Competitions, Contracts, Sales by Auction, &c. may be obtained on application to the Publisher.

Terms for Series of Trade Advertisements, also for Special Advertisements on front page, Competitions, Contracts, Sales by Auction, &c. may be obtained on application to the Publisher.

Terms for Series of Trade Advertisements, also for Special Advertisements on front page, Competitions, Contracts, Sales by Auction, &c. may be obtained on application to the Publisher.

Terms for Series of Trade Advertisements, also for Special Advertisements on front page, Competitions, Contracts, Sales by Auction, &c. may be obtained on application to the Publisher.

Terms for Series of Trade Advertisements, also for Special Advertisements on front page, Competitions, Contracts, Sales by Auction, &c. may be obtained on application to the Publisher.

Terms for Series of Trade Advertisements, also for Special Advertisements on front page, Competitions, Contracts, Sales by Auction, &c. may be obtained on application to the Publisher.

Terms for Series of Trade Advertisements, also for Special Advertisements on front page, Competitions, Contracts, Sales by Auction, &c. may be obtained on application to the Publisher.

Terms for Series of Trade Advertisements, also for Special Advertisements on front page, Competitions, Contracts, Sales by Auction, &c. may be obtained on application to the Publisher.

Terms for Series of Trade Advertisements, also for Special Advertisements on front page, Competitions, Contracts, Sales by Auction, &c. may be obtained on application to the Publisher.

Terms for Series of Trade Advertisements, also for Special Advertisements on front page, Competitions, Contracts, Sales by Auction, &c. may be obtained on application to the Publisher.

Terms for Series of Trade Advertisements, also for Special Advertisements on front page, Competitions, Contracts, Sales by Auction, &c. may be obtained on application to the Publisher.

Terms for Series of Trade Advertisements, also for Special Advertisements on front page, Competitions, Contracts, Sales by Auction, &c. may be obtained on application to the Publisher.

Terms for Series of Trade Advertisements, also for Special Advertisements on front page, Competitions, Contracts, Sales by Auction, &c. may be obtained on application to the Publisher.

Terms for Series of Trade Advertisements, also for Special Advertisements on front page, Competitions, Contracts, Sales by Auction, &c. may be obtained on application to the Publisher.

Terms for Series of Trade Advertisements, also for Special Advertisements on front page, Competitions, Contracts, Sales by Auction, &c. may be obtained on application to the Publisher.

Terms for Series of Trade Advertisements, also for Special Advertisements on front page, Competitions, Contracts, Sales by Auction, &c. may be obtained on application to the Publisher.

Terms for Series of Trade Advertisements, also for Special Advertisements on front page, Competitions, Contracts, Sales by Auction, &c. may be obtained on application to the Publisher.

Terms for Series of Trade Advertisements, also for Special Advertisements on front page, Competitions, Contracts, Sales by Auction, &c. may be obtained on application to the Publisher.

Terms for Series of Trade Advertisements, also for Special Advertisements on front page, Competitions, Contracts, Sales by Auction, &c. may be obtained on application to the Publisher.

Terms for Series of Trade Advertisements, also for Special Advertisements on front page, Competitions, Contracts, Sales by Auction, &c. may be obtained on application to the Publisher.

Terms for Series of Trade Advertisements, also for Special Advertisements on front page, Competitions, Contracts, Sales by Auction, &c. may be obtained on application to the Publisher.

Terms for Series of Trade Advertisements, also for Special Advertisements on front page, Competitions, Contracts, Sales by Auction, &c. may be obtained on application to the Publisher.

Terms for Series of Trade Advertisements, also for Special Advertisements on front page, Competitions, Contracts, Sales by Auction, &c. may be obtained on application to the Publisher.

Terms for Series of Trade Advertisements, also for Special Advertisements on front page, Competitions, Contracts, Sales by Auction, &c. may be obtained on application to the Publisher.

Terms for Series of Trade Advertisements, also for Special Advertisements on front page, Competitions, Contracts, Sales by Auction, &c. may be obtained on application to the Publisher.

Terms for Series of Trade Advertisements, also for Special Advertisements on front page, Competitions, Contracts, Sales by Auction, &c. may be obtained on application to the Publisher.

Terms for Series of Trade Advertisements, also for Special Advertisements on front page, Competitions, Contracts, Sales by Auction, &c. may be obtained on application to the Publisher.

Terms for Series of Trade Advertisements, also for Special Advertisements on front page, Competitions, Contracts, Sales by Auction, &c. may be obtained on application to the Publisher.

Terms for Series of Trade Advertisements, also for Special Advertisements on front page, Competitions, Contracts, Sales by Auction, &c. may be obtained on application to the Publisher.

Terms for Series of Trade Advertisements, also for Special Advertisements on front page, Competitions, Contracts, Sales by Auction, &c. may be obtained on application to the Publisher.

Terms for Series of Trade Advertisements, also for Special Advertisements on front page, Competitions, Contracts, Sales by Auction, &c. may be obtained on application to the Publisher.

Terms for Series of Trade Advertisements, also for Special Advertisements on front page, Competitions, Contracts, Sales by Auction, &c. may be obtained on application to the Publisher.

Terms for Series of Trade Advertisements, also for Special Advertisements on front page, Competitions, Contracts, Sales by Auction, &c. may be obtained on application to the Publisher.

Terms for Series of Trade Advertisements, also for Special Advertisements on front page, Competitions, Contracts, Sales by Auction, &c. may be obtained on application to the Publisher.

Terms for Series of Trade Advertisements, also for Special Advertisements on front page, Competitions, Contracts, Sales by Auction, &c. may be obtained on application to the Publisher.

Terms for Series of Trade Advertisements, also for Special Advertisements on front page, Competitions, Contracts, Sales by Auction, &c. may be obtained on application to the Publisher.

Terms for Series of Trade Advertisements, also for Special Advertisements on front page, Competitions, Contracts, Sales by Auction, &c. may be obtained on application to the Publisher.

Terms for Series of Trade Advertisements, also for Special Advertisements on front page, Competitions, Contracts, Sales by Auction, &c. may be obtained on application to the Publisher.

Terms for Series of Trade Advertisements, also for Special Advertisements on front page, Competitions, Contracts, Sales by Auction, &c. may be obtained on application to the Publisher.

Terms for Series of Trade Advertisements, also for Special Advertisements on front page, Competitions, Contracts, Sales by Auction, &c. may be obtained on application to the Publisher.

Terms for Series of Trade Advertisements, also for Special Advertisements on front page, Competitions, Contracts, Sales by Auction, &c. may be obtained on application to the Publisher.

Terms for Series of Trade Advertisements, also for Special Advertisements on front page, Competitions, Contracts, Sales by Auction, &c. may be obtained on application to the Publisher.

Terms for Series of Trade Advertisements, also for Special Advertisements on front page, Competitions, Contracts, Sales by Auction, &c. may be obtained on application to the Publisher.

Terms for Series of Trade Advertisements, also for Special Advertisements on front page, Competitions, Contracts, Sales by Auction, &c. may be obtained on application to the Publisher.

NOTICE TO ADVERTISERS.

Persons advertising in the *Builder* may have REPLIES ADDRESSED TO THE OFFICE, 46, Catherine-street, Covent-garden, W.C., FREE OF CHARGE.

Letters will be forwarded if addressed envelopes are sent, together with sufficient stamps to cover the postage.

Best Bath Stone.

WESTWOOD GROUND, Box Ground, Combe Down, Corsham Down, And Farleigh Down. RANDELL, SAUNDERS, & CO., Limited, Corsham, Wilts. [Adv.]

Bath Stone.

Facilities for selection and quality unequalled, having upwards of 350,000 Feet Cube In Stock of all known descriptions. PICTOR & SONS, Box, Wilts. [Adv.]

Doubling Freestone and Ham Hill Stone of best quality, in blocks, or prepared ready for fixing. An inspection of the Doubling Quarries is respectfully solicited; and Architects and others are CAUTIONED against inferior stone. Prices, delivered to any part of the United Kingdom, given on application to CHARLES TRASK, Norton-sub-Hamdon, Dorset. Somerset.—Agent, Mr. E. WILLIAMS, 73, Charlotte-street, Portland-place, W. [Adv.]

Doubling Freestone, of best quality, supplied from their own Quarries and Kilns by STAPLES & HANFORD, Stoke, Lincolns. Agent, Mr. H. MITCHELL, 6, Augustus-road, Hammermith, London, W. [Adv.]

BLUE LIAS LIME (Ground or Lump).

Asphalts. Seyssel, Patent Metallic Lava, and White Asphalts. M. STODART & CO. Office: No. 90, Cannon-street, E.C. [Adv.]

Asphalts.—The Seyssel and Metallic Lava Asphalts Company (Mr. H. Glenn), Offices, 38, Poultry, E.C.—The best and cheapest materials for damp courses, railway arches, warehouse floors, flat roofs, stables, cow-sheds and milk-rooms, granaries, tan-rooms, and terraces. [Adv.]

Immense quantities of

DRY WAINSCOT,

DRY MAHOGANY,

DRY WALNUT,

in all thicknesses.

B. J. HUDSON & SONS,

Whitfield-st., W., and Great Peter-st., S.W.

London. [Adv.]

MICHELMORE & REAP,

Manufacturers of

CHARLES COLLINGS' PATENT.

COLLINGS' PATENT HINGES,

LEVER, SCREW, & BARREL BOLTS,

SLIDING "FALL DOWN" GATE STOPS,

and IMPROVED GATE FITTINGS of every description.

36A, BOURGHOE ROAD,

LONDON, S.E.

DISCOUNT TO BUILDERS.

ZINC ROOFING.
F. BRABY & CO.,
LONDON, LIVERPOOL, GLASGOW.
VIEILLE MONTAGNE BRAND.
NO SOLDER.
NO EXTERNAL FASTENINGS.

PARTICULARS ON APPLICATION. CHIEF OFFICE: 360, EUSTON ROAD, LONDON.

The Builder.

VOL. XLV. No. 2321.

SATURDAY, SEPTEMBER 29, 1883.

ILLUSTRATIONS.

The Vestibule of the International Art Exhibition at Munich. (Double-page Engraving).—By Herren Rudolf Seitz and Professor Friedrich Thiersch	418
The Maximilian-Strasse at Augsburg (German Renaissance). (Double-page Engraving)	420
"Furze Bank," a House at Brighton.—Messrs. Holford, Clayton, and Black, Architects	422
St. James's Congregational Church, Newcastle-on-Tyne (Interior and Exterior).—Mr. T. Lewis Banks, Architect	424, 425
Sunday Schools, Asylum-road, Peckham.—Mr. J. Wallis Chapman, Architect	427

CONTENTS.

Buildings and Fittings in the United States	407	The Vestibule of the International Art Exhibition of Munich	418	A Large Church Organ	434
Labour and Wages in the Old World and the New	408	The Maximilian-Strasse at Augsburg: German Renaissance	416	London Dwellings	435
Bavaria	409	Sunday School, Asylum-road, Peckham	416	Building Patent Record	436
Something about the Art of Java	410	"Furzebank," a House at Brighton	433	Fireproofing	436
Art Work and Designing at the Fisheries Exhibition	411	St. James's Congregational Church, Newcastle-on-Tyne	433	The Lambeth Vestry and House Drainage	438
Birkenhead New Quarter Sessions Court	411	Overtime: Notes from Birmingham	433	Running Riots	436
The Last of Garden Court, Middle Temple	412	The Mersey Tunnel	433	Church Building News	437
The Government Offices Competition	412	Supervision of Ironwork: Society of Engineers	434	Dissenting Church-Building News	437
Special and Sub-Contracts in Building Construction	413	Bristol and Gloucestershire Archaeological Society	434	Stained Glass	437
Railway and Dock Construction	413	Competitions	434	Books: Batley's Etched Studies for Interior Decoration (Sampson Low & Co.)	437
Pure Geometry	414	Notes from the West	434	Miscellaneous	438
Sanitary Congress and Exhibition in Glasgow	415	Decorations in Cripple-gate Church	434		

Buildings and Fittings in the United States.



other countries, took the wise step of going for his tour of inspection to the United States, where there may probably be found more money to spend on material comforts, more desire for the enjoyment of them, and more enterprise in the development of the means of realising such enjoyment, than anywhere else in the civilised world. The subjects to be considered include all those points which are concerned with the sanitary condition of dwellings, the employment of special materials, and their suitability to their work, the planning and the arrangement of buildings so as to contribute to the health and comfort of their occupants. Mr. Gale embodied the substance of his observations in a paper read before the Royal Institute of British Architects, in which the matter was condensed to a more readable and convenient form; but the detailed report, which will be published shortly in the next volume of Transactions of the Institute, contains a good deal more information, though, as we understand from the writer, not nearly all which he collected during his visit, in the course of which he seems to have been thoroughly desirous to make the best use of his time and opportunities in the spirit which the founder of the Bursary had suggested.

Mr. Gale spent about a month in New York, and various lesser periods in Philadelphia, Baltimore, Washington, Chicago, and Boston; but the report submitted to the Institute is chiefly concerned with New York buildings, and these chiefly in regard to the great blocks of apartment-houses, or what we call houses in flats, which are more used, and are on a larger and more elaborate scale, in New York, than for the most part, they can be found in any other part of the world. These great blocks of houses in combination seem in fact to have grown out of American hotel life, and to represent an attempt to get the luxury of hotel life in combination with the privacy of home life.

The class of buildings referred to are capable of being regarded from two points of view,—the horizontal and the vertical; the horizontal plan illustrating the arrangement of the plans of separate tenements and the methods of entrance and of isolation, the vertical design being concerned with the means of access to floors at different levels, and the architectural treatment of the exterior. Horizontally, it would appear

that New York generally is already suffering from over-crowding. The situation of the city on an island makes land dear and difficult to procure:—"The price of land has been steadily on the increase, so that the first idea on which the city was laid out has been perverted, and the lots of 25 ft. frontage and 100 ft. depth, which were the original dimensions of the land, are now few of them intact, but five and six and even seven houses have been built upon four lots, giving much greater disproportion between the depth and the frontage. This, perhaps would not have signified if the spirit of the idea of the 100 ft. depth had been preserved; but, instead of a spacious rear garden, the New Yorker has built over nearly the whole of his lot and thereby spoiled the lighting and planning of his house. Much needs to be said to indicate the development and *raison d'être* of the American or New York apartment-house; and when we take into consideration the facility of vertical communication given by the elevators in universal use, there seems to be no reason why there should be any more difficulty in access to a town dwelling up many stories than to a similar dwelling distant many miles." That seems a very good concise statement of the philosophy of town architecture in a crowded city, one which has before been emphasised in these columns, even in regard to cities not so bounded by material circumstances as New York. The latter is, in fact, in the same condition as a Medieval city bounded by walls; its lateral extension is rigidly circumscribed, and hence it is perfectly natural that in New York, of all great cities, the expedient of vertical building should have been most largely and most elaborately carried out.

Of the specimen plans given by Mr. Gale, by far the best in general plan appears to us to be that of the Central Park Apartment-houses, situated between Fifty-eighth and Fifty-ninth streets. In the majority of the blocks the quadrangle system, with a central court nearly surrounded by buildings, is employed,—a system which, for high and crowded buildings in a region subject often to great heat, we hold to be by no means healthful or desirable. On this head Mr. Gale says nothing, and perhaps his guides did not give him any encouragement towards entertaining an idea so uncompromising to their own perceptions in planning. But in the Central Park houses another plan is adopted, both more economical of ground and more favourable to circulation of air. The block is traversed by a longitudinal court down the centre crossed by three transverse courts; at the intersections they expand into an octagon shape, the adjacent corners of the blocks of buildings being cut off at an angle of 45°, and in these octagon spaces are fountains and flower-beds. There is thus provision for a cross current of air both ways, and there are no re-entering angles and *culs-de-sac*. The building is divided by these courts and cross

courts into eight blocks, connected only by open archways carrying landings over the interspaces. Each block has a separate name, just as each room had in old English inns; in this case the names are all taken from Spain: "Madrid," "Cordova," "Granada," &c., indicating, we presume, some Spanish interest on the part of the founder. Each of the eight blocks contains thirteen distinct tenements, the public staircase for the whole being in the centre of each block. If this central staircase is used as a ventilator for the whole, the arrangement is a good one; but we hear nothing about this; and in their ideas about ventilation the American architects do not appear to be so advanced as in regard to some other points. The architect of one set of these buildings, in fact, told Mr. Gale that he had provided no inlet ventilators to his rooms, considering that they were never likely to be crowded. Nor do we in England, unfortunately, generally find inlet ventilators provided to the rooms of dwelling-houses; but we, or some of us, at all events, know that they ought to be.

In most of the large apartment-houses the central court is open to carriages, and in the Dakota buildings this has a basement under it, which affords access for tradespeople and their messengers to the servants' quarters, and to entrances at the bottom of the servants' stairs. This suggests two points to which we would put a note of interrogation. The first is, what is the result as to ventilation of this low basement under the carriage court, and from which the servants' stairs apparently open? Is it never found to be a receptacle of close and heated air? Secondly, how does the system of grouping all the servants of each block together on one story, above or below, which seems from the plans to be usually employed, answer in New York and other States towns? In London it would be thought very objectionable; in Paris it is found to be so; the servants form a colony among themselves, and no family can have any secrecy about its affairs; so far as these are known to the servants at all, they are known to the whole colony, who can sit in judgment and compare notes upon their employers *en masse*. It may be that where the notion of class distinction is less prominent,—where people are rather "helps" than "servants," there may be less disposition to dissect those who in England would be called their masters and mistresses, and less inclination for gossip; otherwise we must regard this grouping of the servants in one quarter of the building as an undesirable portion of the arrangement. In the Central Park building, as far as we can ascertain from the plans, the servants of each house are lodged within the tenement to which they belong. A peculiarity of the planning of the separate tenements is the constant habit of having the three main sitting-rooms, or dining-room, drawing-room, and library *en suite*, opening into each other with large

double doors, not folding (these are never used), but sliding back into a recess in the wall on either hand. This is a very good arrangement for a small house when its inhabitants wish to be *en fête*, and to make as much room and as easy circulation as the area will admit of for their guests; but whether it is the most comfortable or desirable arrangement for the ordinary conditions of family life is another question. Few people would think so in this country, we imagine.

So far there is not very much to note from which we can learn in this country. But we find some important points in regard to which very useful suggestions are offered by the information given in Mr. Gale's report. One of these is in regard to the provision for escape in case of fire,—a very serious consideration in such large and crowded buildings. The block of dwellings is built 5 ft. within the line of ground on one side, the spaces being occupied by balconies with a series of permanent ladders from balcony to balcony. The method in which the water service is arranged for the double purpose of lifts and household use, may be described more fully in the words of the report:—

"There are other points of interest about the building which it may be well to touch upon." (This is speaking of the "Hubert" buildings.) "Among these are the fittings in the sub-base-ment or cellar, such as pumps, &c. These fittings are four in number,—two boilers and two pumps. One of the boilers works the two pumps, and also makes steam for the steam heating system; the other works the hot-water service for the household building. Of the two pumps, one, a large one, works for the elevator only, and fills the tank at the top of the building. This tank stands on the flat roof, and is best compared to a vast cylindrical brewery-vat; it affords the head of water required for working the hydraulic elevator, which is one of the well-known 'Otis elevators,' by Messrs. Otis Brothers (now merged into the American Elevator Company, I believe). The pump itself is not without interest, from an architect's point of view. It is, I think I may say, absolutely silent, at all events, one can hear a whisper while standing beside it as it works. I am told it is known as the Worthington Duplex Pump. The small pump fills the house supply-tanks or cisterns, and also the boilers on first starting. The water which these pumps raise is drawn all the abutment processes into a separate room, is still better. Mr. Gale especially mentions of the excellent character of the plumbing work in New York, which apparently results from a more direct and strict governmental supervision than is the case with us. There is a stringent plumbing law, an Act "to secure the registration of plumbers, and the supervision of plumbing and drainage, in the cities of New York and Brooklyn," and under the provisions of this Act, a list of plumbers is required to be published annually; the Board of Health examines and approves all plumbing plans and specifications, and provides an outline specification which is to be filled up, in the first instance, as a general guide to what is wanted. "One point, which has its humorous side," says Mr. Gale, "I may mention to illustrate the thoroughness of the arrangements made. Plumbers who do not believe in the first principles of the action of water, &c., in traps and pipes, and who are unwilling, or unable, to amend their ways, are taken to a room in the Board of Health offices, and there shown the working of a series of glass traps, pipes, &c., illustrating ordinary sanitary appliances, and the effect of syphonage and improper trapping is explained and proved by actual experiment. They are said to need no more proof, and to be rendered docile and obedient to plumbing regulations." Happy country! We see visions of a stream of plumbers, sad, misguided, and doubtful, entering the exhibition of glass models at one door, leaving the room at another door, enlightened, smiling, and hopeful, with their minds elevated, and the future bright before them and their employers. When shall we see such Arcadian happiness in our own cities?

The report gives some information, too long to quote in detail, but very interesting and useful, as to the commercial working of the system of large apartments in New York. Some of these have been the speculations of private individuals or of a company occupying the usual relations of landlord to the inhabitants; but there are others carried on upon a

ordinary wooden floors seems intended to be justified in the reference to "so-called fire-proof" ones; but, even granting the truth of the conclusion implied, there is the question, Are these wooden floors sound-proof? i.e., as much so as a thick wall; for that is, to our minds, an absolute necessity in these great blocks of apartments, and in all buildings where dwellings are divided horizontally as well as vertically. No more sound should come through a floor in such a case than comes through a party-wall when properly built and of proper thickness, and wooden joists and boarding will not effect this. We are not surprised, therefore, to find that in some other of the large tenement-houses, the "Dakota," for instance, the floors are made in much more solid fashion, "with hollow arch-blocks" (*ronssoirs*?) of burnt clay, almost like fire-clay or terra-cotta, laid in a flat arch, and the skewbacks arranged to protect the beams"; and if this construction is not really necessary or really efficient in a "fire-proof" point of view, it is obviously far superior in securing the isolation of tenements. The Central Park apartments are also, it appears, entirely fire-proof, the floors of rolled iron joists with brick arches, the partitions fire-proof, mostly of "lime of tile" blocks; the roofs brick in cement on asphalted felt, carried upon iron beams; the stairs of iron, with tile treads. If these substances are not fire-proof against the action of a really blazing conflagration, they at least leave very little material from which such a conflagration could arise, and prevention is better than cure,—especially in the case of fires.

The American architects do not seem to have made so much use of the flat roof as might have been made in these large tenements. Where the roofs are flat, one or two special constructions or finishings are mentioned; one architect had used slates in cement, on five layers of roofing-felt, the latter being each of them laid in hot asphalt, put on with a brush. "It was not, however, found quite satisfactory," nor should we have expected it. One very good practice in the planning of the interiors is the introduction, in the "Vancouver" apartments, of a separate washing-closet, opening out of the bed-rooms; or, when there is not room for that, a wash-basin recess, or cupboard, closed when not in use. This is much nearer than the visible wash-stand, as a part of the furniture of the room; and the separate washing-closet, taking all the ablutionary processes into a separate room, is still better. Mr. Gale especially mentions of the excellent character of the plumbing work in New York, which apparently results from a more direct and strict governmental supervision than is the case with us. There is a stringent plumbing law, an Act "to secure the registration of plumbers, and the supervision of plumbing and drainage, in the cities of New York and Brooklyn," and under the provisions of this Act, a list of plumbers is required to be published annually; the Board of Health examines and approves all plumbing plans and specifications, and provides an outline specification which is to be filled up, in the first instance, as a general guide to what is wanted. "One point, which has its humorous side," says Mr. Gale, "I may mention to illustrate the thoroughness of the arrangements made. Plumbers who do not believe in the first principles of the action of water, &c., in traps and pipes, and who are unwilling, or unable, to amend their ways, are taken to a room in the Board of Health offices, and there shown the working of a series of glass traps, pipes, &c., illustrating ordinary sanitary appliances, and the effect of syphonage and improper trapping is explained and proved by actual experiment. They are said to need no more proof, and to be rendered docile and obedient to plumbing regulations." Happy country! We see visions of a stream of plumbers, sad, misguided, and doubtful, entering the exhibition of glass models at one door, leaving the room at another door, enlightened, smiling, and hopeful, with their minds elevated, and the future bright before them and their employers. When shall we see such Arcadian happiness in our own cities?

The report gives some information, too long to quote in detail, but very interesting and useful, as to the commercial working of the system of large apartments in New York. Some of these have been the speculations of private individuals or of a company occupying the usual relations of landlord to the inhabitants; but there are others carried on upon a

system which was elaborated by Mr. Hubert, of the firm of Hubert, Pirsson, & Co., and thence called the Hubert Home system, which are on a kind of co-operative system, a number of families agreeing together to live in so many tenements, the building of which is arranged for, so that they can choose their own associates, and the matter becomes more a multiple of the private owner building for his own residence than an ordinary landlord and tenant system. Considerable difficulty was experienced, as may be supposed, in arranging for the legal working of this associated ownership; how this difficulty was surmounted and how the arrangement was made for the continuity of the system, readers may learn from the detailed account in the report.

The remainder of Mr. Gale's practical notes and experience, when they come to be published, as it is implied they will be, in a more extended form than his report would admit of, ought to be of considerable value and interest. We may add that the volume of "Transactions of the Institute," in which the report is published (1882-1883), contains a good deal of matter of exceptional interest, especially a paper "On Medieval and other Buildings in the Island of Cyprus," by Mr. E. l'Anson, supplemented by copious notes by Mr. Sydney Vacher, and largely illustrated by drawings.

LABOUR AND WAGES IN THE OLD WORLD AND THE NEW.

The inevitable certitude with which water attains a mean level when channels of communication are freely open is a fact in physics based on something even more universal than physical law. There is a similar teaching in all human conditions; and the great feature of the nineteenth century hitherto has been that it has allowed of an opening of the channels of human communication with an ample freedom which, fifty or sixty years ago, he would have been held as a madman who should have ventured to predict.

The opinions or the efforts of any individual, however energetic or however resolved, can produce but an infinitesimal effect with regard to this great levelling of the surface of the human world. The results of change of laws can only be appreciable in so far as they wait upon, or at the utmost concur with, the march of the rising tide. To open ports freely would have but little effect were there no steam fleets ready to enter the harbours, and with the steam fleets of the world outside, the most sternly-guarded ports have found their barriers falling,—against it, may be, the will of their defenders. The rush of mankind over the earth, borne by the iron horse, or by the steel sea-horse, is as irresistible as the course of the monsoon.

One thing has been too much left out of sight by many of those who, like children delighting in a rising flood, have danced with glee at the advance of the waters, and gaily cleared from their channel any of those tiny obstacles which the stream would otherwise have swept away without their aid. It is evident that a levelling process of the kind means two things. It means a fall in the higher places, equal in its measurement to the rise in the lower. That there may be, and has been, a general rise we do not question; but no one will for a moment suggest that this rise has been such as to lift those who were formerly in the lowest condition to the level of those who were in the highest. And any march short of this, in so far as it approaches equalisation, must certainly depress those who were formerly the best off, not only comparatively, but positively.

Of this tendency we have, in this country, experienced very much more of the effects than we have as yet realised. It has been our fortune to see the change effected in some foreign parts,—in Italy, for example,—at the very moment of the overthrow of the secular barriers of an old régime. In England we are most of us too busy, or too nearly interested, at once to take in the full meaning of much that we see and hear. It is thus in the condition of our neighbours that we are apt to find the readiest illustration of the effect of that great levelling of human conditions which ensues on the opening of free, ample, and very cheap intercommunication.

Our habits and customs, our pleasures and recreations, our rules of business, and our methods of work, differ so widely from those of

our nearest neighbours on the other side of the Channel, that the great industrial and social changes that France is so rapidly undergoing do not come home to us as closely as, perhaps, they ought. While our ocean distance from the United States is so far larger than our sea passage from France, there is not the same strangeness between the two shores. On the western Atlantic sea-board are those of our own blood and kin, our cousins not more than four descents removed, with whom there is a much closer, — though tacit, — sympathy than we entertain or can entertain for any Celtic race. What goes on now in America is very much what has gone on, what will go on, or what, under like conditions, would have gone on, in England.

It is thus matter of very serious moment for us to see how that same insoluble, or at all events unsolved, question of labour, which at times turns up with such ugly incidents in the United Kingdom, is becoming grievous in the United States. We have long known how high has been the cost of living in the New World. But we have been accustomed to regard this cost as consequent on, or at all events as concurrent with, a high rate of wages. The feature of the day which it is least agreeable now to contemplate is the dissociation of this natural bond, as we have been wont to regard it. Wages are falling in America, but prices are not.

It is true that we have witnessed, before now, rise and fall in wage rates. And there is a great tendency in mankind to regard the actual movement going on around as permanent. When wages are rising, faces brighten, and prosperity is regarded as assured. When wages fall, we are too apt to look forward to impending catastrophes. At the same time, the tendency of that great levelling force of which we have spoken is to diminish the range of oscillation, and, we fear, to diminish the rise far more than the fall.

In the United States, the almost boundless background of cultivable country on the fringe of civilisation is such, that it has been thought that the pinch of the labour question could never be felt. To be able to provide food for a year, and a few simple implements, was all, we were told, that was necessary to enable any abled-bodied man to become a self-supporting land-owner, — all but a small sum per acre, and the cost of conveyance to the selected spot, — and that this has been the case in many instances has been true, and is to a certain extent, still true. But then there is another thing to bear in mind. The settler requires a capital which is not money. It is something which money cannot command. And although its possession will enable a man to do much with very little money, that little, in the absence of that of which we speak, will do nothing at all. It is not enough that a man should fail as a tailor, or a shopkeeper, or a clerk, to enable him to succeed as a farmer. What is required for the latter, in addition to sturdy health and strength, and some acquaintance with natural productions and their cultivation, are energy, industry, perseverance, — in short, the moral constitution of a man; and if a man has that, he is far more likely to succeed at home than to betake himself to unknown regions, where he may have to fare harder, and, at all events, confront the unknown.

Thus while two thousand emigrants, or hard upon it, are speeding each day to the United States, it is but too sure that with the rush of emigrants comes much of the after-current of poverty, or even of pauperism. Wages, it appears from evidence lately given before a Committee of the United States Senate, have been steadily falling for some years. Six or seven years ago a machinist earned from \$3 to \$3½ a day. He now only earns from \$2 to \$2½, an abatement of from 30 to 33 per cent. In the five great states of Massachusetts, Pennsylvania, New York, Illinois, and Ohio, wages are now stated to average only from 4s. 7d. to 5s. 8d. per day for skilled labourers, and in these states there are said to be no fewer than 62,000 paupers, — a larger number than all the indoor paupers in Ireland in 1882. And everything consumed by the working-man in America, except bread, meat, butter, and milk, is much dearer than in England.

So seriously is this pressure now felt that it has told upon what was formerly, perhaps, at once the proudest and justest boast of the United States, viz., the education of the people. In every new settlement the allotment

of a proportionate block of land for school purposes was regarded as essential. Now we hear that in Chicago itself 47 per cent. of the children do not attend school, while in Cincinnati ten per cent. of the children are said to be engaged in cigar-making. Now, however strong may be the opinion that an education which seems chiefly directed to turn children into inefficient schoolmasters, clerks, salesmen, or something requiring no practical outdoor industry is a mistake, it is yet something better than factory work. To be told that in the open field of the United States "pauperism and ignorance are steadily growing," and "children have to eke out the earnings of their parents," is nothing short of distressing. The comfort of the working-classes in America is steadily declining; while the wealth of the wealthy is growing at an unprecedented rate. This, then, is not an evil that affects ancient civilisation alone. It is not one which appears to be in any way abated by republican institutions, or by the widest distribution of the voting powers.

Is not that a valuable lesson for us? Does it not tell us that our prosperity depends on the maintenance of that from which it sprang, the energy, industry, and superior capacity of the British workman? As far as we maintain and support that, we may hold our own against the greatest physical advantages on the part of the foreigner. But the freest people, as they call themselves, in the world are now furnishing us with incontestable proof that it is not by any constitutional or legislative conditions that the welfare of a national industry is to be secured. Industry has its own laws, of which the first is that the industrious man wins.

RAVENNA.

WITH the largest court in our South Kensington Museum literally overcrowded with sculptured specimens of the Italian art of the Renaissance alone, specimens all gathered within the last twenty years or so, there is, we think it will be admitted, some foundation for the accusations of vandalism which one hears so freely brought against modern Italy. We in England, while we have been material gainers, seem especially to have interested ourselves in the question. No sooner is some fresh iniquity laid bare than the cry from the columns of the leading journal in which the world is usually made acquainted with these misdemeanours, finds a ready echo from all sorts and conditions of professional and sentimental critics, till the chorus of lamentation and blame finally dies away.

It is comforting to learn that, in one respect at least, the latest outrage to this most praiseworthy sympathy with the undying interest in the past of the Italian peninsula is not exactly of so heinous a character as usual. Readers of Dryden and "Don Juan," those who know by its romantic reputation alone the famous pine-forest of Ravenna, heard not long since with feelings of genuine indignation the announcement, — first made in the columns of the Roman *Fanfulla*, — that this characteristic feature of the once great city, the forest from which the navies of Rome were, it has been said, built, was about to be swept away and its site utilised for agricultural purposes. The fact thus crudely announced was calculated, it will be admitted, to arouse the feelings of the sentimental, but to those who know Ravenna, who have visited it of late, the news, while it grated as harshly on old memories, came with less shock than to those who have pictured to themselves the verse-sung pines of the Ravenna forest as evergreen as in the days when Byron roamed romantically on horseback through its sweet-smelling shades, during that period which succeeded his spell of forgotten pride in Venice. Little, however, of this forest, in the immediate neighbourhood of the city at least, now remains; hard winters, the woodman's axe, failure of natural moisture (though the country round is a marsh), and some mysterious insect blight, have, as in the case of the cedars of Lebanon, reduced to lamentable proportions the thick groves amidst which Dante used to dream and gather his inspirations during those last years of his exile and his life when he was the honoured guest of that Polenta family to which belonged the frail sinner, Francesca di Rimini, with whose plaintive tale the poet has wrung so many hearts. And was it not, too, in this same forest that Boccaccio laid the scene of a most moral *novella*

of his, which our own Dryden adapted in his superb poem of "Theodore and Honoria?"

Associations such as these were calculated, it can be understood, to tempt the romantic nature of Byron and render him, as runs the inscription above the door of the house he occupied, "Impaziente di visitare l'antica Selva ch'è ispirò già il Divino e Giovanni Boccaccio," though cynics might suggest that the fascinating charms of the Contessa Guiccioli may have also shared the thoughts of the poet in those evening rambles which inspired the lines that more perhaps than any other association have endeared the pine forest of Ravenna to the sentimentalist: —

"Sweet hour of twilight,—in the solitude
Of the pine-forest,—and the silent shore,
Which bounds Ravenna's imperious wood,
Rooted where once the Adrian wave flow'd o'er,
To where the last Cæsarean fortress stood,
Evergreen forest which Boccaccio's lore
And Dryden's lay made haunted ground to me,
How have I loved the twilight hour and thee."

If the merry cicala still sings its "ceaseless song," its shrill chirrup resounds through withered stems and shrivelled branches, that in a Salvator Rosa-like style seem even more in accord than the shades of the past, with the grim legend sung by Dryden of that spectre huntman whose

"... hunting which the devil design'd,
For one fair female lost him half mankind."

The shriek of the steam-engine has successfully drowned the fabled cries of the "heuteous maid" pursued by the spectral "mastiff gaunt" and that "knight of swarthy face" who high on his coal-black steed had thundered through the shades for so many centuries; and with the departed glory of those ghosts, to whose strange antics they had grown accustomed, the pines themselves would seem also to have faded, leaving Ravenna one more dead memory to add to the many which crowd its deserted streets and crumbling edifices.

Pisa la Morta, on the further side of the peninsula, may be said to be alive in comparison with Ravenna,—far off the main road, it is true, but too rarely visited by those who, crowding to Italy, fly past the romantic old city. This neglect promises to even further hasten the ruin which is more rapidly each year overtaking its singularly interesting artistic treasures.

"Of all the cities in Roman lands,
The chief the most renowned Ravenna stands,
Adorn'd in ancient times with arms and arts,
And rich inhabitants with generous hearts."

So sung Dryden, but how different is the Ravenna of to-day! All around it the rich plain is well cultivated, broken alone by the long lines of waving poplars and the elms over which, as in the days of Virgil, the vine creeps gracefully in classic festoons. But in Ravenna all seems dead; the sea that once filled its streets with the gondola life of Venice is now many miles distant; the basilicas, once crowded, are empty, and what is chiefest pity of all, their choice mosaics, after thirteen centuries of existence, where not actually left to crumble away under the influence of damp, are woefully neglected. The statement recently made in the columns of the *Times* by Mr. Kershaw, as to the rapid destruction of some of the most interesting of these, can be fully borne out by all who have visited of late the eastern coast of the peninsula.

Fortunately, the work of decay does not proceed in all the churches as it does in the case of San Apollinare in Classe, now situated in the midst of a swamp. If all the buildings of Ravenna had suffered as has of late years this interesting basilica, the artistic world would soon sustain an irreparable loss in these rare and certainly the most important relics which remain to show us, a thousand years after it had reached its noblest development, the condition of that Greek art which had produced the Parthenon. For the mosaics of Ravenna, with the basilicas which they adorn, far exceed in interest those of Rome. Ravenna, it must be remembered, from a curious series of historical reasons, has passed through its venerable existence singularly unaffected by the destructive influences which elsewhere have left us only the merest relics. Like Pompeii, which reveals so clearly the life of the Romans at the commencement of our Christian era, Ravenna seems to have been preserved to afford us an insight into those strange centuries which followed upon the ruin of the Roman Empire.

More Byzantine than Constantinople itself, which, under Turkish influences, has been greatly modified since the days of the Roman

emperors, the peculiar architectural interest of Ravenna has been long familiar to the artistic world, and by the good fortune of the very obscurity and remoteness which saved the city from Medieval pillage and influences, we have had handed down almost intact, a series of some of the noblest examples in existence of the successful results which attend on the combined and friendly efforts of the architect and the decorative artist, results which modern times have striven earnestly to emulate, but with what success comparison with these mosaics neglected in the marshes of Romagna only too painfully shows.

The rich collection of mosaics with which the basilicas of Ravenna were adorned in the days when emperors attended mass under their now crumbling domes has at all times given Ravenna, in addition to its familiar architectural interest, an exceptional place in the history of art. All important specimens of the art which Ghirlandajo so truly called "painting for eternity," their present decay, through sheer neglect, is a matter for the profound regret, and the more so, as the position is an unavoidable one. The steps to be taken for their restoration would involve a considerable outlay, and neither the Ravenna ecclesiastical nor municipal authorities have at their disposal very large resources. The geographical accident to which the city, situated in the midst of marshes, owed its original choice as the residence of the Roman emperors flying before the invasion of Alaric's Visigoths, is the cause of the destruction which is gradually progressing. The tomb of Theodorio, that extraordinary building with its huge monolith cupola, stands in an almost perpetual swamp; the crypt of San Apollinare in Classe is constantly invaded by the water, and sad indeed is the mischief which the damp has there inflicted on the choice mosaics.

San Vitale, however, with its unique Byzantine character, remains, and will yet long remain,—uninfluenced by any more destructive agent than the indifference of its guardians. Its wonderful conglomeration of cupolas supported by circles of columns, each the spoil of some classic building; the rich mosaics,—these stand so far in no fear of destruction; the colours shine out in all the sober brilliancy which they have preserved in the many centuries of their existence. They stand as they have stood since the days when their originals lived: the pictured emperor Justinian, with his attendant crowd of warriors and clergy, and his singular consort, the Empress Theodora, and her suite. We know little of the period and the court of which these mosaics portray so truly the chief figures, save from the brilliant pages of Gibbon, to the text of which these pictures are the living commentaries. One is able for the first time to realise something of the extravagance, the reckless love of ornament of the Byzantine rulers, in whom had died out so completely all appreciation of the classic simplicity of their ancestors. In such an atmosphere, and amidst such scenes as Du Cange has so well described in his picture of Constantinople during the days of the Lower Empire, little wonder is it that the artists employed by such a court should have lost the sense of the beauty of nature, so alive in those from whom they had inherited what cunning they still possessed,—cunning evident in the brilliant colouring, the skill, though purely conventional, in the cast of their drapery, and in the grouping of their languid yet still dignified figures.

And with San Vitale, as yet no danger threatens that jewel of decorative art the fifth-century tomb of Galla Placidia, ablaze with its gold-grounded mosaics and rich marbles; nor does as yet any harm menace that scarcely less perfect specimen, the chapel which is attached to the palace of the archbishops. These and many others of the rare features of the old city, the Baptistery,—nearly a thousand years older than that of Florence, which it in some respects resembles,—the basilica of San Apollinare in Città, with its long line of columns each of rare marble, brought piously from Constantinople, and their worthy companions the triple file of sixth-century mosaics, unique in the history of art; and with San Apollinare, Santa Maria in Cosmedin, no less a sanctuary of some of the rarest creations of the mosaicist's art, and not least of all the hallowed tomb of Dante, no injury but that of the tender hand of time promises as yet to endanger. These no power can transport to our shores, as has

been the case with so many other Italian treasures; they can alone be seen in their true home on the shores of the classic Adriatic.

SOMETHING ABOUT THE ART OF JAVA.

In the as yet very imperfect and to a great extent untrustworthy accounts we have so far received of the terrible volcanic disturbances which have recently visited Java, mention has been made of serious injury to several of the great temples which exist in the island. Something more than an ordinary interest attaches to these relics of a vanished and once brilliant civilisation, stranded, so to speak, amidst the comparative barbarism of the Malay Archipelago. "There is no chapter in the whole history of Eastern art," remarks Fergusson in his "History of Architecture," "so full of apparent anomalies and which so completely upsets our preconceived ideas of things as they ought to be, as that which treats of the architectural history of Java."* The art which is displayed in the colossal temple of Boro-Bodor, the largest Buddhist temple in existence,—and apparently much injured in the recent earthquakes,—is of purely Hindoo origin and of a most interesting period, while the architecture of the numerous other ruined temples which lie scattered over the island of Java,—imperfectly as they have yet been explored,—reveals aspects of Oriental art unrepresented in any portion of the Indian Empire.

It is a point of no small interest that it is to English energy that the world owes its first acquaintance with the long-hidden treasures of Javanese architecture, which, ruined as they have been by the action of centuries of earthquakes, still remain in a singular state of preservation considering their, in many cases, venerable antiquity.† It was Sir Stamford Raffles, Governor of Java during the few years that the island was under British rule, who in 1814 laid bare the ruins of the wonderful Temple of Boro-Bodor, the very existence of which was apparently unknown to the natives. In the field of inquiry opened by the discovery and exploration of the numerous other ruins scattered over the colony, Sir Stamford Raffles was not slow to labour, as is amply proved by his "History of Java," which appeared as far back as 1817, and in which a large share of attention is paid to the "Antiquities" of the island. Till the days of this model Governor-General the former owners, the Dutch, had neglected any further researches in the island than those necessitated by the requirements of their commerce, and hence the existence of a civilisation so brilliant as that which produced the wonderful Temples of Boro-Bodor and Prambanam was not even suspected. The archaeological research set on foot by Sir Stamford Raffles was fortunately carried on by the Dutch when they once again, in the political changes of the commencement of this century, came into possession of their richest colony. Now, thanks to the energy of the Dutch home government and the local Society of Arts and Sciences (originally founded, let it be remembered, by Raffles, who was its first president), the Temple of Boro-Bodor has received a degree of artistic and archaeological study such as no other Eastern monument can boast.‡

"If to the naturalist," remarked Sir Stamford Raffles, as far back as 1815, in a discourse delivered at Batavia, and in which he enumerates some of the marvels of the animal and vegetable life of the colony, "Java exhibits these extensive and wonderful varieties to the antiquary, the philologist, and the philosopher who in like manner offers subjects of equal novelty, and even of higher interest, whether we investigate the splendid remains of her temples and her cities, her language and her literature, or the character, institutions, and customs of her inhabitants." §

But of the past civilisation of Java only the

faintest traditions remain. Of its monuments, only a series of deserted ruins, buried beneath the rich growth of the tropics, stand to prove the wealth and refinement of the Javaneses, and their generous patronage of the arts in days long gone by.

Our readers may recall a brief description, given in these pages some three years since, of the great temples of Boro-Bodor and Prambanam. M. Désiré Charnay had then been sent to Java by the French Government on one of those numerous archaeological and scientific missions by means of which our neighbours generously endow that research which it is justly claimed is, where not entirely neglected, left far too largely in our country to private initiative. M. Charnay (whose acquaintance with the strange architectural ruins of Central America is familiar to the professional world) had specially in view, in visiting Java, to obtain further details respecting the singular resemblance of the Javanese architecture to that of Mexico, and to Yucatan, and to which Fergusson, it may be remembered, refers, tracing it to a probable common origin of the two nations developing at a distance a similar art. Be this as it may, the resemblance of the later forms of Javanese architecture to that of Central America, as can be seen by comparison, is so striking as to suggest something more positive than what would in reality be a unique coincidence in the history of art.

The study of the art of Java, an architecture which reached a high degree of perfection without the use of pillars, arches, or mortar, is, it will be seen, a field offering no small interest. Taken in connexion with the art of our great Indian dependency, concerning which there still remains,—be it said almost to our shame,—so much to be learned, and in the development of which the ruined temples of Java present many features for study difficult on the mainland, it can be understood and how justified are the regrets that we should not know more of the strange art of this distant European colony, particularly when such terrible upheavals as have recently visited Java seem to threaten the annihilation of all the sources of study.

The origin of the art to be found in Java,—for Javanese art proper, it may at once be stated, can scarcely be said to exist,—are, beyond question, Hindoo. An Indian colony in the early centuries of the Christian era migrated to Java, and as a comparison with the architecture of the peninsula would seem to show, not from the nearest coast, but from the western side of Hindustan; on this point, however, too great doubts as yet exist for any certainty to be expressed. Under the rule of these colonists the Javanese would appear to have arrived at a high degree of civilisation, and that during a period which to Europe is historically known as the Dark Ages. Slowly the original Hindoo element can be seen dying out, and the purity of its style degraded by the revival of local influences, till at length these so completely gain the upper hand, that Java may be said to have once more returned to the original condition of comparative barbarism, in which it and the adjacent isles are still plunged. The last blow to its brilliant past was dealt when Mahomedanism invaded the country; but, strangely enough, the Arab influence which covered India with such architectural marvels would seem to have destroyed for ever the artistic spirit in Java, an apathetic indifference replaced the once brilliant artistic industry of the nations, the very memory of their past greatness faded away. European influences went in entirely new directions,—those of commercial profit,—and it was not until the arrival of Sir Stamford Raffles as English governor that any steps were taken to discover the almost forgotten facts which told the story of the builders of such monuments as those at Boro-Bodor, Prambanam, or the Thousand Temples. Since then, however, much has been done to clear up the mystery which surrounded these ruins; and we are in possession of a certain amount of information, yielded almost entirely, however, by a study of the ruins themselves, for of literary records scarcely any exist.

The Theatre in Great Queen-street, Lincoln's-inn-Fields, built a year or so ago, and at first called "The Novelty," and afterwards "The Follies Dramatiques," is to be offered for sale at the Auction Mart by Messrs. Debenham, Tewson, & Farmer on the 18th of October.

* History of Architecture, vol. iii., p. 637. (Edition 1876.)

† The Dutch Government have already published four folio volumes containing about 400 photographs of the temple, while the Batavian Society of Arts and Sciences has further produced 65 photographic plates, while the same society has further brought out 300 photographs of other Javanese antiquities. In Raffles's "History of Java" twelve plates are devoted to the temple of Boro-Bodor, a description of which will be found in the *Builder* for May 22, 1880.

‡ Discourse (delivered before the Society of Arts and Sciences), Batavia, 1815.

ART WORK AND DESIGNING AT THE FISHERIES EXHIBITION.

If it be difficult to estimate the full amount of amusement and recreation to be found and got out of such a display of curious things as is now to be seen at South Kensington, then is it yet more so to put at its full value the worth of the information it affords on so many subjects altogether away from the usual sources of information, coming from places all but inaccessible even to curious readers and searchers after what is unique. Museums for the most part are made up of things not usually to be found except by those who may be said to more or less devote their lives, and at times their fortunes, to the search after and the acquisition of illustrations of the objects, whatever their nature. In the now historic Great Exhibition of 1851 the whole show mainly consisted of illustrations of the art and art-manufacture of the time as it then was and even now is; the present display in great measure made up of such, together with things which come from long distances, and from times past. This is by this time so well known that we need but point to a few of the most typical objects, our main purpose here being to direct some more special attention to the examples of hand-wrought work, and to the evidences of thought and design elicited from the artist and workman in the very act of making and decorating or ornamenting such objects in whatever material.

Our main object here is then not so much to direct attention to any special object of fine art or to the production of it, but to ask attention to one item in this great show which, we think, might well be improved on. It is that of illustrating the more or less thoroughly, or, we ought, perhaps, to say incompletely, the progress of any one speciality, as architecture, or building, or even boat-building, here so well illustrated. In these days of never-ceasing change (for what is done to-day is apt to fall into disuse to-morrow, be its value what it may) it is true it is not so much progress that is in vogue as change,—the passing away of old things, even of yesterday, and the coming in of new, be they what they may. In days of old, this constant change was certainly quite a different process, as may be broadly illustrated by a careful notice of the passing away of one style of art and the coming in of another, and that by a process so gradual that it can hardly have been noticed, even by those who made the change itself and worked out the new phase of things. This might be illustrated in very many ways, and by reference to many epochs in art. In this great show it may be seen in progress almost by the consecutive inspection of the many illustrations there are of boat-building from nearly all countries and of all dates. It may be well, therefore, and instructive, to point to some of these, and to follow them, not in the order of time only, but as coming from so many centres of art action and of construction and design. Here there is ample material for this historic comparison, if we may so put it, and it needs only to be carefully done and in order of time.

In passing we may, perhaps, make note of the somewhat imperfect numbering of the various objects in this vast collection, which makes it difficult to follow any special class of them consecutively; and, more than this, they are a good deal scattered about, so that some little patience and care is needed in those who go really to see and to learn a somewhat. The distance, too, from object to object is sometimes considerable, even when they are closely related, and all but grow out of each other. It would be difficult, perhaps, to find a series of objects fuller of even art instruction,—if we may so call it,—than the Naval Architecture or the Boat-building Section of the Exhibition. It begins fairly with the very rudest and roughest examples of the ship-builder's and the ship-architect's craft that can well be, and the collection takes us step by step to the very latest efforts made, or which modern science and workmanship on new materials can give. It begins with the very roughest,—with forms hewn out of the trunks of trees, canoes from the South Sea Islands,—and then goes on from the simplest forms and the roughest to the more and more complicated and "refined," till we come to the Lord Mayor's State Barge, and the model of the last ironclad, with steam-propelled mechanism, as full of ingenious con-

trivances as a chronometer, and wherein the human action is all but eliminated, and the steam-engine or "electricity" takes the place of it. That this is a sign of "progress" there can be no doubt; but as machinery triumphs human action vanishes, and with it individuality all but wholly. Here we would ask attention, more especially to the art part of this division of the Fishermen's Show.

So much has been said and written on the subject of art and design, and of the influence which education generally has had, and must at all times have, on the skill of the artist and workman, that it would seem beyond possibility to add to it or to say one word that would seem in any way to oppose it; but to those who are at all interested it will afford not a little instruction and create no small wonder,—increasing as they look and study,—to find out, as they most certainly must do, how hard and sorely pressed the modern man,—the workman and the designer,—is at times for what may be termed a fine line, a classic curve, if the phrase may be allowed, even for the lines of a common row-boat. There, however, may be found a grace of outline in the side of a rough canoe from an all but unnamed island in the South Seas, which a Greek of old might well have envied and could hardly have excelled. In the division of this fisherman's show devoted to boats of all kinds and sizes, there is nought of more interest than the examples of boat and canoe building and carving, and even the "turning out" of them from the rough trunks of huge trees, together with others made up of rough planks, wherein the very eye of the executive workman has been evidently guided by the work of his hand, and he has found out, as if by intuition, how to go on and to complete his work by simply looking at its beginnings. But this work has been done, not by the copying of it and the repeating it, but by the very and mere impulse it has given.

It is thus, as we cannot but think, that by looking at these examples of so rude yet truly refined work, we may see, as the workman most certainly may do, how much is to be gained by his being made or educated into an artist, as well as being an executive workman; in other words, that he be incited or driven to think and consider over his work, as well as to do the hard hand-work of it, or to simply follow the workings of a steam engine, or the mere lines of a drawing, however full of detail and directions. It would seem a pity that there is so comparatively little of architecture proper in this display, for in no other fine art are there more or better opportunities for the display of the skill, whatever its amount, of the artist-workman, in whatever material he may work. Architecture may here seem, at first sight, a little away from the fisherman and his vocation, but he must live sometimes away from his boat, and with those who belong to him, on land, so that the house or cottage he then lives in, and its surroundings, may well be just thought of, and its worth and importance and present needs urged on those who can help to make it better than it now to all appearance is. All, indeed, are interested here, for who is there who has seen the shores of this island of ours from the deck of either boat or man-of-war who has not looked at the hut, or hovel, or cottage of the fisherman?

There is so much here, indeed, to study and comment on that we know not what to miss note of in the short space at our disposal, but we would not end without the expression of a hope that this section of this unique show may not finally be altogether lost and dispersed, when the time comes for its final closing; for there are, as here seen, not a few objects of surpassing interest which can never be replaced, or anything got as a substitute for them. We can but hope and trust that a selection will be carefully made, and a permanent museum established, either on this ground, or at the British Museum, where additional space might be obtained for their reception. It should not be lost sight of that we of this age are but getting together, however slowly, the materials for a due history of art, whatever its division may be, or whatever the mode of its production, whether as a following of the part of it or as in the search after some new method of art-production assisted more or less by machinery, and by that which best imitates its action in speed of work and closeness of copying. Doubtless, it must be some time before another system or method of art-work as regards the workman can obtain, but if any change is to be,

or can be, there is no better place to initiate it than amidst this accidental gathering of workmanship.

BIRKENHEAD NEW QUARTER SESSIONS COURT.

THE plans sent in competition for the new Sessions Court at Birkenhead were exhibited at the Birkenhead Municipal Offices during last week. The site for the new building adjoins that of the new Town-hall, which is now proceeding. The committee called in the aid of Mr. Chas. Barry as professional adviser on the merits of the plans, and they have accepted his decision in favour of the design sent in by Messrs. T. D. Barry & Sons, of Liverpool, although we understand their previous inclination had been towards another design; but they rightly felt that in asking the advice of a professional judge, they were bound to respect it when given; and in so doing they set a whole-some example to other corporate bodies under similar circumstances. It has sometimes happened that people have called in a professional referee, and then set his opinion aside,—a proceeding not only absurd, but disingenuous.

The plan selected is unquestionably the best one. The Quarter Sessions Court is placed centrally as the basis of the arrangement, and the Police-courts in the rear; the public entrance-hall is so contrived as to be close to the entrance for the public in each court; and the rooms for magistrates and others are conveniently placed for easy and private access to the several courts. The plan has a definite system, and will be convenient in working. There are some defects of detail which should be considered in execution. Some of the water-closets are too much in the interior of the building, and complaints have been made as to deficient light and ventilation of the cells in the police department. These defects can be remedied however, and they do not affect the special merits of the plan. The design is classic, and is treated and grouped with considerable originality and picturesqueness of general effect. We should suggest an attempt, however, to give a little more consideration to some of the details, and evolve something more original than the vase terminals and the festoon ornaments which have done duty so often that every one would be tired of them now, even if they possessed more decorative suitability than they ever did.

The competitors were required to give, and to take the responsibility of abiding by, an estimate of the cost of the building. It is wonderful what an effect such a stipulation has in bringing up architects' estimates to a level of realism in a competition, and in nipping the imagination which can often in such cases see a power of doing everything for 25 per cent. below the normal rate of building. Messrs. T. D. Barry & Sons estimate their building at 27,000*l*. It will be rather a tight fit, but we think it can be done.

Among the other designs sent in, two alternative sets by Messrs. Hornblower & Sons exhibit a great deal of work, and have some very good points in detail, but the plan wants simplicity in its working, which is also the defect of Messrs. Aldridge & Deacon's plan. They have sent a beautiful set of drawings, and the architectural treatment is suitable and in good taste, but the arrangement cuts short internal corridor communication at one point in a way that might be inconvenient, and there is a lack of distinct method in the plan. Mr. T. N. Crofts has attempted with some success a special architectural treatment suggesting the idea of a building which (for evil doers) is to be the next step to a prison, and is in part a temporary prison itself; his elevations are clever and original in this respect, and his cells are apparently better placed for securing light and air than others; but there are features in the other parts of the plan which would put it out of court hopelessly, on practical grounds.

The Corporation adopted the system of limiting the competition to local architects, i.e., in this case, residents either in Birkenhead or Liverpool. Except in the case of buildings of first-class size and importance, this is a precedent that might very well be followed more often than it is.

A Large Set of Chimes has been erected in Leyland Church, Lancashire, by Messrs. John Smith & Sons, Queen-street, Derby.

THE LAST OF GARDEN COURT, MIDDLE TEMPLE.

SOME slight stir was occasioned a few months since by the threatened destruction of Goldsmith's latest residence in the Temple. Brick-court has just been partially rebuilt, though there are spared for a while the sets of chambers on No. 2 staircase, in which Blackstone (then at work upon his Commentaries on the Laws of England) on the first floor, and Goldsmith immediately above him, were contemporaries together. But the benches have marked out for speedy demolition the remaining portions,—being Nos. 3 and 4,—of Garden-court (built circa 1755); a locality that is closely associated with the authors of the best prose tale, the best biography, and the best romances in our language.

Removing from No. 6, Wine Office-court, Fleet-street, Goldsmith, in 1763, took a humble set of rooms in the attic floor of the then library staircase, Garden-court; sharing them with one Jeffs, butler to the Society. Here he was soon visited by a neighbour from No. 1, Inner Temple-lane. On that occasion Dr. Johnson excited his host's uneasiness by an apparently minute survey, owing to his defective vision, of the scanty accommodation afforded. Making no attempt to conceal the sensitiveness of his nature, Goldsmith characteristically broke out with:—"I shall soon be in better chambers, sir, than these." "Nay, sir," answered his tender-hearted friend, "never mind that. *Nil te quæviseris ætra*," Invaluable advice, says Forster, if Goldsmith, blotting out remembrance of his childhood and youth, and looking solely and steadily on the present and the future, could but have dared to act upon it. Yet this oblivion such a man as Goldsmith could never share. In Garden-court he completes,* and dedicates to his brother Henry, that exquisite poem, whose opening stanzas dwell upon a recollection and love of their early home at Lissoy. At this period, moreover, Dr. Johnson, who had received a similar kindness from the author of "*Clarissa*," relieved Goldsmith from arrest in his temporary retreat in Newbery's lodgings at Canonbury Tower by the sale to Newbery's nephew of the "*Vicar of Wakefield*." A few months afterwards we find him in a better set of rooms in the floor below, and there, as appears from the accounts of his tailor, Mr. Filby, he kept a man-servant. Here he composed some of those dear delectable little histories, as Charles Lamb describes them, for children: he called himself their friend, but he was the friend of all mankind; and, inspired by Percy's "*Reliques*," wrote his own ballad of "*Edwin and Angelina*." Whilst living in Garden-court, too, he resumes practice as a physician, going about in a scarlet cloak and with the cane which, with his desk and chair, is preserved in the Forster Collection; and, emulative of the success that attended Garrick and Colman's "*Claudine* Marriage," determines to write a comedy. Four editions of "*The Traveller*" had appeared in twice as many months when the Newbery found it worth while to give to the world that incomparable story of quiet labour and domestic happiness which Sir Walter Scott does not stand alone in declaring to be without a parallel as a fireside picture of perfect beauty. Goldsmith devoted the profits, some 400*l.*, derived from his first play, "*The Good-natured Man*," to purchasing, in 1768, the chambers in Brick-court, where, after further struggles with the extremes of fortune, he eventually closed his unhappy life on the morning of Monday, April 4th, 1774, unattended by any one of his beloved companions, and lamented alone that day by that strange unaccustomed group of unbidden mourners who sat on the stairs weeping bitterly for the only friend they had ever known. Well might the Jessamy Bride ask for a lock of his hair; well might Reynolds, hurrying of his death, put aside his brush, and Burke burst into tears; whilst Johnson, writing to Boswell some three months later, penned those few words which will endure as long as all the names recorded here. At No. 2 staircase, Garden-court, lived Sir John Carr, the eccentric author of the "*Caledonian Sketches*," subject of Du Bois's amusing burlesque; on No. 3 staircase the late Capt. Hans Busk, asserted founder of our present volunteer

forces, had chambers; and there, within sound of the once pleasantly-rippling fountain, Sir Walter Scott often called to see James Boswell, son to him who wrote the life of Johnson.

THE GOVERNMENT OFFICES COMPETITION.

SIR,—As some of the conditions of this national competition do not appear to be drawn with that perfect freedom from one-sidedness which is not only desirable but, doubtless, intended, by H.M. Commissioners, I will venture, if you permit, to make a few remarks upon them by way of friendly protest and suggestion. In their well-meant anxiety to be fair to both sides the Commissioners have adopted a severity of method which I fear will defeat that object. The precautions proposed are calculated to give great powers to them, while the competitors are carefully bound to silence and excluded from court. I think that any man of the world, without necessarily being a cynic, would say that the conditions, as they at present stand, irresistibly suggest the possibility of unfairness, an opening for hole-and-corner work, a job. Now if this impression, erroneous though it be, should be general or even limited, the result will be unfortunate. The best men will not compete. Clearly publicists in the essence of the whole proceedings in this as in all other great national competitions. There is everything to be gained by it. I can see nothing to be lost by it. On the other hand, secrecy and unjust suspicion inevitably go together. Then have not competitors always a right to know their judges before engaging in the race? But let me proceed to notice the objectionable clauses.

3. "Before any designs are sent in the Commissioners will appoint a committee of judges, one, at least, of whom will be an architect. The judges so to be appointed will select ten designs, or such less number as they may think fit, the authors of which will be invited to compete in the second or final competition."

The first sentence should rather run thus:—*After* (not *before*) the designs are sent in the Commissioners will appoint and *make public the names of* a committee of judges, one half of whom, at least, will be non-competing architects, who will begin and finish their work immediately after appointment, and, after coming to a decision, at once report publicly in the usual manner without communication with the Commissioners or with any other department.

The proposal of one architect is utterly inadequate. There might be five or more other judges, and, not being architects, they could only be more or less competent to decide a question emphatically architectural and practical. On every question the poor weak individual would be outvoted by men with only partial knowledge.

As the clerk of works who is to receive the drawings (see 15) is an *employee* of the Commissioners (as stated in debate in the House of Commons a few weeks ago), can it be supposed that some of the Commissioners (whose men must arrange the plans for examination by the judges) will not either see them or hear a great deal about them? It is clearly impossible that the designs shall not be seen by any one except the judges, and, if their officers (that is, a body of indiscriminate workmen) see them, the guarantee of secrecy,—the basis of the conditions,—vanishes. I am sure, therefore, that the competitors would prefer the usual publicity from the first.

This publicity would be a sufficient security against any second competitor making unfair use of a good idea of someone else's. But if done the judges would know how to act. Judges, moreover, feel more responsibility when known and when acting in public.

Why, in a great national work, involving unusual and the utmost labour, anxiety, professional and architectural knowledge and practical skill,—the experience, in short, of a lifetime,—the commission for which has been won in a severe national, perhaps international, contest, the usual commission of 5 per cent. should be reduced by 10,000*l.* on estimated outlay (usually much below the actual one), it would, I think, puzzle the Commissioners to explain satisfactorily to any disinterested person. The actual work will take some ten years of time, thus only yielding 2,500*l.* per annum,—a small income indeed for a first-class architect, who would necessarily have to reduce his private

practice considerably so as to give the proper attention to so large a work, and to pay many clerks.

Is it to be supposed that this great nation will expect its best and most severely tested architect to make such a sacrifice? I think not. Meanness assuredly is not a national characteristic. AN ARCHITECT.

SIR,—Wisely or unwisely, rightly or wrongly, the upshot may decide; but of the fact that the Departmental paper issued by the Office of Works on the 17th current, as to a competition for the Admiralty and War Office, throws down the gauntlet to the architectural profession, so far as it is organised and represented, can hardly be denied. "No rules of any association or society shall be held binding upon the Commissioners." Any dispute or question between the architect and the Commissioners shall be referred to a single arbitrator to be appointed by the Treasury; that is to say, shall be decided against the architect. In case of the death or incapacitation of the architect, any unsatisfied claims he may have against the Commissioners lapse, or, at all events, are relegated to that region of "equitable proportion" which is to be decided by what is called the "arbitrator,"—that is to say, the *employé*,—of the Treasury. For any extra time or labour,—and architects know what that implies,—the most satisfactory mode of "arbitration" is to be adopted. All plans, specifications, and the like, are not only to be the property of the Commissioners, but to be deposited at the Board of Works; and the architect is to make all copies and working drawings at his own expense. And for all this, and for the brainwork which survives a competition *à deux étages*, the munificent sum of 25,000*l.* is to be given to cover all claims. Clerks of the works, inspectors, draughtsmen, are all to be at the charge of the architect. And as if to add to the other disadvantages of the plan, comes the scheme for making the builder independent of any efficient control on the part of the architect. The determination of the instalments to the builder, and the making up of the amounts connected with the execution of the works, are to be conducted on the Japanese plan; which was adopted for the special object of taking advantage of foreign skill, while keeping the foreign engineers and architects in ignorance of Japanese prices. They will be "provided for by the Commissioners of Works."

Who, under these disrespectful conditions, may be disposed to dissent in what the Commissioners modestly call a "sketch," provisions are adopted for concealing. The "sketch" is to be on a scale of 24 ft. to the inch, to include a plan of each floor, an elevation of each principal front and court, two complete sections from north to south, and one from east to west; description of the accommodation provided on each floor for each department and sub-department, total cubic contents, "explanation" of material and mode of construction, and approximate estimate of the cost of each building.

The reward for pleasing the Commissioners by this gratuitous work is to be the privilege of sending in another set of plans on a larger scale, for which the handsome sum of 600*l.* will be allowed, to be deducted from the main sum allowed the ultimate winner; and the success in this second competition is to determine who shall be the architect, or rather the anomalous servant of the Commissioners; there being no provision that he shall be allowed to carry out his own design.

The ultimate authority,—with the exception of the "arbitrator" of the Treasury,—seems to be a Committee of Judges to be appointed by the Commissioners, of whom "one, at least," will be an architect.

What response these terms will elicit from the profession remains to be seen. It would, we think, be difficult to frame a set of brand-new regulations more offensive to a dignified profession, or more likely to elicit, at the greatest cost and trouble to the competitors, the most unsatisfactory results. Every rule, custom, and practice of the profession seems to be studiously set aside,—and the name, without either the power, the responsibility, the dignity, or the proper emolument of an architect, is the only bait that is offered in order to net a shoal of laborious designs. We cannot but anticipate that either the Commissioners will have to improve their terms, or that former failures and disgraces will be distanced by the New War Office and Admiralty. C.

* "This day is published, price 1*s.* 6*d.*, *The Traveller*, or a Prospect of Society, a Poem. By Oliver Goldsmith, M.B. Printed for J. Newbery, in St. Paul's Churchyard." (460). *The Public Advertiser*, 19th December, 1768. This was the first work to which Goldsmith put his name.

SPECIAL AND SUB-CONTRACTS IN BUILDING CONSTRUCTION.

SIR,—In the absence of more capable correspondents, I would solicit permission to supplement the remarks you did me the favour to afford space for a few weeks ago, by some further remarks suggested by the more recent correspondence, not by way of criticism, but by way of taking kindly counsel with each other, suggesting rather than harshly asserting; and though differences of opinion may, as they must, in fact, exist, their expression, when couched in this form, cannot be other than acceptable to all fair minds (see *Builder*, pp. 199, 234, 302, *ante*).

If one could deal with the present subject in very few words one would like it the better, but to do justice to a subject when it has been brought to the front by correspondents representing, in some cases, conflicting interests, is difficult, except at some length.

Your correspondents have made the duty easier by their outspoken, clear, and not unkindly manner of representing their views upon a difficult and somewhat thankless subject, for, although many have been long aware of the desirability of this vexed question being settled on its fair merits, but few there are who would feel sufficient interest in it to state their views openly and without fear or favour, risking possibly not a little odium in adverse quarters for having initiated the ventilation of a subject which, however important in its bearings upon more than one class of interests, has been held by not a few to be a highly inconvenient and undesirable subject to discuss in this shape. Of course we know that too much as well as too little may be said upon any subject.

However, as regards one point of recent correspondence,—as to an architect's right to scrutinise sub-contracts made between a general and a subordinate contractor for any part of the work connected with a contract,—much, of course, depends upon the circumstances and the standing of the contractor employed. Most architects claim the right to closely scrutinise everything done in connexion with the erection and completion of the buildings they have designed, of whose requirements they are the best judges, and most experienced contractors do not appear to deny this. The commonly accepted version of a contractor's duties under his contract is that the work will be carried out by competent workmen, under the eyes of proper foremen, at daily wages, in his (the general contractor's) direct employ; and so far at least as London custom is concerned, we know that this is the ordinary practice of all leading contractors. Should an architect find any evasion of the conditions, or should he find that a sub-contract had been made with some subordinate contractor for any of the structural portions of the work, entirely foreign to him,—in fact, objectionable, and not what he had a right to expect,—it would be difficult to say that he had not a clear right to interfere and insist upon the conditions of the contract being fulfilled, which commonly would be covered by the clause that "no part of the work shall be sublet." &c. Of course, when a contractor has the confidence of an experienced architect, he (the architect) would have not the least desire, nor, in fact, would he find it to his client's advantage, to harass the contractor about matters of minor detail connected with his (the contractor's) methods of arranging his business in his own way, and especially when there should be no need for such interference; at the same time, it would look like taking a one-sided view of an architect's proper position,—standing, as he does, between the contractor and the client, to see strict justice done to both,—to say that he has no concern with sub-contracts entered into between a general and subordinate contractor, because there might occur circumstances when he would have much to do with such arrangements.

Then as to whether the frequent insertion, in architects' specifications, of the names of special firms of merchants, manufacturers, and others, from whom materials connected with the structural work must be obtained,—such as the stone, bricks, slates, &c.—is a modern and unnecessary innovation whenever it occurs, and a sign of undue partiality for certain firms not superior to others, when there exists a large field, so to speak, of firms quite as good, and fully capable of supplying the same class and quality of goods; whether the selection of the most suitable is not more properly a matter for the judgment of

the contractor, who undertakes all the risks, and is held to be solely responsible, are questions upon which opinion is not altogether one way. The object, of course, is to obtain the fittest and the best, and certainly the old school of architects seemed to have no difficulty in meeting the case without any special predilections. The careful wording of their specifications was with them, as is now with such of them as remain, of far greater importance to the solidity of their buildings, and their general effect, when finished, than any sentimental preference for the goods of any particular firm of merchants or manufacturers. Of course, these remarks apply to the ordinary run of specifications. There are, we know, buildings erected in which many of the materials, &c., employed are not generally known nor commonly used, nor commonly manufactured, and in such cases the special insertion of the particular merchants' or manufacturers' names from whom such are to be obtained should be a convenience and a help to contractors. Before passing on, it may be mentioned that an authority has said, "Ambiguity is the bane of modern specifications." Touching again the question of special or separate contracts made between architect and specialists, or others, and the bearing upon the general contractor and clerk of works, it is necessary that both of them should be fully acquainted with all the details connected with such contracts,—that is, as regards what is actually included; whether the builder's work and attendances, &c., have been provided for and included in the estimates, or the contrary. This necessary information on all points should not be given simply orally, as is too frequently the case, not even when directed by the tip of a fluent tongue, but should be fixed in writing. Many specialists give little if any specification describing clearly and in full detail, for the information of others, what they have included in their contracts, and not unfrequently are they their own interpreters of what they have or have not included, and especially does this occur in connexion with what is called the "builder's work"; the general contractor, knowing nothing, hesitates, or acts upon the word of the clerk of works, who may know as little, but, nevertheless, has to arrange and look forward. Any settled arrangement tending to the avoidance of cross charges, misunderstandings, confusion of accounts,—and this is really what it comes to,—should be welcome to all interests concerned. Here, as in the general work, we may not inaptly quote again, "Ambiguity is the bane of modern specifications."

As regards the practice of the old school of architects in their dealings with contractors, there is much that may be copied with advantage by the new school generally. I am old-fashioned and conservative enough to feel the highest respect for them and their doings. They delighted in solid and lasting work; they were, as they are, clear about their intentions and precise in their instructions, unchangeable, and with a high regard for their word, just to all interests, economical, but not peddling niggards; and these are they who are now, in various ways, giving the benefit of their long experience and the wisdom bought of it to the newer school and with the unselfish object of promoting to the extent of their powers the elevation and dignity of their profession generally.

It has been remarked by an able correspondent, writing upon the subject of sub-contracts, that "it is a difficult matter to bring proof as to the amount of profit derivable from any branch of the building trade." To my mind, this is true, and it rather amusingly reminds one of the tortures described by the experienced in connexion with the mystic word "prime-cost"; it is capable of an elastic interpretation according to circumstances, and many astute brains have been before now puzzled over it, and it has not unfrequently been found to contain within itself a considerable element of profit. It need not be said that the "prime-cost," as understood by all leading architects and contractors, is that which represents the *net* cost of the labour and materials, &c. without any further additions whatever; it is then susceptible of taking its legitimate and fair profit.

Before concluding, and although not quite pertinent to the object of this discussion, it may be stated that much soreness has occurred before now by what may be called an anomalous practice, stated to be not so rare as it should be, *viz.*, contractors of standing and repute being invited to tender for works in competition with others not of equal standing, and

doing what may be termed a cheap class of work. The former, as is the custom, do not know the names of other competitors; in result one of the latter usually gets the contract, and the former would not have wasted time and money in working up tenders, but they would have declined had they known beforehand with whom they were classed in competition. The public should understand that it is not with building affairs as with many of the other concerns of life; the apparent saving of 5 per cent. in a contract may, as it has in very many instances before now, prove a 10 per cent. loss. N.

RAILWAY AND DOCK CONSTRUCTION.

MR. JAMES BRUNLEES, F.R.S., President of the Mechanical Science section of the British Association, in the course of his address at Southport last week, said he proposed to offer some brief remarks, as far as possible free from technical language, on a subject familiar to his own mind and within his own experience during a period approaching half a century, namely, "The growth of mechanical appliances for the construction and working of railways and docks." Railways of the present time, he said, were in principle what they were at the outset, but they differed greatly in detail. From the opening of the first railway to the present day was only a period of about sixty years, and in that short time Great Britain and Ireland, the Continent of Europe, America (North and South), India, Australia, and Africa had been pretty well supplied with railway lines, more and more perfect in construction, and in a degree more or less suitable to the needs of their populations. About thirty years ago, when the traffic on railways had been very largely developed, the parts of the permanent way which had at first been thought likely to be the most enduring, the rails themselves, were found to be more rapidly worn away than was expected. Efforts were made to harden the surface of the rails, and a plan was introduced by Mr. Dodds for this purpose. The plating of rails with a steel surface was probably begun about 1854. It was not till about eight or ten years later that rails were made entirely of steel. Now, owing to improvements in the manufacture of steel rails, they can be produced as easily and as cheaply as iron rails. It was observed in 1876 that if, in order fully to realise the effect of the enduring quality of steel rails, you take a given section of the busiest portion of one of our leading railways, over which upwards of 7,000,000 tons of live and dead weight pass annually, you would find that the life of a steel rail on that portion of the line would be forty-two years if the traffic remained the same. This would reduce the cost of maintaining the permanent way of railways from 210*l.* to 106*l.* per mile. When you consider that such a saving on a system of 500 miles, which at 25,000*l.* a mile costs 12,500,000*l.*, is 52,000*l.* a year, or about $\frac{1}{4}$ per cent. of the cost of the railway, you will see that, besides some increase of dividend to shareholders, no inconsiderable sum may be, and has been, devoted by the railway systems of Great Britain to the comfort of travellers out of the saving effected by the introduction of steel rails. After referring to various improvements and inventions, Mr. Brunlees said that, with the present apparatus for signalling, the number of trains that may be worked on a line of railway with perfect safety is enormous, and may be said to have reduced the element of human fallibility to as low a point as human ingenuity is capable of compassing. The subject of brake power is one to which very great attention has been given, both in this country and abroad, and certainly, next to the condition of the permanent way and the efficiency of the signalling apparatus, perhaps nothing in connexion with railways is of greater importance. In principle it may be taken to be admitted that the engine-driver should control the brake, that it should be applied to every wheel of the train, and that in certain cases the brake should apply itself to the wheels. All recent efforts for the improvement of brakes appear to have been devoted to making the action of the brakes automatic, and to increasing the rapidity with which they can be applied. Whereas trains which, thirty years ago, weighed on the average thirty tons, with engines of the same weight, running at thirty-five miles an hour, could scarcely be brought to a stand in a distance of about 800 yards or 1,000 yards, now trains of twice or three

times that weight, and running at a much higher speed, can be brought to absolute rest in twenty or thirty seconds, and within a distance of from 300 yards to 400 yards. In the construction of railways and docks, one of the most extensive and tedious operations is the excavation of the soil. In England the cutting of numerous canals had trained a large body of men to special fitness for the execution of such work, which they performed with a manual dexterity and amount of muscular power which have made the British navy a special force in the execution of great public works. Where labour was comparatively scarce and inefficient, as, for instance, in America, efforts were made at an early period to supplement, and, if possible, supersede such manual labour by mechanical contrivances. In the construction of a railway or dock, a large amount of pile-driving is frequently necessary, and the manner of sinking piles has been much considered by engineers, for the purpose of obtaining rapidity and economy in executing their works. For some purposes, where piles were formerly used, cylinders are now sunk, and the manner of sinking them and their form and material have been much studied. For fine sands, such as were met with in piling for the Morecambe Bay viaducts, and the promenade pier in this town, I used a disc-pile, lowered into the sand by its own weight as fast as the sand was removed from under the disc by a jet of water forced through a tube opening at the foot of the pile,—a plan which has been applied by others elsewhere, and notably at Calais harbour—works recently, where a considerable saving has been effected by its use in sinking piles for the repair of the western jetty. For hard gravel, shale, or soft rock, such as is met with in the Mersey, I adopted a corkscrew form. Abroad, notably in Brazil, where the deposits are mostly alluvial, the ordinary bladed screw-pile was used in one case for a bridge of ten spans, in 35 ft. to 40 ft. of water, with perfect success. A great revolution in driving timber piles was effected by Mr. Nasmyth, who adopted the principle of his steam-hammer to the purpose. The Nasmyth pile-driver was first employed at an extension of the Devonport Docks, where a very large number of piles had to be used. At the first trial it did in four minutes and a half the work which by manual labour could only be done in twelve hours, and was perfectly successful from the first moment of trial. Iron cylinders for foundations were first used by Mr. Redman, on the Thames, at Gravesend, for the construction of the Terrace Pier in 1842, and they have since been largely employed all over the world. Several mechanical contrivances, more or less perfect in their operation, have been used for removing the soil inside the cylinders, to assist in lowering them into place. Mr. Milroy, Mr. Bradford Leslie, and others, have designed and used these mechanical aids with much success. There has been some controversy as to the relative advantage of caissons and gates for closing the entrance to docks. The former seem to be in favour in the Government docks; and at the Portsmouth Dockyard extension caissons were exclusively employed. Where a road has to be provided for, probably a caisson is not more expensive than a pair of gates and a swing-bridge; but it cannot be so easy or so quick to handle, especially since the introduction of hydraulic machinery for opening and closing dock gates. One of the most important operations in connexion with shipping is the repairing, cleaning, and painting of ships. For this purpose graving-docks, from which the water was removed after the vessel had entered, were and continue to be mostly employed. But during the lifting of the tubes of the Britannia Bridge into place with what were then called hydraulic presses, it occurred to Mr. Edwin Clark that similar means might be used to lift a vessel out of the water and place it in a position to be dealt with similarly to a construction on dry land. Floating docks consisting of pontoons which lifted the vessel out of the water have been used in this country, and more extensively in America, for this purpose; and at St. Francisco and Philadelphia a dock was constructed of pontoons in sections called "cannals," any number of which might be used, according to the size of the vessel to be docked. Mr. Clark's plan is quite different from these. His hydraulic dock consists of a number of columns arranged in two parallel rows, in which columns are placed the hydraulic lifting power. Between

these two rows of columns extends a frame or cradle, over which the ship is drawn in the water. When the ship is in position the hydraulic lifts are set to work, and they raise the cradle first to the bottom of the ship, which, being properly secured, is then lifted with the cradle clear of the water. There is no difficulty whatever in the management of this form of dock, and it has been perfectly successful, its chief recommendation being that any area of shallow water can be made available for docking large vessels, and that it is especially valuable in tideless seas. Among the many mechanical appliances for saving labour on railways and docks, the machinery for shipping coal is remarkable. The bulk, weight, and low price of coal render every item of saving in transport relatively important. It is commercially important also that the coal in the different stages of transport from the pit to the distant consumer should be broken as little as possible, and a good deal of attention has been given to contrivances to secure these ends. A great variety of hydraulic machinery has been designed by Sir William Armstrong for coal-loading, as it is largely employed at Newport Docks and elsewhere. Many different kinds of labour-saving machinery for dock and railway work in loading and unloading have been invented during the last fifty years, and have had a most important influence on the development of railway and steamship transport. Without such machinery it would be impossible that the present enormous commerce of the country could be carried on. Much of the work which was done by the steam crane is now done by the hydraulic crane, the first example of which, in a stationary form, was applied by Sir William Armstrong upon Newcastle Quay in 1846, speedily followed by hydraulic cranes and hoists at the Albert Dock, Liverpool. They were first applied to railway purposes at the Newcastle station of what is now the North-Eastern system, in 1848; and Mr. Brunel used hydraulic power three years later not only for cranes, but for the movement of turntables, traversers, and capstans for hauling wagons at the Paddington station of the Great Western Railway; and now not only stationary, but portable, hydraulic machinery is employed at most of the more important goods depôts throughout the kingdom. Hydraulic machinery has also been largely employed for opening and closing dock gates and sluices, and for warping ships through the locks. The working of railways by electricity has not advanced further than to justify merely a brief reference to it in this paper as among the possibilities, perhaps the probabilities, of the not distant future. A line of a mile and a half of tramway has been working successfully at Berlin for over two years without hitch or accident of any kind. A line of narrow-gauge railway is constructed from Portrush, the terminus of the Belfast and Northern Counties Railway, to Bush Mills, in the Bush Valley, a distance of six miles, which is now partially worked by electricity, and is to be wholly so worked as soon as the necessary plant is completed. As the generating power is that of the abundant streams of the neighbourhood, it will be economical; and if success should crown this practical experiment, it may lead to important results in regard to the employment of electricity under similar circumstances as a locomotive power.

PURE GEOMETRY.

This was the subject of the opening address given by Prof. Olaus Henrici, F.R.S., as president of the Mathematical and Physical Science Section of the British Association Congress at Southport. He said that pure geometry seemed to him to be of the greatest educational value, and almost indispensable in many applications; but it had scarcely ever been introduced at Cambridge, the centre of mathematics and mathematical education in England. In England pure geometry was almost unknown, excepting in the elements as contained in Euclid and in the old-fashioned geometrical conics. The modern methods of synthetic projective geometry, as developed on the Continent, have never become generally known here. The Professor continued—It is easy to see how the neglect complained of has come to pass. In England, when mathematics, after having lain dormant for about a century, began to revive, the first necessity was to become acquainted with the enormous amount of work meanwhile

done on the Continent. This acquaintance was made through France, at that time nearly all the standard works being in the French language, which was at the same time the language best known to English students. The subjects principally taken up were the calculus and its application to mechanics; and I believe I am not far wrong when I say that the wonderful writings of Lagrange, with their extraordinary analytical elegance, had the greatest influence; but in his works anything geometrical was studiously avoided. Lagrange prided himself that there was no figure in his "Mécanique Analytique." The best analytical methods of the Continent were thus introduced into England, rapidly assimilated and made the foundation of new theories, so that the mathematical activity in this country is now at least as great as it has ever been anywhere. But whilst analysis, algebra, and with it analytical geometry, made rapid progress, pure geometry was not equally fortunate. Here the hold which Euclid had long obtained, strengthened, no doubt, by Newton's example, prevented any change in the methods of teaching. Most of all, perhaps, solid geometry has suffered, because Euclid's treatment of it is scanty, and it seems almost incredible that a great part of it,—the mensuration of areas of simple curved surfaces and of volumes of simple solids,—is not included in ordinary school teaching. The subject is, possibly, mentioned in arithmetical, where, under the name of mensuration, a number of rules are given. But the justification of these rules is not supplied, except to the student who reaches the application of the integral calculus; and what is almost worse is that the general relations of points, lines, and planes in space is scarcely touched upon, instead of being fully impressed on the student's mind. The methods for doing this have long been developed in the new geometry which originated in France with Monge. But these have never been thoroughly introduced. Works written in the German language naturally received even less attention. But it was in Germany, at the beginning of the second quarter of this century, that geometry received at the hands of several masters an impulse which put the subject on an entirely new footing. As far as the progress of science is concerned, this neglect of pure geometry in England has been of little consequence,—perhaps it has rather been a gain. For science itself, it is often an advantage that a centre of learning becomes one-sided, neglects many parts in order to concentrate all its energy on some particular points and make rapid progress in the directions in which these lie. At present, when mathematics flourishes as never before, when almost every nation, however small, has its eminent mathematician, there are so many such centres that what is neglected at one place is pretty surely taken up and advanced at another. But what may suffer if one side of a science is not cultivated in a country is the industry which would have gained by its applications. In considering the teaching of any mathematical or other scientific subject, we cannot at the present time neglect the wants of the ever-increasing class of men who require what has been called technical education. Among these, the large number who want mathematics at all require geometry much more than algebra and analysis, and geometry as applied to drawing and mensuration. This want has been supplied by the numerous science classes spread over the country, with their headquarters at the Science and Art Department at South Kensington, whose examinations,—now, however, put in competition with those of the City and Guilds of London Institute, and others,—have pretty much guided and regulated the teaching. A great deal of good has thus been done, but there is still much room for improvement. The teaching of geometry especially, as judged by the text-books which have come before me, is somewhat deplorable. And this is so, principally, because the spirit of Euclid and the methods of the ancient Egyptians and Greeks, rather than the fundamentally different ideas and methods of modern geometry, still rule supreme; though the latter have had their origin partly in technical wants. It is satisfactory to learn that an association has recently been formed, under the presidency of Professor Huxley, "to effect the general advancement of the profession of science and art teaching by securing improvements in the schemes of study, and the establishment of satisfactory relations between teachers and the

Science and Art Department, the City and Guilds of London Institute, and other public authorities." The good wishes of all who have the cause of sound education at heart must go with such an undertaking, one of the principal aims of which seems to be to save teaching from being any longer enslaved by examinations, and to promote greater accord between the teacher and the examiner. In considering the merits of Euclid as a text-book, it is desirable to distinguish clearly between the general educational value of its teaching and the gain of geometrical knowledge. It is with the latter chiefly that I am concerned, whilst it is, of course, through the former that Euclid has got so firm a hold at all schools; and to the great majority of boys this is undoubtedly of most importance, and no reform would have the slightest chance of becoming generally introduced which neglects this. But improvement in both directions may well go together, and the logical reasoning employed in Euclid would gain to many boys much, both in clearness and interest, if the subject-matter reasoned about became in itself better understood. Probably a great deal could be done by introducing some of the elements of logic into the teaching of language. I have been assured by an eminent scholar that the laws of forming a sentence,—the fact that a sentence in its simplest form consists of subject, object, and copula,—was not explained in English schools. If this grammatical part of logic were properly treated of in connexion with language, and if at the same time acquaintance with geometrical objects, particularly through the medium of geometrical drawing and the many methods used in the Kinder-Gartens, were more secured, then a systematic course of geometry would become both easier and more useful. There is very little of the influence of modern ideas to be found in the different syllabuses which have been published. Even in the one-headed "Modern Geometry" there is nothing of the genius of modern thought. The subject-matter is partly taken from modern geometry, but for modern methods one looks in vain. In the geometrical conics, too, one would like to see Steiner's generation of conics, but of these there is no trace. Nevertheless, it is satisfactory to see that the use of the syllabus on plane geometry has spread pretty widely, and it is to be hoped that it will continue to do so. A thorough reform in the direction indicated will be a difficult task, and it will perhaps be a long time before it is possible. At present it has not even been settled which series of axioms will ultimately be adopted.

Professor Cayley highly commended the address, and said there could be no possible harm to any person intending to go through a course of modern geometry to have studied Euclid,—not only the ordinary course of the first four books, but also the fifth book, the omission of which he had always deeply regretted.

SANITARY CONGRESS AND EXHIBITION IN GLASGOW.

THE annual congress of the Sanitary Institute commenced in Glasgow on Tuesday, when the President, Prof. G. M. Humphry, M.D., F.R.S., delivered an address, remarking that by the Providential or natural law of the association of the physical with the other qualities was worked out the predominance of the best. In the great struggle of nations the best won, because goodness was the associate of strength and healthfulness. The maintenance of the sanitary condition of a people was a necessity to the maintenance of a high position among others. This became yearly more and more the case, as increasing civilisation made us increasingly dependent upon sanitary regulations, and determined more clearly what those regulations should be. It was thus that civilisation met and counteracted her own evils. The clustering of people in masses together promoted in various ways the liability to disease, while growing intelligence and rapidly-advancing science pointed out the means of preventing and arresting it. As prevention was better than cure, so the science which promoted the former was better than that which attempted the latter. To this the members of his profession were fully alive, and though their pecuniary gains were won by their efforts to cure disease, it was their constant and unselfish aim to trace out and stamp out every source of disease; and it was their desire and practice

to take an active part in every movement which had for its object the improvement of the sanitary condition of our people. Well would it be for our country when increased opportunity was given to the members of his profession, in Parliament and out of Parliament, of making a deeper impression on the convictions of our country. One result that might be anticipated from such an influence would ere long be the institution of a sanitary department in the Legislature, distinct from the Local Government Board, and under the direction of a Minister of Sanitary Affairs. He could scarcely conceive anything more likely than that to conduce to the well-being of our people, and their success in everything they undertook, whether it were literary, scientific, commercial, or military. Such an office, extending its administration to the sanitary condition of cattle would do much to promote agriculture, and to reduce the price and improve the quality of animal food. It would find a further scope for action in considering and checking the diseases to which our various food-producing plants became more liable as they were more highly cultivated, and which, in many parts of the globe, were producing great devastation and pecuniary loss, with accompanying distress and injury to the peoples. Under such a sanitary office the department of the Registrar-General would properly be placed. The Ordnance and Geological Surveys and the Meteorological Office should be in connexion with it.

In connexion with the congress, an exhibition of sanitary appliances and materials has been opened in Burnbank Drill-hall. In Class I. the Silicate Paint Company show their well-known decorative materials, including the Charlton Duresco. All the products shown by the company are asserted to be non-poisonous, and it is claimed for the Charlton white that it is "a pigment superior to white lead in its covering properties, purer in colour, and of equal lasting power." Messrs. McCulloch & Gow, of Glasgow, exhibit a screen which gained the "Charlton Prize," given by the Silicate Paint Company. This screen is executed in Duresco. Close beside this, Messrs. J. Orr & Co., of Wellington-street, Glasgow, have fitted up a very pretty stand to show the uses to which Lincrusta Walton may be applied. This is a decorative material the sanitary advantages of which have been previously pointed out by us. Opposite to this stand is a specimen of the work which can be done expeditiously and securely by the Pennycook Patent Glazing and Engineering Company. Messrs. Bradford & Co. have forwarded some of their well-known Vowel washing machines. Messrs. Griffith, Berdow, & Co. (Limited), of Glasgow, Liverpool, and London, are exhibitors of their excellent non-poisonous white paint, which they claim to have more body than any other similar product. They have also an enamel paint, and a good specimen of the capabilities of this material is seen on the stand. A washable distemper, similar in character to Duresco, is also shown by this firm, who, besides, exhibit varnishes and colours of all kinds. A new product is their petrifying liquid for damp walls. They claim that it enters and thoroughly closes the pores of the damp plaster, becomes of the hardness of stone, and prevents decay. A short distance from this is the exhibit of the Albissima Paint Company (Limited). This is a non-poisonous white paint. The manufacturers claim for it great purity, and that it will retain its colour under any conditions of atmosphere. Mr. T. J. Syer shows his patent vices; and the Scottish Asbestos Company have a large stand filled with their material. Messrs. Woollams & Co., of London, have neatly arranged a large and varied assortment of paperhangings, all free from arsenic; and in another corner the Drummond Patent Glazing Company, a few yards off, have erected a glass house, showing how their system is carried out. Another stall which will attract some attention is that of the Aluminium Crown Metal Company (Limited). Mr. George Winter, Huddersfield, shows a selection of marbled designs, both useful and ornamental, manufactured from ironstone slabs, and as the same pattern cannot be repeated the variety is almost infinite.

Class II., the exhibits in which are ranged round the walls of the eastern half of the hall, embraces all articles connected with sewerage and water supply. This is a very large section. A great number of manufacturers of baths and other sanitary appliances have entered this section, so that the merits of the various

systems submitted can be fairly examined. Almost close to the entrance Messrs. Shanks & Co., of Barrhead, have a large collection. The most noticeable feature is a peculiarly-shaped bath, which is said to possess numerous advantages over any of these fitted up in the ordinary way. The same firm show lavatories in which the waste-pipe, the overflow-pipe, the basin, and the table-top are all made of one solid piece of earthenware. Mr. E. R. McKee, Kirkcaldy, shows his patent drain-flushing apparatus, which is reported to have been tried with success in that town. The apparatus, which is automatic, can be so regulated that it will flush the sewer at given intervals, and is of especial use where the gradients are flat. Mr. John Hall, Stourbridge, exhibits a bath for which no casing is required. Messrs. J. & M. Craig, Kilmarnock, show white enamelled sinks and enamelled bricks, and Buchanan's patent sanitary appliances; and Mr. James Binnie, Gartcosh, has in his stand specimens of articles manufactured of fire-clay. Messrs. Joseph Cliff & Sons, Wortley, Leeds, exhibit their imperial porcelain baths, which are moulded and glazed in one piece, and are said to be much lighter than others; but the special feature of the stall is a fine array of enamelled bricks in various colours. The principal exhibits on the stand of Messrs. Walter Neilson & Co., of Paisley, are the commode and the wash-basin intended to be fitted up in Indian railway carriages. A very unpretentious, yet effective, self-setting close and open fire range for country use is also seen on this stand, besides a gully with basket sewer-gas trap. Messrs. J. & R. Howie, Kilmarnock, show a variety of fire-clay goods, and Messrs. J. & W. Kirkwood, of Leith, have forwarded a zinc bath. Mr. W. B. Morrison, of Eglinton-street, shows a varied collection of enamelled tiles by Messrs. Wedgwood. On the same stand are shown several improved systems for flushing water-closets. Messrs. Doulton & Co., of Lambeth, have forwarded numerous specimens of the articles manufactured by them, both in metal and stoneware, for the fitting up of baths and lavatories. Several of their newest inventions are shown in operation, and their display of fire-clay goods, composed of pipes and connexions of every conceivable kind for sanitary purposes, is a most instructive one. Messrs. W. Moyes & Sons, Pollokshields, exhibit what is claimed to be a new kind of flush-out closet, with improved cistern connexions. Mr. James Stewart, sen., Glasgow, shows a number of traps and syphon pipes. His principal exhibit, however, is one of Mr. Rogers' Field's flushing tanks. Almost alongside is the stand of Mr. John Fairbairn, of Edinburgh, who exhibits a double trap for preventing contaminated air or sewer gas from being forced into the house. Messrs. Muir, Ewing, & Co., Glasgow, show two marble-lined concrete baths. Mr. C. G. Roberts, of Collard, Haslemere, exhibits a patent automatic rain separator. It is self-acting, and is said to direct into a water-pipe the first portion of the rainfall that washes the roof of the building, and then, after the rain has fallen for a certain time, the separator catches, and turns the pure water into the storage tank. Close beside this are two stands containing earth-closets. Mr. Robert R. Heap, of Manchester, shows closets of various descriptions, but all are on the same principle. In these the earth requires to be dried or prepared, and their action is entirely automatic. The British Sanitary Company have also a specimen of their closets on view. Mr. T. C. Messenger's closet is fitted with a patent valve arrangement, which gives a uniform measured quantity of water at each flush, and thus prevents waste where the supply is limited. Mr. Wm. Ross, St. Vincent-street, Glasgow, shows an ingenious apparatus for regulating the supply of water to closets, and preventing waste. Mr. W. P. Buchan exhibits on the adjoining stand the "Carmichael" wash-down water-closet, with a powerful flushing apparatus.

A very large amount of floor-space has been allotted to the manufacturers of apparatus for cooking and heating, and the best known makers of this class of goods are represented. The stand of the Carron Company is in the large hall, close to the cooking-range in operation. Feature is a large cooking-range in operation. Messrs. Walker, Turnbull, & Co., of Falkirk, have also a large stand of cooking-ranges, stoves, and grates of various kinds on view. At the western end of the hall Messrs. Andrew Shaw & Son, of Glasgow, exhibit their "sine qua

non" open and close cooking-range, which can, by a couple of simple actions, be changed from the one to the other. On the adjoining stand Portway's "tortoise" slow-combustion stoves, manufactured by Messrs. Hydes & Wingfield, Sheffield, are shown. Messrs. Wm. M'Geoch & Co., Glasgow, show a number of grates and cooking-ranges, and Mr. Osbert Henderson has sent in a selection of grates, stoves, water-filters, lamps, and various useful household articles. In the temporary wing to the north of the hall, heating apparatus of various makes are exhibited. Messrs. J. L. Bacon & Co. have a good display in this section. The "Adams" Patent Gas Heating and Stove Company show a large selection of their manufactures. Messrs. Waddell & Main, of Glasgow, show a series of ranges and stoves of various kinds, and Messrs. A. Brown & Company's patent gas-governors will be found on the adjoining stand. Mr. James Keith has a large stand filled with different kinds of heating apparatus for houses, halls, or greenhouses, a hot-water coil-table, and hydraulic appliances. Mr. James Carriek's air-warming glass-enclosed grate is shown in the western wing. This grate does away with any blowdown of smoke or dust, the air is warmed by the use of a large metal surface in the form of a case which receives the radiant heat of the fire only, and the room is ventilated by means of a shaft, which, carried up to the ceiling, takes away all foul air. The Wilson Engineering Company exhibit a large selection of their open and close ranges and cooking apparatus. Mr. Thomas Fraser, of Aberdeen, has a collection of corrugated linings for vents on view, with a working model of a grate for the abatement of smoke and economy in working. Messrs. Mecham exhibit in the western wing their patent turning gear for managing the cowls of stockholes and ventilators, and adjoining it is a patent mechanical stoking apparatus, exhibited by Mr. George Sinclair, of Leith. Messrs. White & Bradford, of Bo'ness, show a cooking-range with revolving fires for consuming smoke, and other improvements.

There is, it is perhaps unnecessary to say, a large display of ventilators. Messrs. J. M. Lamb & Co., of London, show the "Triumph" ventilator in all sizes, from that devised for the smoking compartments of railway carriages to the larger ones for churches and other buildings. Ventilators made on the same principle for sewers and soil-pipes are also shown. Messrs. Hill & Hey, Halifax, show their ex-celsior syphon and outcast ventilators of different makes, and the Abolus Water Spray Company, of London, have on view some contrivances for ensuring ventilation. Among the other firms represented are Messrs. H. W. Cooper & Co., J. E. Ellison, Leeds, and W. P. Buchanan. Messrs. W. Rogers, of Bradford, show their patent opener for skylights, ventilators and fanlights; and Messrs. J. M'Haig & Co., of Glasgow, exhibit Munn's patent exhaust-ventilator. Messrs. Kite also show some of their successful ventilators.

THE VESTIBULE OF THE INTERNATIONAL ART EXHIBITION OF MUNICH.

WHEN, in 1879, the artists of the Bavarian capital invited the world of art to send their productions to the International Art Exhibition of that year, they promised to repeat the undertaking, for the third time in four years. The city of art, as München is rightly called, was determined and almost compelled to redeem its pledged word, notwithstanding many and various vicissitudes. Invitations were consequently sent out once more to all countries of the globe. The call of the South German capital, renowned in art, was not in vain. The responses were far more numerous and valuable than even the most sanguine expectations of the organisers of the exhibition could have hoped for. The wide space of the Crystal Palace at München contains, at the present time, a large proportion of the best works which the last decade has seen created in the art workshops of the civilised world.

The time did not seem at first favourable to the project of the München artists. Having nobody to rely on but themselves, they perceived, wherever their eyes were turned, preparations for exhibitions in contemplation or in course of execution, which naturally would divert attention and interest from the Bavarian

undertaking. But the Müncheners would keep to all they had promised, and, once more confiding to the charm and good repute of a name, they resolutely set to work. The result shows that their confidence was not misplaced. More splendid and successful than ever in its intrinsic value, richer and more fantastic in its outward appearance, the Third International Art Exhibition of München was able to open its doors to the public on the 1st of July last.

The vestibule of the building, of which we give a view in this week's *Builder*, is in keeping with the whole character of the exhibition. On entering the building, the visitor finds himself in a richly adorned hall supported by columns, and facing a luxuriant garden laid out in the rococo style. Three portals, connected by shrubberies, form, in a wide semicircle, the vestibule of the exhibition. The centre of the whole is formed by a huge and picturesque rock, from the summit of which water descends into basins at its foot. It is surrounded by a slender obelisk adorned with antlers and surrounded by shrubs. Statuary seems to spring from the rock. A winged genius extends the ermine protectively over the life-sized bronzed relief portrait of King Ludwig II. of Bavaria, the patron of the exhibition; the end of the ermine being partly supported by a winged boy. The water, caught in its fall by shell-like basins, descends upon a basis formed of broken rocks and covered with verdure, and surrounded by picturesque groups of high fir, palms, and other tropical trees. From the background steps lead up to a terrace-like elevation, the parapet of which is guarded by a sphinx bearing fruit. Thence a good view is obtained over a charming scene. The central rock garden is surrounded by green hedges, in the numerous niches of which statuary has been placed. Three monumental portals, the pediments of which contain trophies, at its towered over by trees and shrubs, lead, instead of into the shady grounds of a leafy park, into the solemn quiet of rooms full of art treasures.

Such is the vestibule of the München Art Exhibition. The effect is both festive and cheering, pleasant and stirring, and the artists who designed the whole well deserve the praises bestowed upon them for their work. They are Herren Rudolf Seitz and Professor Friedrich Thiersch, both of München.

THE MAXIMILIAN-STRASSE AT AUGSBURG.

(GERMAN RENAISSANCE.)

IT is said in Germany that "what Nuremberg is to Gothic architecture, Augsburg is to Renaissance," and it must certainly be allowed that no city in Central Germany exhibits more numerous and valuable examples of the latter style of architecture than does this noble old Imperial city. The "Maximilian-strasse," of which we give a view, almost bi-sections the town; it is nearly a mile in length, very wide, and bordered on either side by lofty gabled houses, exhibiting in the form of their gables and elaborate detail every variety of Renaissance architecture from the earliest, intermixed with much Gothic feeling and treatment, down to the latest and wildest extravagances of the so-called "pigtail style." The earlier houses are rather plain in design, with simple straight-sided gables, the architectural ornament being chiefly confined to the projecting bow-windows, doorways, and string-courses, which are generally of stone, whereas the surfaces of the walls are of brick, covered with plaster, which has in all cases been adorned with paintings in fresco or distemper. The two houses forming the extreme right and left of our view are excellent examples, that to the left retaining nearly all its original-coloured decoration. This house belonged formerly to the Weber family, and was evidently painted by artists possessed of a superior amount of skill to those who generally devoted their labours to this kind of art. The two other very elaborate gables on the left, though highly picturesque, show a later and less pure development of the style, and here we see the scroll gables, key-hole-shaped windows, curved pediments, and other signs of the decay of architectural taste. The vast brick gable, flanked by octagonal dome-capped towers, is that of the town-hall, or Rathaus,—a really noble example of civic architecture, and, though dating from the years 1617-1629, very free from the wildness and eccentricity of the late German Renaissance. The architect of this

building was Elias Holl, a native of Augsburg, who excelled not only in architecture but also as a worker in metals. Many of the ornaments of the noble gable are of bronze, and are supposed to have been modelled by him. The three upper stories of the Rathaus are occupied by one enormous room called the Golden Chamber. It is 110 ft. long, nearly 60 ft. wide, and about 50 ft. high. The lofty tower near the Rathaus is in reality the tower of the church of St. Peter, but is used as the watch-tower of the town. It is said to be 350 ft. high, and is constructed of brick, which was originally covered with plaster, and like the houses, decorated with painting. The church itself dates from the fifteenth century, but has been thoroughly modernised during the eighteenth century, and really contains nothing of interest except a few fragments of rather good Renaissance stained glass. The fountain in the foreground of our view is called the "Mercurius-brunnen," and is adorned with a statue of Mercury in bronze, by Adrian de Vries, executed in the year 1599. The street contains two other fountains, the "Augustus-brunnen," by Hubert Gerhard, 1590, and the "Hercules-brunnen," by Adrian de Vries.

The mode of decoration adopted by the earlier Renaissance builders at Augsburg seems to offer several suggestions to the architects of our own time, and it is well worthy of consideration whether we might not adorn the flat plaster surfaces of our London houses with some species of coloured decoration. Many firms in London spend thousands of pounds every year in advertisements. Might not the outside of the houses be made artistic advertisements? That advertisements may be made singularly ornamental is proved by the Chinese fans and umbrellas. We remember once asking a friend who had spent many years in the "Celestial Empire" to explain the legends upon these, as we had passed from the pictures that they were love stories or poems, but to our astonishment they all turned out to be the most bragging and impudent advertisements!

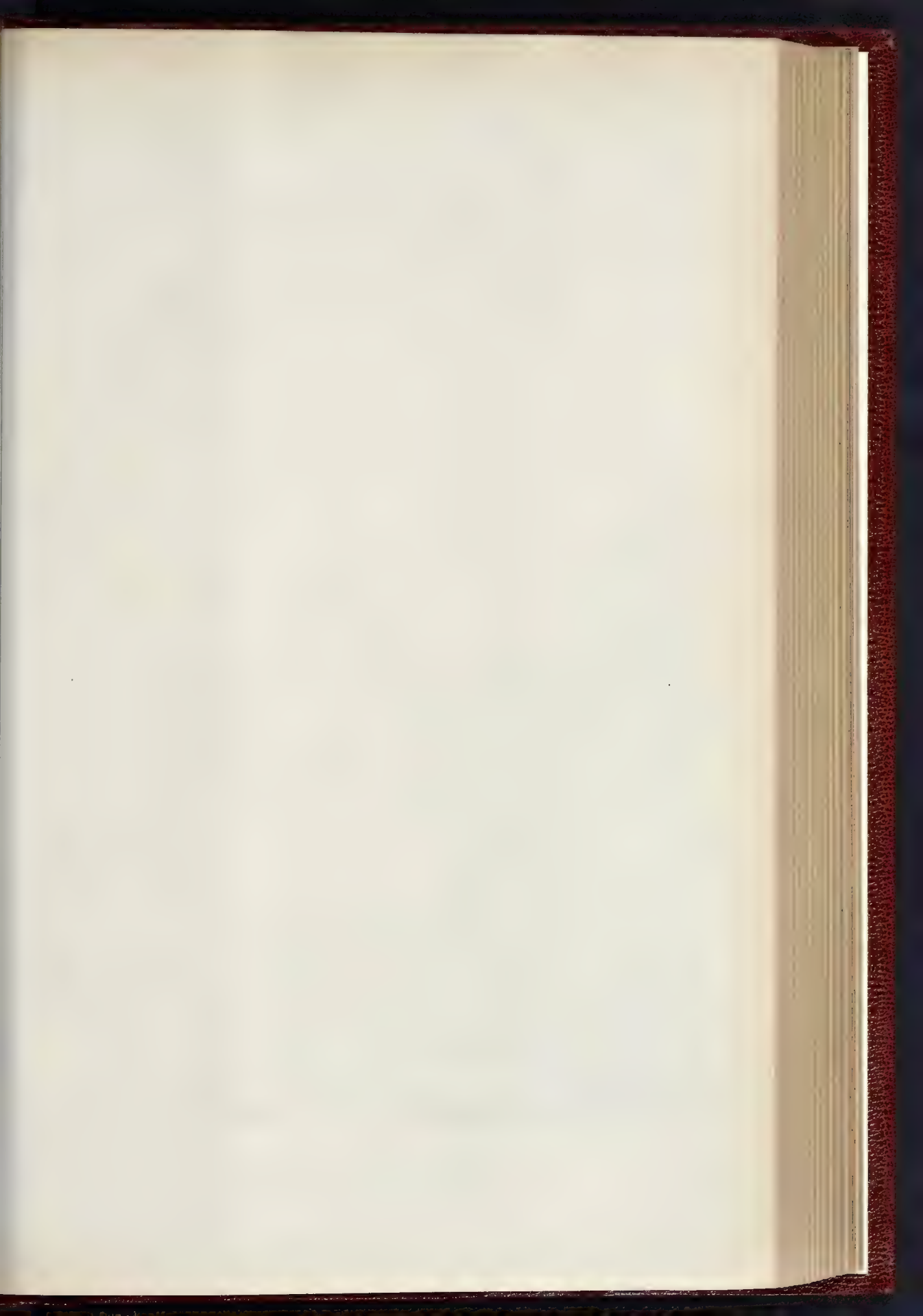
It would, of course, be impossible to have our houses adorned externally by painting of the highest class, but would it not be possible to set art students at work on some of our London plaster fronts? There is no reason why these pictures should not be movable where it is thought desirable, though, of course, it would be better for them to be painted direct upon the walls. Even if they were not wonderful as works of art, surely they would be better than the everlasting "stone colour," mud colour, and damson-jam colour, which now disfigure the exteriors of our houses.

SUNDAY SCHOOL, ASYLUM ROAD, PECKHAM.

THIS building has been erected at a cost of about 1,800*l.* at the rear of the Clifton Congregational Church, Asylum-road, Peckham, for the purpose of a Sunday-school. It consists of a main room, 55 ft. long and 32 ft. wide, with open roof of pitch-pine, and lighted by six dormers and windows at both ends. There are two small class-rooms divided from, but opening into, the main room; a separate Bible-class room, 16 ft. by 13 ft. 6 in., with bay window; another class-room for infants, 22 ft. by 14 ft.; a kitchen, and other offices. There are separate entrances for boys, girls, and infants. Warming is effected by warm water, and ventilation by vertical tubes and Boyle's exhaust ventilators on the roof. Externally the building is of red brick, Bath stone, and Broseley tiles, and lead glazing is used in the windows. Messrs. Pack Bros., of Brixton, were the builders; and the architect was Mr. J. Wallis Chapman, of 11, Sutherland-gardens, Harrow-road.

Threatened Fall of Houses in Drury-lane.

Something like a panic was created in Drury-lane on Tuesday afternoon by the report that several of the houses in that crowded thoroughfare were in imminent danger of falling. Four houses immediately adjoining a long-vacant but recently-excavated site north of the disused burial-ground belonging to the parish of St. Martin-in-the-Fields showed alarming symptoms of collapsing. The District Surveyor was communicated with, and the necessary precautions in the way of shoring-up were at once taken, the occupiers being meanwhile removed and the traffic of the street stopped.

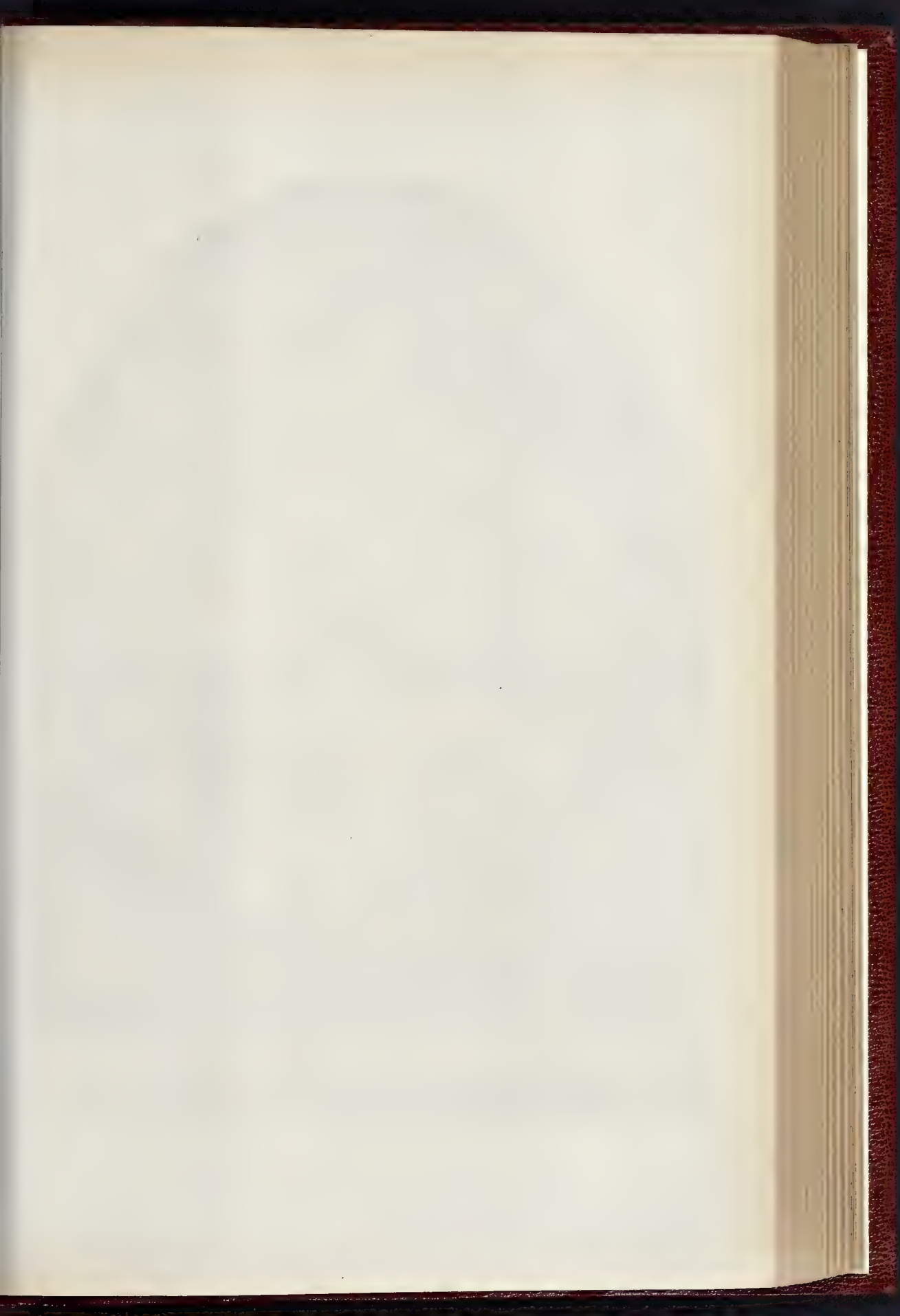


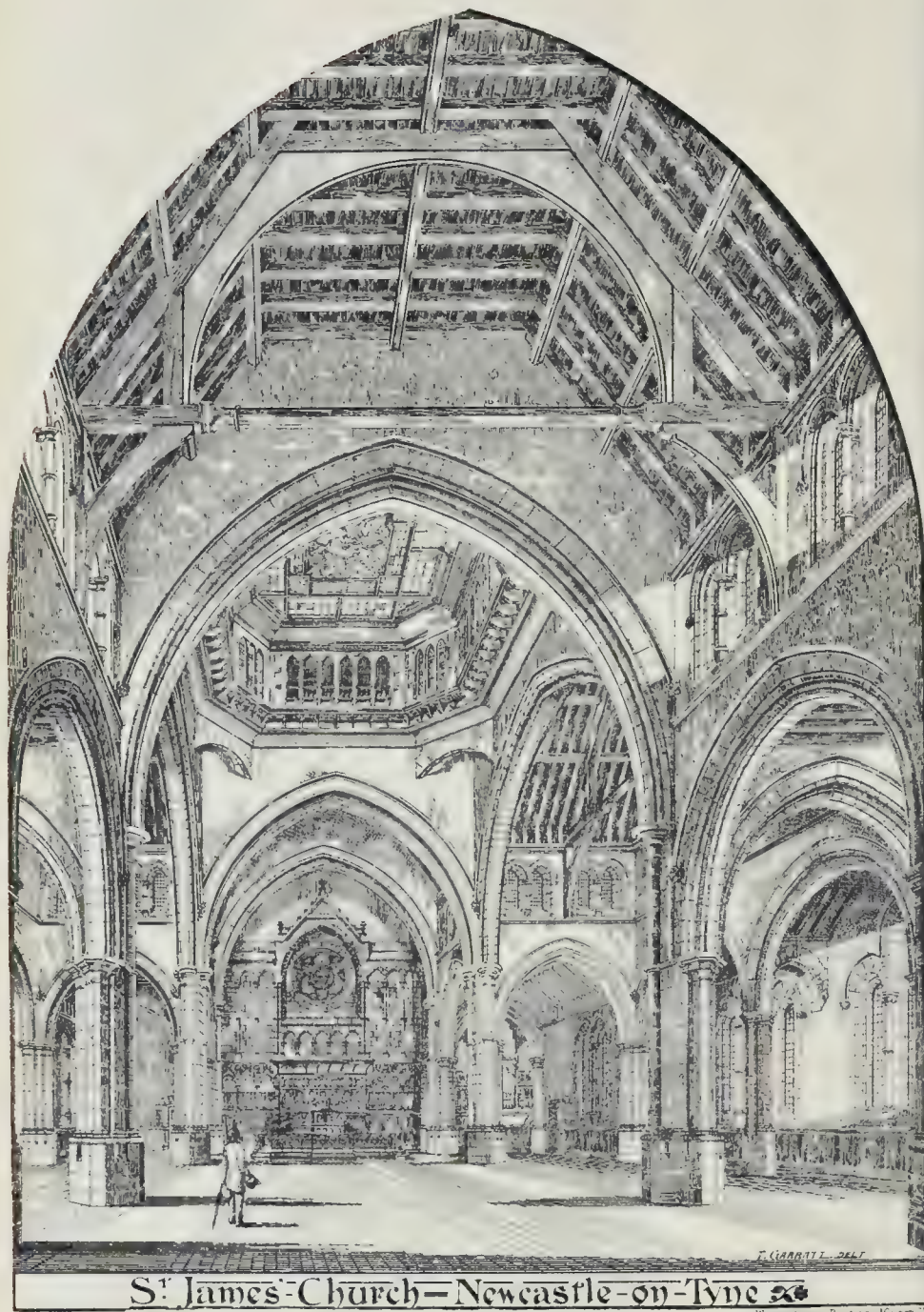


Wyman & Co. Printers 27 Queen St.

"FURZE BANK" A HOUSE AT BRIGHTON.

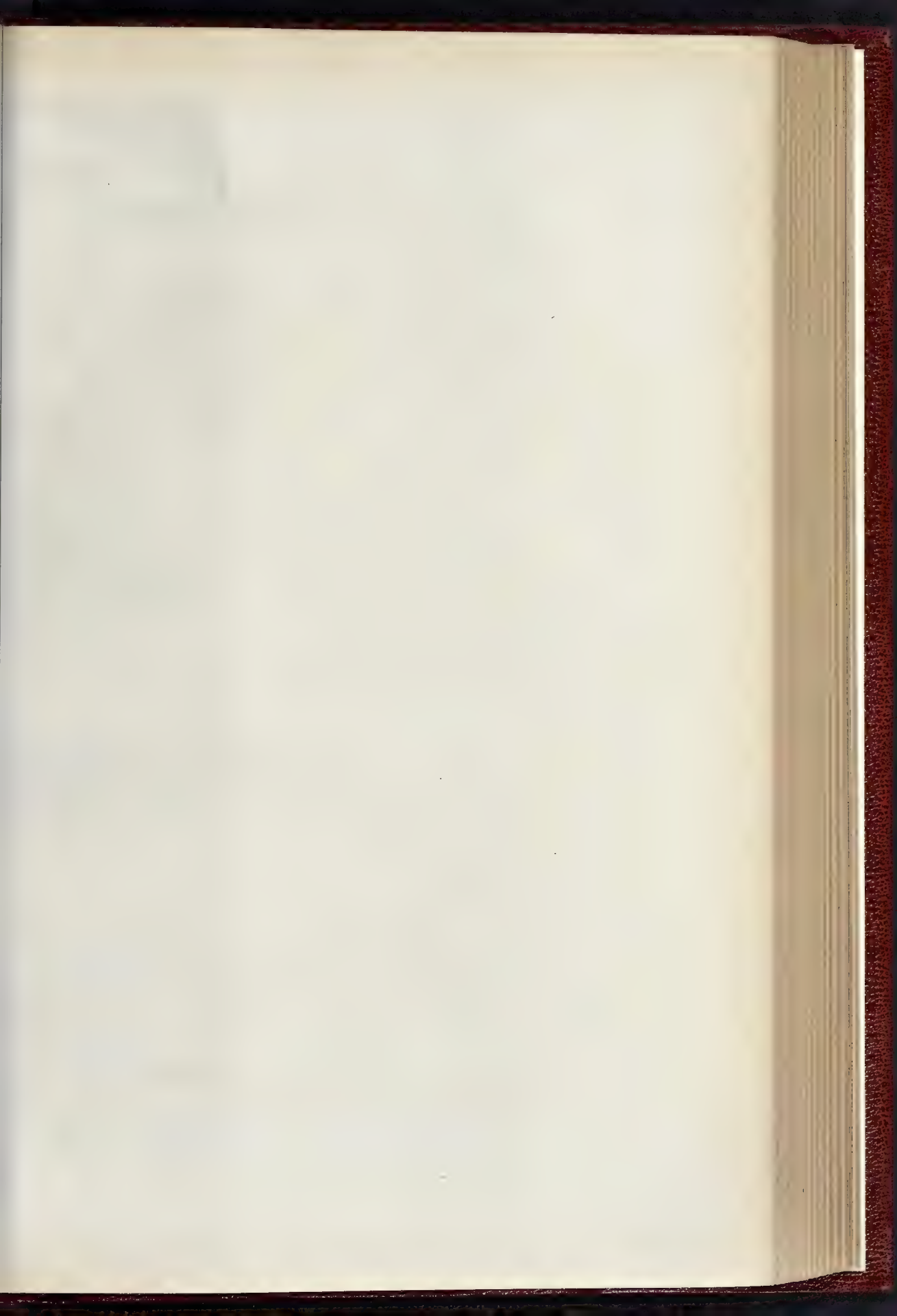
HOLFORD, CLAYTON AND BLACK, ARCHITECTS.



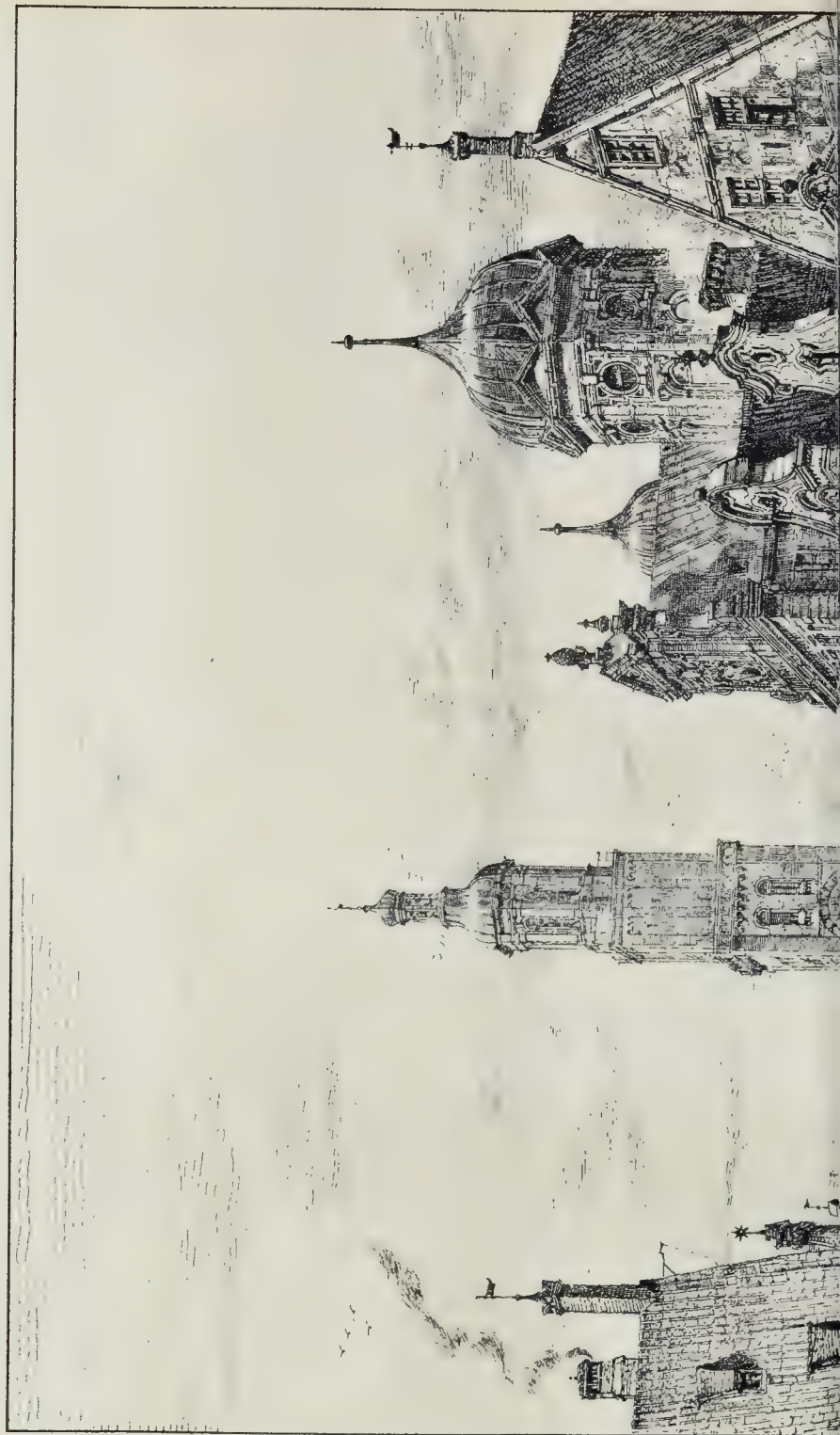


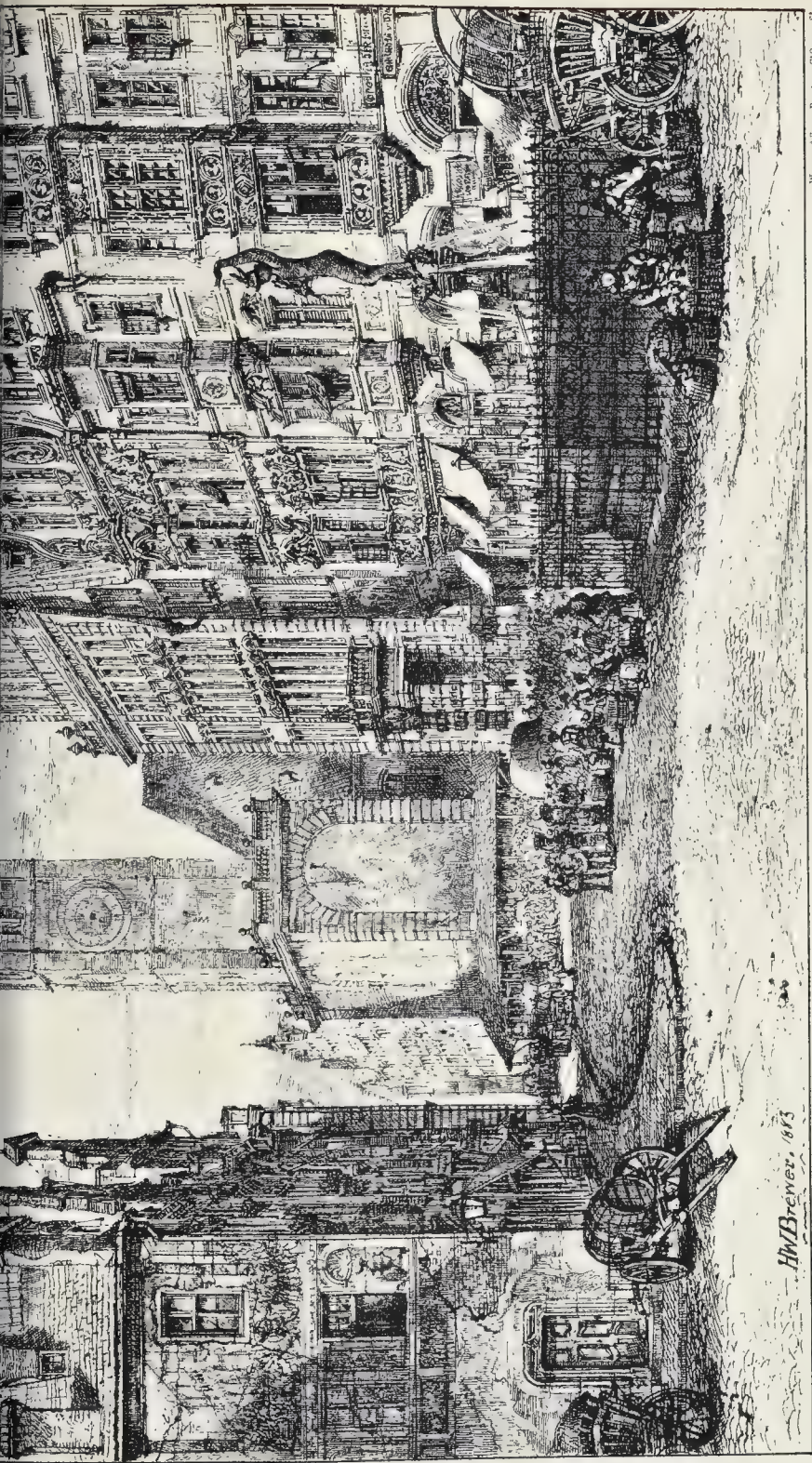
S^t. James' Church—Newcastle-on-Tyne

Wynand & Co. Printers, Queen



THE BUILDER SEPTEMBER 29, 1883.





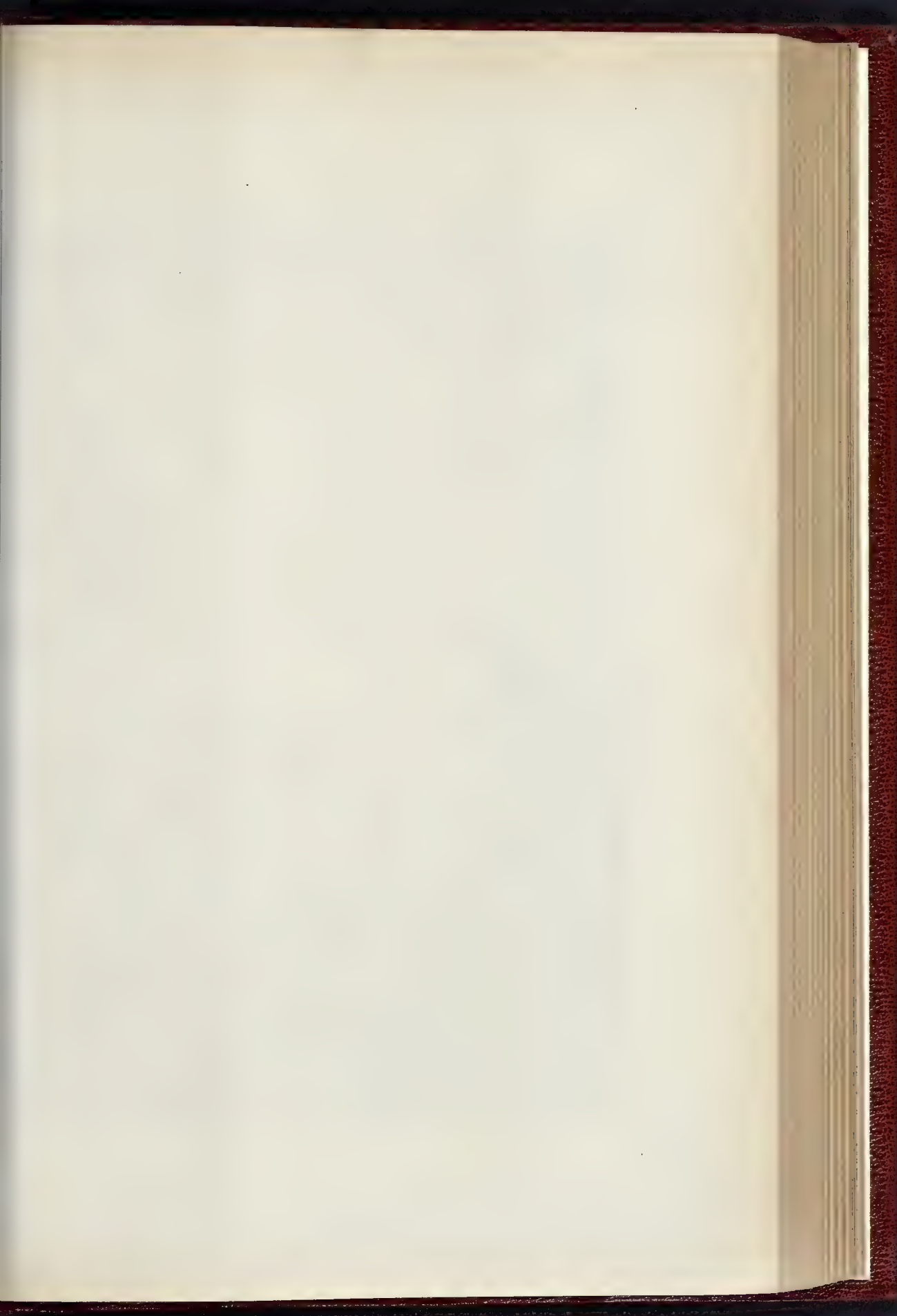
C. F. Hall, Photo-Litho, Castle St. Hollow.

H. W. Brewer, 1873

Wyman & Sons, Printers, D'Queen St.

THE MAXIMILIAN-STRASSER AT AUGSBURG.

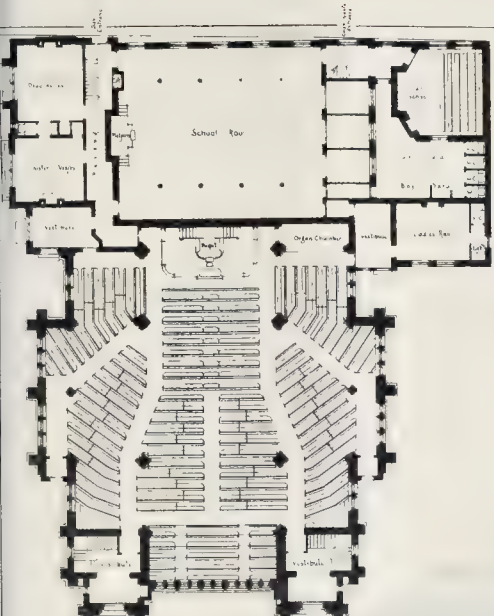
(GERMAN RENAISSANCE.)





THE VESTIBULE OF THE INTERNATIONAL ART EXHIBITION





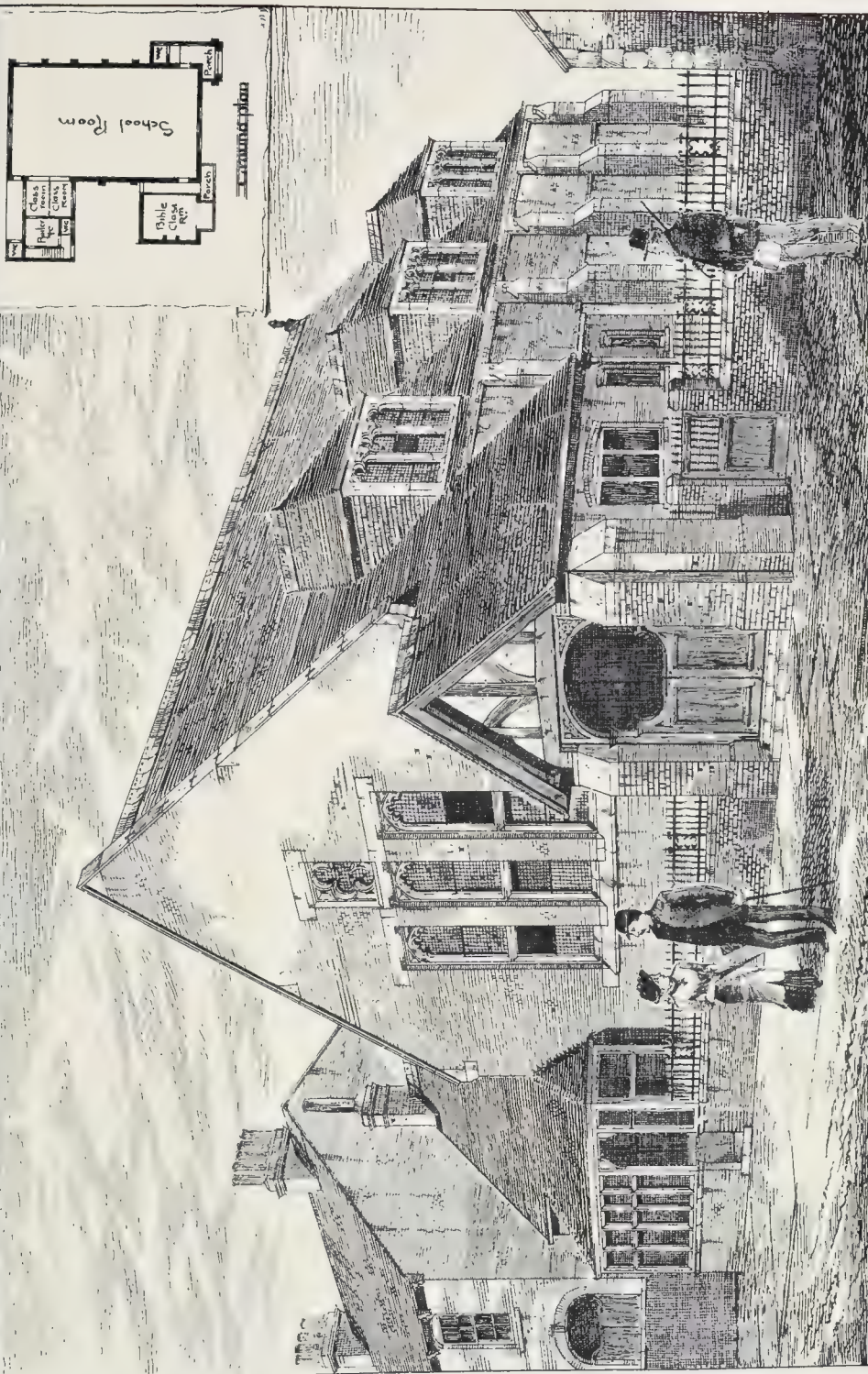
Ground Plan



St. James' Congregational Church Newcastle-on-Tyne

J. Lewis Banks Architect
W. & A. S. Jones Printers & Engravers

Printed by the Photo-litho. Co. London E.C.



SUNDAY SCHOOLS : ASYLUM ROAD : PECKHAM : J. Wallis Chapman Arch^t Sutherland Card^r W

"FURZEBANK," A HOUSE AT BRIGHTON.

This detached house, which has been built for Miss Whitehead, of Brighton, and is now almost ready for occupation, fronts to The Drive, a fine new road which runs from the sea front at West Brighton up to and over the Dyke-road, and thence down to the Preston Valley. Furzebank occupies a site which is at almost the highest point on this road, and it has consequently fine views of the sea and of the South Downs. The architects are Messrs. Clayton & Black, of North-street, Brighton.

ST. JAMES'S CONGREGATIONAL CHURCH, NEWCASTLE-ON-TYNE.

The committee having invited five firms of architects to submit designs for a church and school (two local firms and three from London), the design submitted by Mr. T. Finnis Banks, of 23, Finabury-circus, was chosen. The church has seats to accommodate 905 persons on the ground-floor, and 165 in a small end gallery, facing the pulpit.

The Sunday-school, at the rear of the church, has accommodation for 800 children.

Externally the church assumes the shape of a Greek cross, surmounted at the intersection of the arms by a large tower flèche. The few internal columns are so disposed that they do not obstruct the view of the preacher.

On the left of the pulpit is the organ-chamber level with the floor, and the choir in the immediate neighbourhood, blending with the congregation.

There are six entrance-doors. In the rear of the church are the schools and vestries, and ladies' room. Over the vestries is the "church parlour" and ante-room, separated by folding doors. Every convenience is attached to all these rooms. In the basement is the kitchen, with a small lift to take up the things to the central hall of the schools, and to the church parlour.

The Sunday-school consists of a central hall, having class-rooms facing the desk, and a number of class-rooms in a gallery on three sides of the room.

There are altogether twenty rooms available for Bible-classes,—young men's and young women's,—Dorcas, mothers' meetings, and other societies.

Under the galleries the divisions for classes are formed by curtains.

The infant school is in a separate building, but connected by a short passage with the main school. It is found inconvenient to have infant tuition within hearing of the classes.

The church will be heated by Grundy's hot-air system; the school by Messrs. Emley & Walker's hot water apparatus, heating-chambers being provided for the purpose at each end of the church.

The whole of the buildings are of stone, and the work is being carried out by Mr. W. Scott, of Newcastle-on-Tyne, Mr. Brewis acting as clerk of works.

OVERTIME.

"NOTES FROM BIRMINGHAM."

SIR,—I noticed in your issue of the 15th inst. (p. 364) a letter which, at the close, dealt severely with the question of overtime. Severely, but fallaciously; for workmen have others to consider than unemployed mates,—their first concern should be the home. The welfare of their own families will tax their energies; and not till this has been secured are others' employment to be considered. It is to no one's credit to overlook his domestic circle, and curtail the supply of the necessities of life there, in order that some stranger may find a job, when the latter's need may be much less than his. A helping hand should, indeed, always be outstretched to the deserving, but always with regard to circumstances. A little from a poor man's store comes with as good a grace as a lordly gift from the coffers of the rich. But for a poor man, out of the warmth of his heart, to give more than he can afford is a piece of folly which those dependent upon him surely have to rue.

It is thus with overtime. To surrender it, when it is the means of obtaining many things necessary to the household, is not to be commended, just for the sake of finding work for others with none to maintain. To give it up

when employment is precarious, and winter brings want to one's own door, is criminal in the highest degree. What are the passing thanks of a casual mate to the distress of the helpmate, and the pinched faces of the little ones?

For those favoured with constant work and a good wage, it is no sacrifice to renounce overtime, nor is it greatly to their credit. Their bread is both buttered and sure. But all men have not constant work, nor regular wages. They have to make as much as they can while they are able. Their opportunities soon pass, and winter finds them without work. Long, dreary winter! through which they must eke out existence, till spring gladdens their hearts, and summer swells their earnings. Surely they are not to reject the blessings of overtime; for it is to the surplus fund thus realised that they have mainly to look during the days of frost and ice, and snow, and gloom. Were they to reject ever so small a part of their available overtime for vain illusions, their wives and children might well reproach them for their brutality, when gaunt hunger scanned the naked board.

Take, for instance, the painter's trade. Briak in spring, in swing in summer, dead in winter. Where would the married painter be in January if he turned aside from work in June? Take any trade of irregular employment. Are not its responsible followers culpable if they refuse to make hay while the sun shines?

Systematic overtime is objectionable for the regularly employed, because it is certain to prove injurious in the long run, both to master and to man, loss of stamina, mental and bodily, invariably resulting, with loss of care and finish.

While, therefore, overtime is to be discontinued in some cases, it is to be commended in others. It proves a man, as he plods through his day for the benefit of those near and dear, and brings to remembrance lines written years ago, when it was fondly hoped that reform would bring a happy age:—

"The morning bells that ring for toil oft fill him with delight,
In hopes of joyous plenty, and a glorious Saturday night."

One thing can hardly be denounced too strongly,—the iniquity of the slavery cry. Slavery, to work from 6 a.m. to 4.30 p.m.! Five hours and a half for culture and enjoyment every day, with half a day's holiday on Saturday! Slavery! If this be slavery, there are thousands of workmen, to my knowledge, who will be only too glad to bear its yoke during the coming winter.

If this formed part of the teaching of one who had the control of the working-men of Birmingham in days gone by, the reason of the degeneracy of the Birmingham workman need not be deeply sought. It is to be hoped that there will be different teaching in the future; that work will be dignified and encouraged; that it will be regarded as something noble in itself, and not merely as the means of bringing in so much money every week. Then Birmingham will lose its evil name, and yield workmen worthy of its brightest fame.

T. B.

THE MERSEY TUNNEL.

A PAPER on this work was read by Mr. Charles Douglas Fox before the Mechanical Science Section of the British Association meeting at Southampton last week. The author said that the question of providing railway communication between Liverpool and Birkenhead is one that has for many years occupied public attention. High-level bridges and tunnels have been on more than one occasion proposed, and amongst these the Mersey Railway was authorised, first as a pneumatic, but afterwards as an ordinary railway. The company was organised as at present constituted in 1881, with the Right Hon. Henry Cecil Raikes as chairman, the Right Hon. E. Pleydell Bouverie as deputy-chairman, Major Isaac and Mr. John Waddell as contractors, and Mr. James Brunles and the author as engineers. The length of the railway is 3 miles 84 chains, of which almost the whole is either in tunnel or covered way, and it is being constructed for a double line throughout, with stations at Green-lane, Borough-road, and Hamilton-square in Birkenhead, and James-street and Waterloo-place in Liverpool; the

works being arranged for trains every five minutes each way, the traffic being expected to be very large. The landworks do not call for special remark, being to a great extent in tunnel through sandstone rock under the public streets. For the purpose of the works under the river two shafts have been sunk on each side of the Mersey, one being for pumping purposes, and for communication with the drainage heading, and having a depth of about 180 ft.; the other for winding and ventilation from the main tunnel, and about 90 ft. deep. These shafts are lined partly with brickwork, and partly with iron tubing. From nearly the bottom of each of the pumping shafts a drainage heading, rising slightly towards the centre of the river to allow the water to run to the pumps, is being driven partly by hand and partly by Colonel Beaumont's boring-machine, which cuts a circular heading 7 ft. in diameter. Out of a total of 1,774 yards, 1,143 yards had been driven up to the 5th of September, 1883. The sandstone rock through which the works are carried, though hard and compact, is porous, and yields more or less water. The pumping machinery on each side consists of two 20-in. and two 30-in. sets of bucket lift-pumps, driven by compound engines by Hawthorn Davey & Co., of Leeds. A 40-in. set of plunger pumps, to be driven by an overhead engine by Messrs. Barclay & Son, of Kilmarnock, is now being fixed as a duplicate on each side. The 30-in. sets have hitherto been found amply sufficient to clear the works. The paper described the mode of setting out the works, the precautions adopted under the river, the means used for tubing back the water, and the details of the main tunnel, the excavation for which has now progressed some 1,590 yards, closely followed by the brickwork lining.

Colonel Beaumont supplemented the paper by a short statement of what the boring-machine had done in other places, and what it was expected to do. It was employed upon the hard chalk of the Channel Tunnel, and a distance of 5,000 yards had been driven with it. The greatest speed that had been attained with it had been,—more as a *tour de force* than with any idea of keeping it up,—one foot every ten minutes, and this speed was kept up for two hours; so that the capacity of the machine for boring through the hardest chalk, requiring blasting, might be taken to be at the rate of 48 yards in every twenty-four hours. The speed which he anticipated getting, and which he had every reason to believe would be got before the machine had completely perforated the rock under the Mersey, was 1 ft. per hour, or 8 ft. in eight hours. It might be asked why there should be this enormous difference in speed. The reason was the necessity for changing the cutters more frequently in cutting the hard sandstone rock than in cutting the softer chalk, in consequence of the greater heat developed. In the softer chalk from 16 ft. to 20 ft. could be cut without changing cutters, but in the sandstone rock the greatest distance that could be cut without changing had been 18 in., and it had been brought down as low as 3 in. This latter figure, however, was not due to the hardness of the rock, but, to a certain extent, to the want of proper temper in the tools and to the fact that ice was forming in the engine, and consequently a regular action was not imparted to the cutting-tools. The new red sandstone that the Mersey Tunnel was being driven in he took to be rather more than half-way in hardness between the chalk and the hardest sandstone. The machine had been tried in the hardest sandstone, and with the most perfect success, so far as demonstrating the possibility of the application of the system to the cutting of the harder rocks. This individual machine was not sufficiently strong to cope with the difficulty of cutting the harder rocks, but a larger machine was in course of construction, and he had not the slightest doubt that the outcome would be that the hardest red sandstone rocks could be driven without the use of explosives at an average rate of 8 yards in the twenty-four hours. If this could be done, he thought the system of driving would have a very important effect on the development of coal-mines, more especially in those cases where they were troubled with gas or there was any danger from explosions.

Mr. T. R. Crampton followed with a paper on the advantages of constructing, ventilating, and working long railway tunnels with three separate openings.

SUPERVISION OF IRONWORK. SOCIETY OF ENGINEERS.

At the next ordinary meeting of this society on Monday, the 1st of October, in the Society's Hall, a paper will be read, on "Designs, Specifications, and Inspection of Ironwork," by Mr. Hamilton W. Pendred, the leading features of which are as follows:—

The relations existing between engineers and contractors; a more perfect knowledge of each other's line of business desirable. Defects in specifications.

Good and complete drawings expedite work. The necessity of designs being completed at the outset. Details and their design. Evils of bending angle-irons. Joint covers and their use. Specifications.

Methods of work in different yards. Securing cross girders to main ones. Joists of floor plates, water-tight floors. Drifting; its use and abuse. Rimmers. Mode of fastening main girders to abutments. Hand and machine riveting.

Camber of girders. Designing cast ironwork. The use of fillets. Evils of casting lugs on columns. The shilling of cores in casting. Inspecting cast ironwork. Cement used to fill up flaws. Painting.

Weighing and delivery of materials at the site. The legal value of dispute clauses in specifications.

BRISTOL AND GLOUCESTERSHIRE ARCHÆOLOGICAL SOCIETY.

A SPECIAL district-meeting in connexion with the West Gloucestershire district of this Society was held on Monday. The members, to the number of nearly 150, met at Ruardean and inspected the church there, which was described by Sir John Maclean. The church consists of chancel, nave, western tower, and south aisle, and shows various styles of architecture. Its history possesses nothing of importance, and until a comparatively recent date it was a chapel belonging to the parish of Walford, near Ross. A visit was next paid to Walford Church, which was also described by Sir John Maclean. This edifice contains some interesting Norman work. Near to it is Walford Manor House, concerning which a few particulars were given by Miss Shand. From Walford the party drove to Goodrich Court, where they were entertained to lunch by Mr. Harold C. Moffat, the owner. From the Court the party walked to Goodrich Castle, the history of which was briefly given by Sir John Maclean. Haselhurst was next visited, where Miss Phillips provided tea, and the party returned from Lower Lydbrook. Among the party were the following:—Sir John Maclean, Sir William Guise, bart., Messrs. J. Bush, J. Williams, Sherwood Smith, A. Hudd, William George, E. A. Spencer, E. Bush, E. Strickland, G. B. Keeling, T. W. Keeling, T. G. Clarke, E. Halsell, Uren, H. Derham (Frencheay), Shum (Bath), and J. J. Stone (Bath).

COMPETITIONS.

Bedford Town and County Club.—About two months back the above company advertised for architects who were willing to compete for the above to send in their names. A large number of applicants was the result, out of which they selected fourteen, who were asked to send in competitive designs by the 25th day of August. The competition has been decided in favour of Mr. Henry A. Cheers, of London and Bagshot, who has had instruction to proceed with the work forthwith.

Belfast Free Library.—After consideration the committee have decided upon recommending the Council to award the first premium to Mr. W. H. Lynn, of Belfast; the second to Messrs. Maxwell & Tukey, of Manchester; and the third to Mr. John Johnson, of London, provided their designs comply with the conditions as to cost. The Town Council have confirmed the recommendation.

Newcastle Hospital.—Mr. Worthington, the referee, has made his award as follows:—1st. "Red Cross," A. B. C. Gibson, Newcastle; 2nd. "Isolation," W. J. H. Levaton, Upper Tooting, and M. J. Lansdell, London; 3rd. "Sunlight and Air," Bradshaw & Gass, Bolton.

Levensham Public Baths.—We understand that the designs sent in by competitors will be publicly exhibited at the Board of Works Offices, Catford Bridge, this Saturday, the 29th, and Monday next, October 1st.

Horsham.—The memorial stone of a new Congregational Church here was laid on the 18th inst. The building, Gothic in style, will cost £2,000. Mr. W. Buck is the architect and Mr. J. Longley, of Crawley, the builder.

NOTES FROM THE WEST.

THE two public buildings at Plymouth which are now in the course of erection, a new Post-office and new Hospital, have made considerable progress during the last month or two. The new Post-office, for which Messrs. Laphorn & Goad hold a contract under Her Majesty's Government, is now up to the transom of the window of the first floor. All the more difficult stone work of the front elevation is completed so far as the builders are concerned, and the remainder of the building will be completed, comparatively speaking, at a much quicker rate. The sorting-office is ready for roofing, and all the less important parts of the building are in a forward state. There was a great deal of labour in the stone-work, and the plainer work is going on satisfactorily. The stone is left rough for carving, and the ornamental work will include an elaborate device for the Royal Arms over the principal entrance at the Westwell-street corner of the building. At the other end of the frontage there will be an illuminated clock in the archway which has been made, and a door for the mail-bags and letter-carriers. It is hoped that the whole building will be covered in by Christmas. The centre turret is just about to be taken in hand. The building will be 85 ft. from the pavement to the top of the turret.

The new buildings of the South Devon and East Cornwall Hospital at Clifton-place, Plymouth, now present quite an imposing sight, especially from the new road which runs at the bottom of the hospital grounds. The whole of the main buildings have been roofed in, and the central tower, with gilded vane and lightning conductor, forms a prominent and striking feature of the group. The block which contains the men's wards is the one nearest completion. There all the constructive work is done, and little remains to be added except the painting and the fittings. These wards give an idea of what the remainder of the buildings will be, and very light, airy, and pleasant they are. The floors are very beautifully laid with pitch-pine, which is, later on, to be polished. The floor above is supported by iron girders, and much iron has been used throughout the buildings. Some fine staircases with oak balustrades are now in course of erection. The administrative block and the nurses' institute have now reached the stage at which they are ready for the plasterers, while the upper part of the women's and children's ward has been plastered and the remainder is well forward. The lodge at the principal entrance, which is near the corner of the new road, and the mortuary at the opposite corner of the grounds, are being got on with apace. The roof of the accident ward has to be lifted again in consequence of the determination recently come to add another story to it. Mr. Jonathan Marshall, Plymouth, is the contractor for the new hospital.

Sir Daniel Gooch, bart., M.P., chairman of the Great Western Railway Company, accompanied by his son, Mr. Alfred W. Gooch (resident engineer of the Severn Tunnel on behalf of the company); also by Mr. Michael Castle, Mr. C. G. Mott (directors of the company), Sir John Hawkshaw and his son, Mr. Chas. Richardson, and Mr. E. D. Jones (the engineer of the company), and the contractor (Mr. T. A. Walker), passed through and inspected the Severn Tunnel from the Gloucestershire side to the Monmouthshire side of the Severn, last week. Sir Daniel then proceeded to Cardiff, and returned via the New Passage Ferry on Friday.

Two mission-halls are about to be opened at Plymouth. The most important one is that in Exeter-street, built for Mr. Kiley. Its dimensions are 70 ft. by 60 ft., with side-passages 5 ft. wide. The length of the building is 60 ft. by 70 ft.; height, 20 ft. to the eaves; to the apex, 35 ft. It will seat 1,600, and the cost has been £1,800, of which £400 has been paid. The ground cost £1,500, of which £1,000 is on mortgage. The hall contains two commodious galleries; and altogether the building is spacious and handsome.

There are four exits for the ground-floor, and a similar number for the galleries. The other is the Christian Mission Hall which Mr. Foot, a Wesleyan Methodist Minister, has built at the lower end of Notte-street, upon the site of the old Mayorality House of Plymouth. It has been erected from the design of Mr. H. J. Snell, architect, Plymouth, by Messrs. J. & E. Goad, of Stonehouse, builders. The hall

is a very fine one, being large, lofty, convenient, and well lighted, and forms a great acquisition to that part of Plymouth.

The new dock in Devonport Dockyard, which when completed will be the finest in the world, is making rapid strides towards completion. Priestman's patent digger has been at work for about a fortnight at the entrance of the dock. On account of the variety of stuff to be brought from the bottom, the ordinary bucket for clearing away gravel or clay is used, and so far has been found equal to picking up the pieces of rock that have been blasted. It is calculated that some six or seven hundred tons of stuff will have to be removed before the entrance to the dock is properly clear, and that this will take about two months. The dock will be opened towards the end of this year.

DECORATIONS IN CRIPPLEGATE CHURCH.

THE ancient church of St. Giles, Cripplegate, in which John Milton and also his father are buried, has been closed for several weeks, during which the interior has been undergoing decoration, and this work having been completed the church will be re-opened to-morrow, the 30th instant. The decorations consist of the painting of the interior main walls, ceiling, and also the arcade columns and arches. The mural decorations are in French grey, the ceiling in white, whilst the arcade columns and arches have been painted in a cinnamon tint. As these columns and arches are in stone it is, perhaps, questionable whether, so far as they are concerned, the so-called "restorations" are in the best of taste. The cleaning and re-facing of the stone-work would have been more appropriate than painting it out of sight. The work has been executed by Messrs. Diplock Brothers, of Jewin-crescent, the materials having been supplied by the Indestructible Paint Company. It may be interesting to add that the artistically-executed monument to Milton and his father, placed against the wall at the south-west end of the church, was only erected within a comparatively recent period, namely in 1862, nearly 200 years after the death of the poet, and 216 years after the death of his father. The inscription on the monument are as follow:—"John Milton born December, 1608; died November, 1674. His father, John Milton, died March, 1646. They were both interred in this church."

A LARGE CHURCH ORGAN.

THE largest organ said to have ever been built has just been completed at the organ-manufactory of Walcker & Co., Ludwigsburg, Germany. The organ is intended for Riga Cathedral, Russia. It contains 7,000 pipes, 124 voices with 174 stops, couplings, draughts, and trades, and several swells of powerful effect. The wind is supplied by a continuous self-regulating mechanical blast driven by a gas-engine of 4-horse-power. The organ has a height of 66 ft., a breadth of 36 ft., and a depth of 33 ft. The largest wooden pipe is 33 ft. long, and has a cubic contents of 440 gallons, whilst the smallest pipe is scarcely 0.6 in. long. The same establishment, which has supplied large organs for Ulm, Boston, Reval, and St. Petersburg, has also received the order for a new monster organ for St. Stephen's Cathedral, Vienna.

The Two Three-branch Candelabra just erected at the entrance to Northumberland-avenue by the Metropolitan Board of Works are now completed, and were lighted for the first time on Monday night. These candelabra are from the designs of Mr. G. Vulliamy, Architect to the Metropolitan Board of Works. The castings are from the foundry of Messrs. Young & Co., statue founders and engineers, Fimlico, and are from the models made by Mr. C. H. Mabey, of the firm of C. H. & J. Mabey, Storey's Gate, Westminster, sculptors and modellers. The lamps, of globular form, are Mr. William Sugg's patent, fitted with his patent combination flat-flame burners, each having a group of four burners, three of the burners burning 10 ft. each, and one in the centre 5 ft., per hour. The centre one is intended to be burned after midnight, and there is an arrangement by which the lamp-lighter may extinguish the outer three of the group, leaving only the centre to burn till daylight.

LONDON DWELLINGS.

THE following is the pith of the address delivered by Professor Roger Smith as President of Section II. (Engineering and Architecture) of the Sanitary Congress at Glasgow:—

The enormous size of the metropolis and the constant pressure under which its affairs of every sort are transacted, combine to render it most difficult to change anything, or carry out any measure that affects all London. The habits of those occupying this vast area are, of course, diverse in the extreme, but still they are, in some very marked particulars, definite, and have a bearing on house sanitation. Perhaps the most strongly-marked London peculiarity is the desire to live, or seem to live, in a house of one's own. No Londoner, rich or poor, is at ease living at a boarding-house, at an hotel, or in a building obviously erected for many families.

Many, at a rate of those who reside in the outskirts, are remarkably ready to migrate from one quarter to another, so much so, that not a few systematically change their dwelling every three years. The result of this is that much less care is taken in the selection of a house, much less money is expended in remedying defects, and many more serious evils are patiently put up with than would be the case were persons more in the habit of living long in one house; in fact, but for this custom a great many serious defects, sanitary and otherwise, would hardly, I think, have become quite so gross and serious as they actually are.

There have been Building Acts in London ever since the period of the Great Fire, mainly directed to diminishing the risk of another general conflagration. Of the Acts now in force, which are numerous, the most important are the Metropolis Local Management Act and the Metropolitan Building Act, with sundry amending Acts. The Building Act, besides attempting to secure a minimum of strength and solidity in walls, and requiring many precautions against the risk of fire, contains some sanitary regulations of considerable importance and value, though the Management Act is the one mainly directed to sanitation. In the outer zone, outside the Metropolitan area, vast districts have been and are being built over. These, so far as they are supervised at all, come under the action of the Public Health Act. Attention is paid to their drains, though but very little supervision has, as yet, been extended to the dwelling-houses, no by-laws affecting houses having till lately been passed in some districts. Moreover, where such rules exist, a supervision as thorough as that exercised within the metropolitan area by district surveyors is not provided.

What I have called the economical or financial conditions under which London has been and is being built next invite our attention. These differ from those which obtain in many parts of England, and though they may at first sight appear to lie a little outside your legitimate province, they will be found to bear directly on the subject before us, and exert so bad an influence on London houses that you must permit me to lay a hurried sketch of them before you. It is not the custom in London to buy freehold land for building purposes, unless it be for a public building. Land for dwelling-houses is always taken on lease; or, as I believe it is called in Scotland, on feu. The usual term is far shorter than I believe is customary in the North. Eighty years is looked upon as a very long term indeed. Sixty years is a very usual term; but fifty, or even forty years, are not unusual terms. Building leases rarely contain any provision for renewal or extension of the term, so as a rule the transaction amounts to this, that the freeholder lends his land for say sixty years, on the conditions that he receives an annual rental, that buildings such as he approves are put up, and that at the end of sixty years the land, with the buildings on it, reverts back to him. There are also, usually, covenants that whatever is erected shall be kept in repair by the person building.

Let us see, now, how the machinery by which the larger part of the dwelling-houses in London are erected works for the good or ill of the tenant. First it provides him a house of some sort at the point where he wants it, and with about the requisite number of rooms, and I will go so far as to say that it provides the average Londoner with a house that seems to suit him, for houses thus built are readily taken; but it will be seen that there is absolutely no

one whose permanent interest it is that the buildings shall be sound, sweet, and safe to occupy. The original landlord is sure of his ground-rents and has no further interest; the middleman, where he exists, and the builder, at any rate, seek to release themselves from any connexion with the property at an early day; and the unlucky tenant, still more unlucky if he has bought the lease of his own house, finds that there is no one to whom he can turn for any redress or remedy, whatever goes wrong. There is, indeed, one advantage which, on estates where landlords have a sense of public duty, the system of building leases does possess, and it is this,—The landowners can lay down the conditions under which alone buildings shall be put up, and can enforce them; but for one who does so in the interests of the public health and the welfare of the future occupiers of the houses, ninety-and-nine only frame such regulations as conduce to the benefit of their own pockets; and are careful to shackle the speculating builder with few or no conditions of a character which he might consider onerous, and which might consequently induce him to transfer himself and his building operations to some neighbouring estate.

It may, perhaps, be asked, Where in this system does the architect come in? My answer is, Nowhere. The bulk of London houses are not designed by architects, and not superintended by them. The first and last time when any architect looks into them with a critical eye is in too many cases only when they are offered as security for a mortgage, and a professional opinion, not upon their sanitary state, but upon their commercial value (a very different matter), is asked for. I am anxious to put this upon record, because persons occupying houses full of defects are only too apt to take it for granted that some member of the profession to which I have the honour to belong must have been charged with the supervision of the row or square in which they dwell, and that to this unknown architect's neglect of a duty which was never cast upon him are they indebted for attacks of typhoid or diphtheria, or the risk of them.

It will hardly be necessary to take you through a long series of individual cases to induce you to believe that much of the older parts of London consists of houses that are unhealthy owing to defective sites, bad drainage, bad plumbing, defective water storage, the absence of proper air space, the dampness and foulness of basements; [the unsoundness of attics and upper stories, that are neither damp-proof, nor heat and cold proof; and the narrowness of the thoroughfares in which they stand; and this notwithstanding the exceptional occurrence in some localities of fine old houses admirably built, and with good space in front and rear.

The outskirts and suburbs, on the whole, present at first sight a more encouraging aspect; and dwelling-houses are no doubt much better situated as regards air open round them, and to some extent enjoy a purer atmosphere; but the extent to which systematic neglect of proper precautions and piling down of everything to the minutest shred is carried, is almost incredible. All those appliances connected with drainage and water supply which we in our wisdom consider it best to hide from sight are almost always ill-done, and generally ill-understood, so that a direct danger to health lurks behind skirting and pipe casings, and below the floors of many a showy suburban villa, or neat semi-detached residence.

Having now pointed out some of the evils under which residents in the metropolis suffer, I wish, in conclusion, to draw attention to some of the remedies which may be, are being, or might possibly be, applied to a state of things so undesirable. It will be understood that I do not much advocate legislation, unless, indeed, for such special objects as are definite and as cannot be compassed otherwise. There is a great deal possible with existing Acts, especially if every district round London were to carry out its duties, and avail itself of its powers under the Public Health Act to the full. If the Model By-laws of the Local Government Board were uniformly adopted and efficiently carried out a great deal of good would be done. The public, however, have the remedy very much in their own hands if they only could be awakened. In short, the true cure for many of these evils is to be sought in the operation of an enlightened public opinion. When once the public learn to call in the aid of the sanitary

inspector or the inspector of nuisances when anything is seriously wrong, we shall be on the way to improvement; but if we can once create a demand for healthy houses, and induce people to look out for sanitary provisions as they now look out for pretty wall-papers when taking a house, the battle will be won. The moment it becomes the interest of persons who own or build houses to supply a healthy article, because anything else will not command a market, such houses will be built.

I look for great benefit from the action of those societies which have devoted themselves to supplying sound advice on the sanitary state of dwelling-houses. The Sanitary Assurance Association, with which I have the honour to be connected, and the kindred societies, by their very existence, act as a warning to the householder that danger is to be apprehended, and by their organisation afford him reliable advice and assistance on matters with which he is not himself able to deal. But of a large number of London houses inspected by the officers of our association, the percentage of those found in a good sanitary state has been ludicrously small, though it has been found possible to suggest works that have remedied all such evils as were remediable. Good is being done by the erection of houses in flats, though their advance has been less rapid than had been hoped by those who, like myself, advocated the movement in its early days. It has been very much overlooked, by philanthropists and others, that buildings in flats are entirely opposed to the prejudices of Englishmen of every class, and that nothing but the kind of inexorable pressure which the exigencies of life in a great city seem to exert would probably ever have induced London people to take to them; though there is little reason to doubt that, once fairly tried, they will become popular with rich and poor alike.

Some large firms and private individuals have of late become engaged in the business of supplying London with houses. Some of these are doing their work well, and are becoming alive to the fact that a sound, healthy house is an article which will, sooner or later, as sanitary knowledge extends, be at a premium, if its excellences are not much appreciated yet; and as some of these people fortunately build, in part, at least, for investment, some of the worst of the evils of the leasehold tenure system are likely to be by degrees overcome. If it were possible to bring in the custom for leases for long terms, and to make landowners sensible of the responsibility which really rests upon them in respect of the houses they allow to be built on their land; and if, in addition, we could induce capitalists to build as an investment, so that they would have a direct interest in the solidity of what was put up, then surely we might hope that what remains to be built or rebuilt in London would be better fitted for living in than the houses hitherto erected.

But there remains one part of the community whose case is so bad that no amount of public opinion, thought, and care has proved able hitherto to effect a radical improvement, and so desperate that London cannot afford to wait. I allude to the operatives' homes in those old parts of London where the streets are narrowest and the houses worst. This question has forced itself upon the attention of the legislature, and will probably be soon again before Parliament.

This movement began in a very moderate way, and has gone on steadily increasing. The promoters of it have been doing good work, partly by spreading information and influencing the public mind, but chiefly by improving existing tenements or erecting new ones for the accommodation of the industrial classes. The efforts of pioneers like Mr. George Godwin and Mr. Edwin Chadwick; the unostentatious labours of Miss Octavia Hill and the band of energetic workers whom she has called round her; the commercial companies started, like the one inspired by the zeal of Sir Sydney Waterlow, with the avowed object of showing that improved dwellings for the poor can be made to pay; the private speculations that have followed in the wake of these companies; and the corporation established to administer the munificent gift and subsequent legacy of Mr. George Peabody, have all contributed to an aggregate result which has reached larger dimensions than many are aware of, and which is swelling year by year.

In the summer of 1881 the amount of accommodation provided by public or semi-

public agencies in London reached 11,000 families, or estimating an average of five persons in a family, 55,000 persons, at an outlay of about 1,900,000*l.*; and there were buildings in hand, or recently erected by private builders, and by the Peabody trustees, which might be estimated as involving an outlay of not less than 900,000*l.* more, and calculated to increase the accommodation by probably 27,000 persons. I am not prepared to say that the whole of this large estimated increase, that is to say up to 82,000 persons, has as yet been realised, but the greater part of it has, and probably not fewer than between 70,000 and 80,000 persons now inhabit the improved dwellings provided by these agencies, nearly the whole of them being comparatively lofty dwellings, arranged as flats, and with common staircases.

The urgent need of improvement in the dwellings of the working classes in London and elsewhere, and the difficulty of attaining it have, however, been recognised as serious that repeated Acts of Parliament have been passed to facilitate the work.

One thing at least is clear: that London affords now, and must for years to come afford, an ample field for the energies of those who devote themselves to the pursuit of sanitary science, the diffusion of sanitary knowledge, and the performance of sanitary work. The cry for help is a loud one, and, believe me, legislation is almost powerless to help us, even if political strife left our statesmen any leisure for domestic improvements. The average London house can never be made thoroughly strong and sturdy, but it may, generally speaking, be made safe to live in by a moderate outlay, if directed wisely. If, then, it is in the power of each householder, whomsoever, to make his home safe, our duty is plainly, first, to give him no rest till he wakes up to the necessity of doing, and then to diffuse correct information so widely that there may be little difficulty in his finding out what it is that he ought to do.

BUILDING PATENT RECORD.*

APPLICATIONS FOR LETTERS PATENT.

- 4,300. A. Skinner and F. J. Rumney, Manchester. Furniture castors. Sept. 7, 1883.
4,305. W. Van Praagh, London. Apparatus for cleaning windows, walls, &c. Sept. 7, 1883.
4,308. J. C. Bloomfield, London. Manufacture of building material. Sept. 7, 1883.
4,342. B. J. B. Mills, London. Domestic heating apparatus. (Com. by V. Ducruix, Beaujeu, France.) Sept. 11, 1883.
4,418. F. F. Brown, Chester. Manufacture of parquet floors, &c. Sept. 15, 1883.
4,450. D. Dow, Falkirk. Cooking-ranges. Sept. 18, 1883.
4,469. A. M. Clark, London. Means for preventing the spread of fire from one part of a building to the other. (Com. by W. H. Dolman, St. Helen's, U.S.A.) Sept. 18, 1883.
4,488. W. M. Simons, Nottingham. Roller-blind furniture. Sept. 20, 1883.
4,490. S. Van Campen, New York, U.S.A. Decorative tiles. Sept. 20, 1883.
4,503. W. P. Thompson, Liverpool. Apparatus for extinguishing fires in rooms, buildings, &c. (Com. by T. Andre, Paris.) Sept. 20, 1883.

NOTICES TO PROCEED

have been given by the following applicants on the dates named:—

- Sept. 11, 1883.
2,305. L. Fisher, Horne Hill. Manufacture of wall coverings. May 7, 1883.
2,374. W. Wright and T. Holmes, Birmingham. Construction of garden-frames. May 10, 1883.
2,601. A. Clark, London. Fireproof screen for separating the stage from the auditorium of the theatre. May 24, 1883.
Sept. 21, 1883.
3,870. C. J. Dobba, Middlesbrough. Manufacture of paving blocks, from furnace slag, &c. Aug. 9, 1883.

ABRIDGMENTS OF SPECIFICATIONS,

Published during the week ending September 15, 1883.

- 6,174. W. Morgan Brown, London. Doorlocks. (Com. by O. Belger and F. Preller, Hamburg.) Dec. 27, 1882. Price 4*d.*

The spring bolt is secured in the locked position by a locker arm on the bolt. (Pro. Pro.)

* Compiled by Hart & Co., Patent Agents, 186, Fleet-street.

169. W. Berry and P. Stewart, Edinburgh. Pavements. Jan. 11, 1883. Price 2*d.*

Inside the key is a channel in which telegraph wires, &c., are laid. (Pro. Pro.)

234. J. Hudson, Bolton. Apparatus for holding and releasing roller blinds. Jan. 15, 1883. Price 2*d.*

The brackets that carry the rollers are fitted to automatically lock the axle. (Pro. Pro.)

240. R. Stone, London. Manufacture of artificial stone, &c. Jan. 15, 1883. Price 2*d.*

This is made of ground flints and cement mixed together and moulded. (Pro. Pro.)

244. W. Wright, Droylsden. Construction of latches or fastenings for doors, gates, &c. Jan. 16, 1883.

These are sliding doors, &c., and the fastening takes the place of the padlock. (Pro. Pro.)

254. A. Frank, Charlottenburg, Germany. Manufacture of porous silicious material and objects applicable for building materials, &c. Jan. 16, 1883. Price 4*d.*

The silicious material is mixed with alkaline earth and water. The mixture is then dried and burned.

280. J. H. Starting, Erith, and E. A. May, Belvedere. Manufacture of bricks, tiles, &c. Jan. 17, 1883. Price 4*d.*

The dreggings of rivers mixed with chalk are ground in a mill, and the mixture is moulded and burned.

290. J. D. Sprague, London. Holdings or fastenings for blind, saah, and other cords. Jan. 18, 1883. Price 6*d.*

A pawl is fitted within a casing, which jams the cord.

Published during the Week ending September 22, 1883.

309. S. Hart, Hull. Construction of factory chimney-shafts. Jan. 18, 1883. Price 2*d.*

These are made of sheet-iron plates, with internal ribs. (Pro. Pro.)

330. A. Dowson, London. Groynes for raising or protecting foreshores. Jan. 20, 1883. Price 6*d.*

These are made of upright posts of iron, wood, &c., and gratings are attached thereto, through which the waves can wash, but which retain the shingle.

333. E. P. Alexander, London. Foot mats for doors, bath-rooms, &c. (Com. by C. Cheswright, Bordeaux.) Jan. 20, 1883. Price 6*d.*

These consist of strips of wood, &c., jointed together, and so arranged as to leave interstices between them.

336. J. W. Blakey, Leeds. Preventing the freezing of water in water-closets. Jan. 20, 1883. Price 2*d.*

A receptacle for salt is placed between the water main and the cistern, and when necessary, the water is allowed to absorb enough salt to prevent freezing. (Pro. Pro.)

376. W. D. Herman, St. Helen's. Combination of refuse materials of glass works, with other substances, for making flags, flatening-stones, bricks, tiles, &c. Jan. 23, 1883. Price 4*d.*

The waste silicious materials are granulated, and mixed with a solution of soluble glass and asbestos, copper slag, and various other materials as required.

387. G. F. Harrington, Ryde. Ventilating sewers. Jan. 24, 1883. Price 6*d.*

Instead of open gratings, shafts are fitted to the sewers, in which are corals with vanes, and arranged to act alternately as downcast and upcast shafts.

389. E. Verity, J. M. Verity, and B. Banks, Leeds. Window or casement stays or holders. Jan. 24, 1883. Price 2*d.*

A bar is fixed to the casement, and another to the frame. These both pass through a cheese-shaped boss, and can be secured by a binding screw. (Pro. Pro.)

406. A. Bruckner, London. Material to be used as a carpet lining. Jan. 25, 1883. Price 2*d.*

Cork dust, &c., is cemented on paper or thin fabric, to form the carpet lining. (Pro. Pro.)

435. A. R. Holland, London. Ventilation of apartments. Jan. 26, 1883. Price 6*d.*

An opening is made between the meeting ead-bars of the window, which is covered and governed by a plate, to regulate the amount of air allowed to enter the room.

436. W. Lord, Middlesbrough. Appliances to be employed in connexion with chimneys or chimney-pots, for preventing down-draughts in chimneys. Jan. 26, 1883. Price 2*d.*

Several tubes are inserted in the top of the chimney. (Pro. Pro.)

445. P. Born, London. Folding lattice shutter. Jan. 27, 1883. Price 6*d.*

The perpendicular bars run on rollers on the sill, and between them are pivoted a number of jointed cross-bars. The shutter is made in two wings, and as each is drawn out they meet in the middle of the window or door.

The George Dawson Statue, Birmingham.—It is announced that the clay model for this, the second, Dawson statue, is now completed, and is open to the inspection of any subscriber, at Mr. Williamson's studio at Esheer.

FIREPROOFING.

Sir,—Referring to the interesting article by "B. H. T." (see p. 388), on the systems of rendering wood fireproof, I need not say that I am not aware of the existence of "Liquid Fireproof Cyanite," an exhibition of which you notice on page 370 of your valuable paper of the 15th inst.

Many of your readers will be aware that tungstate of soda, although fireproof, quickly scales off, and has to be applied every week or so. This I have tried some time ago at the Princess Theatre; but I notice in the Journal of the Society of Arts of the 5th of June last that Mr. Herman, the business manager of that theatre, stated that he was now using cyanite, and found it thoroughly satisfactory.

My experience teaches me that silicate of soda, as "B. H. T." says, possesses a thoroughly fireproof nature; but I find the objection to it to be that it never perfectly dries, remaining "tacky."

As regards cyanite, the experiments I have made induce me to believe it is a basic silicate of alumina, and the Cyanite Company have confirmed this opinion.

CHARLES E. MOULD.

THE LAMBETH VESTRY AND HOUSE DRAINAGE.

Sir,—I have considerable sympathy with Mr. W. S. Horner's opinions, as expressed in his letter to you (in your issue of the 8th inst., p. 336), because I held precisely similar views myself some years ago. Since that time, however, my experience has been somewhat varied, and more extended.

The resolution of the Lambeth Vestry is a wise one. By inserting a trap (I assume a suitable graded earthenware syphon trap) in the drain near its connection, they effectually prevent the foul air and infectious matters from the public sewer making their way into the house-drains, excepting only a very small amount of foul air (and infectious matter) which would get into the drain by the saturation of the water in the trap; this, and the foulness of the house-drain itself, are most effectually dealt with in the manner resolved upon, viz., by having an inlet ventilator not more than 3 ft. or 4 ft. above the ground level, as near as practicable to, but on the house side of the trap; and an exit ventilating-shaft carried up above the roof, at the furthest possible point from the inlet. All soil-pipes ought, at the same time, to be carried up above the roof, and left open at the top; you thus have a constant current of fresh air sweeping through the house-drains, which effectually deodorises any adhesions.

My experience of a "free outlet to the sewer," in conjunction with trapless closets, is that a piece of paper or other matter is frequently left lodged under the valve or plunger rubber, the water escapes out of the basin by the aperture caused by this, and the sewer gas enters the house by the pipe means, because in its upward light and happy mood it prefers the warmer air of the house to the generally uncongenial, heavy, and oftentimes depressed atmosphere found at the top of the 4-in. ventilating-pipe. In dry weather this water in the surface-traps evaporates, and the sewer air finds its way into the house by the open windows, ventilating bricks, &c.

But this is not the system I apprehend, have to deal with Mr. Horner's system, not only under the most fortuitous aspects, but under its everyday or average trial.

The disconnecting trap and ventilating system is not only a guard against the many grievous shortcomings of the ordinary speculative builder, but also of any honest and careful man wedded to the system advocated by Mr. Horner.

The Lambeth Vestry have within the boundaries of their large parish miles of streets, wherein the houses are built with no other division than the party-wall; these houses have only one entrance to the common sewer, and that is at the front; consequently, as by far the most (say 85 per cent) have their water-closets, sculleries, &c., at the back, nearly the whole of the drainage has to pass under the house. Now, as almost the least subsidence of the ground, or settlement of the building breaks the joint of the pipe, and makes pipe joints, in the case of a sink and surface concrete (should it be there), you have the house deluged with what is commonly known as sewer gas.

TOM NATION.

RUNNING RISKS.

Sir,—As I was going over Prestwich Parish Church last Saturday, looking at the restoration at present being carried on, I noticed what appeared a most extraordinary proceeding in the shape of chimney building. The clerk of the works or foreman's cabin was built directly under a tree, the chimney of the cabin being taken right into the midst of the branches by a cap formed of wood slabs, 3 ft. or 4 ft. long, steepled by wooden stays taken to the roof and boarded sides, which, with the boarding shunting, and the papers, &c., inside, seem to show that those in authority really courted fire, which at night might get a fair hold before it was noticed, and be the ruin of one of the few specimens of ancient Gothic work.

W. D. WARSON.

Mr. George Remington.—The death is announced of Mr. George Remington, C.E., in his seventy-second year. Mr. Remington was for many years associated with the late Sir John Rennie in important engineering undertakings. In 1840, in conjunction with his father, he projected the first metropolitan railway, called the Grand Junction Railway, which was to run from Snow-Hill, Holborn, *via* King's-cross, to the West of London. The construction of this railway was commenced, but was ultimately abandoned. Among other works with which he was professionally connected may be mentioned the London and Manchester Railway, London and Brighton, and many other lines, the Dagenham Docks, and Docks at Greenwich.

CHURCH-BUILDING NEWS.

Dearham.—The ancient parish church of Dearham, Cumberland, has been re-opened by the Bishop of Carlisle. The restorations and additions have been carried out from the designs of Mr. J. J. Ferguson, F.S.A., of Carlisle. The masonry has been executed by the late Mr. Marshall, of Maryport; the joinery by Mr. Foster, of Wigton; the plastering by Mr. Ormerod, of Carlisle; the heating by Messrs. Haden, of Manchester; the glazing, &c., by Mr. Palmer, of Carlisle; the carving by Mr. Richard Nelson, of Carlisle; and the slating by Mr. Mandle, of Maryport. Prior to the commencement of the work, the church consisted of a nave, chancel, and south porch, and a western tower. The condition of the church at that period may be inferred from Mr. Ferguson's own words:—"The interior of the church is in a deplorable condition; the floors damp and much decayed; the seats are so rotten as in many instances to be dangerous; the plaster is much injured by damp; and the principal lintel of one of the windows has entirely decayed and fallen out of the wall, leaving the walling above it unsupported other than by the tenacity of the mortar." All such portions of the church as were sound and good and answered their purpose have been left alone; the remainder have been thoroughly repaired. The east end wall has been rebuilt and a new window inserted therein. The modern filling-in to the west window has been taken out; the window has been repaired and restored. The ancient windows have been opened out. The decayed wooden frames have been taken out of the remaining windows, and reglazed in quarries set in lead. The wooden annex on the north side of the chancel has been taken down, and an aisle added. At the east of the aisle a transept has been built. The battlements to the tower have been repaired, as have the various weatherings and copings where required or the protection of the building. The roofs of the chancel and nave have been stripped and slated. The plaster work has been repaired and renewed, and the surface of the church excavated and covered with a layer of cement concrete. A solid wooden floor has been laid down. The church has been re-seated in oak. The chancel-seats have been carved in panels, and filled with window tracery. The altar-rails, credence-table, and sedilia are of carved oak. The new roof is of massive oak, and follows the pitch of the ancient one. The church is heated with hot air, and lighted with Jones & Willis's "Hesperus" star-lamps depending from the roof. The pulpit, which rests on red freestone, has been constructed from old oak out of the church. The area of the church has been carefully drained. The masonry is the red sandstone of the district. The total cost of the restoration has been £1,750.

Mannamed.—A new reredos is about to be erected in Mannamed Church, near Plymouth, as a memorial of the late Mr. Thomas Rendle, churchwarden, who died whilst in office in 1881. Messrs. Hine & Odgers, the architects of the church, had embraced in their design and always intended a handsome reredos to fill the blank wall space at the eastern end, but circumstances did not permit of this work being carried out at the time the church was built. Mrs. Rendle, of Poltair, widow of the gentleman before named, has commissioned Mr. Harry Hems, of Exeter, to carry out the work in question. The new reredos will be entirely of Caen stone and polished Devonshire marbles, and is in the Early Decorated style. It consists in the design of three bays, the central one rising with a higher though not over-pronounced crocketed gable. The central recessed panel is diapered and has the sacred monogram "I.H.S." within it, worked in polished marble. The columns supporting the three gables are in the same materials, whilst the panels on either side will be filled with representations of wheat and grapes. The wings are formed of continuous arcading, reaching from the north to the south wall, and all kept up to the height, i.e., about 1 ft. above the chancel floor line. All the lower parts of the reredos will be richly paneled.

Langain.—This parish church has been further decorated, painted tiles having been introduced in the chancel. The subjects are taken from the Apostle's Creed, and are painted in colours upon an ornamental background of subdued tints. The whole has been designed and executed by Mr. Charles Evans, of Warwick-street, Regent-street, under the superintendence of Mr. R. J. Withers, architect.

DISSENTING CHURCH-BUILDING NEWS.

Nottingham.—Canaan Church, Broad Marsh, Nottingham, the chief memorial stone of which was laid some months ago by Mr. Charles Seely, M.P., was opened on the 13th inst. The building, which belongs to the Primitive Methodist denomination, occupies a site immediately adjacent to that of the old chapel. It will accommodate nearly 900 persons. The mode of treatment is the Italian. Mr. R. C. Sutton is the architect.

Neston.—On the 13th inst. the corner stone of the new Presbyterian church at Neston, Cheshire, was laid. The building will be situated in a spacious area, and will consist of a nave, with north and south transepts. A narthex at the east end is approached by an open porch; on the north is a porch connected with the tower. The basement will be appropriated for school purposes; schools will hereafter be erected in the rear of the west end of the building. The design is Gothic, or the Early Decorated period. The material is of Yorkshire stone for walling, and Storeton stone for dressings. The ceiling will be wagon-headed. The architect is Mr. James Francis Doyle. The contractors for the work are Messrs. Hughes & Stirling Booth. The church is to be arranged so as to accommodate at first 270 persons,—being capable, with slight additional expense, of being made to contain 400 sittings. The plans include a tower and spire, which are not being proceeded with at present. The cost will be about 3,000l.

Nechells (Birmingham).—On the 17th inst. the memorial stones of a new chapel, which is being erected by the members of the Methodist Free Church in Rocky-lane, were laid. The new edifice, which is being built on the site of the old chapel, will accommodate between 500 and 600 persons. Galleries will extend along two sides and one end of the chapel, and provision is being made for an organ. The façade will be in the Gothic style, and the total cost is estimated at about 3,000l. The architect is Mr. E. J. Lloyd, and the builders are Messrs. Sapcote & Son, who expect to complete their work by the end of the year.

Exeter.—The United Methodist Church, Queen-street, Exeter, has been re-opened, after alterations which have been carried out by Mr. Bradbeer at a cost of about 200l.

STAINED GLASS.

Plymouth.—Messrs. Fouracre & Watson have just erected what is described as a "Memorial Resurrection window" for Dr. Jenkins in the south transept of Emmanuel Church, Compton Gifford, Plymouth. At the top of the tracery there is a crown, symbolising the words, "And when the Chief Shepherd shall appear ye shall receive a crown of glory that fadeth not away." At the sides are pomgranates, the emblems of royalty. The greater portion of the tracery is devoted to angels blowing trumpets,—“At the last trump the dead shall be raised”; while the smaller and less important openings are filled with resurrection emblems. The text selected for general illustration by Dr. Jenkins, to the memory of whose wife the window is erected, was “Come, ye blessed of my Father, inherit the Kingdom prepared for you from the foundation of the world.” The principal figure (in the third light) is the Saviour as Judge, partially surrounded by angels singing and playing musical instruments, while at his feet there is an angel bearing a cross typical of our Lord's sufferings. The light to the right has a number of saints, prominent among them being John the Baptist and the Virgin. The far light on the left is occupied by the blessed dead, who are depicted rising from their graves with guardian angels over them. Here there is introduced a portrait of the lady commemorated. Behind the figures is a landscape with an indication of the New Jerusalem.

Melton Mowbray.—A stained-glass window has just been placed in the south transept of the parish church by the Earl of Wilton and his sisters, in memory of their father, who died at Melton last year. It is a three-light window, the first division representing the Three Women at the Sepulchre on the morning of the Resurrection, with the angel sitting on the stone pointing upwards. The second light contains a representation of David, with upturned face, playing on the harp. In the third light are represented the figures of Faith, Hope, and Charity. The window was executed by Messrs.

Ward & Hughes, of London. The tower of the church is undergoing restoration.

Exeter.—Three stained-glass memorial windows have just been erected in the Congregational Church,—one in memory of the Rev. John Bristow, pastor of the church from 1824 to 1847; the second, in memory of Mr. Alfred Evans; and the third, as a memorial of the Rev. David Hewitt. The windows are the work of Mr. Drake, of the Cathedral-yard, Exeter.

Allendale.—A stained-glass window of two lights has just been erected in Allendale parish church, Northumberland, as an enduring memorial of the long-life services of the eminent and veteran Northumbrian surgeon, William Campbell Arnison, lately deceased, aged 86, and of his fifty-two years wife, Jane. The subjects illustrated are the journey of Abraham, with his son Isaac, servants, ass, wood, fire, &c., towards Moriah to offer up the appointed sacrifice; and the burial of Sarah in the cave of Machpelah. According to a rapidly prevailing custom, a portrait likeness of the deceased surgeon is perpetuated in the lineaments assigned by the artist to Abraham. The window is in the Decorated style. Between the two lights rises up the trunk of the oak of Mamre, the overarching boughs and leaves of which enter into the ornamentation of the decorated canopy and other adjuncts. In the tracery lights above, the angel of the Lord bears a ribbon with the inscription, “Be thou faithful unto death.” The window is from the studio of the firm of Powell Bros., of Leeds.

Sheffield.—Two windows at the west end of St. Vincent's (R.C.) Church, White Croft, Sheffield, have lately been filled with stained glass. They have three lights each, and are of large dimensions. They are designed in the style of the end of the fifteenth century, and the figures represent the Apostles, the general motif being taken from the windows at New College, Oxford. They have been executed by Messrs. Lavers, Westlake, & Co., of Endell-street, Bloomsbury, under the direction of the architects of the church, Messrs. M. E. Hadfield & Son, Sheffield.

Books.

Etched Studies for Interior Decoration. By W. H. BATLEY. London: Sampson Low, Son, & Co.

WE have long been of opinion that any permanent amelioration in the quality of our domestic art must come from within, and have its origin in the houses of the people at large. The time is gone by when the whole art of the kingdom was the special prerogative of a class, as in the Middle Ages, or of a clique of dilettante, as in the close of the last century and the beginning of the present one. There is no longer an authority which issues decrees on matters of taste, nor an obedient bourgeoisie to accept such decrees as gospel. The temper of the time is democratic in art, as in much else, and authority and prescription of all kinds must justify themselves in the face of a questioning spirit which is both alert and suspicious. For the future it is probable that artistic movements will in a greater measure than heretofore proceed from below upwards, and, indeed, the only chance of real improvement in the quality of the humbler art lies in the favour they find with the masses. Their demands for comfort and refinement in their surroundings are perceptibly on the increase. Neither in their homes, nor in the furniture of them and their decorative adjuncts would the majority of Englishmen now be satisfied with that which quite satisfied our fathers. We look back upon the furniture, the stuffs, the wall-papers, the sprawling bouquets on the drawing-room carpet, the transparent blinds of the staircase-window, with its cloisters of bad Gothic in worse perspective, and its complacent parrots perched upon the cusps thereof, the strange forms of household ironmongery and uncouth attempts at the ornamental trifles which enlivened the home of our youth, with nothing short of amazement. There is no doubt that in all these matters a real advance has been made. There is no question but there is room for further advance, and there is now no doubt but that what is sound in principle, and elegant and appropriate in form, will commend itself to the common sense of mankind, will find a ready market, and afford a reasonable remuneration to its authors. The lectures, the writings, and

still more the example of Mr. Morris have all helped to popularise and establish a more reasonable standard of taste in the household arts, and the influence of his labours is felt directly or indirectly in every home in the kingdom. That influence has had a double effect. It has stimulated the invention, and it has moderated and restrained the common tendency to run into excess. There is a becoming reticence about all his work, and if it is, in consequence, sometimes a little tame and his colour a thought too sad, it is never thoughtlessly employed and is never vulgar.

It falls to the lot of comparatively few men to live in a house of their own building or to exercise any control over the form it assumes. But, thanks to those whom it would be invidious to name, our streets no longer present unbroken stretches of dismal drab; they are putting on a garb of subdued reds and browns diversified with white and grey greens with spots of colour in majolica vases and their contents, which are inexpressibly refreshing. The stuccoed fronts of a benighted epoch are becoming gay within the limits of a reasonable gaiety and under the discriminating brush of the more educated house-painter. There are, no doubt, some horrors perpetrated in the name of art. This is a drawback which time will cure. There is at least one house in the Regent's Park which has recently been painted a dull blood red, with bold blue joinery and jalousies. It is a solemn and awful sight, and would drive a man with any sensitiveness in him away from the neighbourhood. But these examples are the exception, and unless some unlooked for misfortune arrests a wholesome development, our thoroughfares bid fair to exchange their dingy uniformity of ugliness for a vesture of pleasant colour, bright, varied, and agreeable.

We have been led to make these remarks by an examination of a collection of studies in interior decoration by Mr. W. H. Batley. As etchings, many of them possess marked merit; they give the effect of colour and texture admirably; others are a little scratchy and weak, and others are out of date. It is scarcely worth while to publish in an expensive form etchings of brackets and cupboards which are to be bought ready made in every street in London. In defence of these plates in the series it may be urged that they are ten years old, and the rapid march of improvement in the articles illustrated has left the illustrator behind. The other studies are, however, well worth examining, and offer many suggestions to both the artist and the householder.

The frontispiece is suggestive of Japanese originals in its studied irregularity of arrangement, and the fashionable peacock which Sir F. Leighton invented and Mr. Whistler popularised occupies a prominent place in this plate. As in the others of the series the constructive features are the weak places. The mouldings and wood-work are shirked or slurred over, and one class of opportunity for effect which of late years received so much attention from skilled artists has been lost. We infer that the author is not an architect but a decorator, and it is unfortunate that he did not seek the collaboration of some one amongst the many young architects who have of late years made the study of furniture and internal fittings their chief care. The filling in of panels and spaces and such like is done with marked taste, and shows a refined feeling for form and colour.

We doubt the expediency of mixing painted tiles with high-class joinery, shown in the design for a vestibule. The forms they bear are neither elegant nor appropriate. That is, of course, remediable. What is irremediable in such an arrangement is the glare and reflection of the vitreous surface when all else is dull and absorbent. A slim angel with outspread arms and wings, standing upon a bulky and ill-designed pilaster, and supporting a continuous cornice of common-place design, is not a very happy idea. Nor is the formal festoon, with its erratic bunches of ribands, which adorns the principal panels of the wall below. The deep frieze of stamped leather is the handsomest thing about the design.

The elaborate design for a staircase is overdone in every particular. It might pass for a City luncheon-bar. It would be a standing offence in a dwelling-house inhabited by a man of taste, wealthy enough to afford such costly adornments. There is an utter absence of repose, and the ornament, which is profuse, is not good. The author has succeeded in conveying, by the simple aid of the etching-needle,

a distinct sense of colour, and the execution is as effective as the design is meagre.

An attempt to adapt Egyptian ornaments to a modern dining-room is a bold experiment, and is not wholly unsuccessful; but the bright colour which would be essential to the scheme would be better adapted for a drawing-room or boudoir. We can fancy that in a house which afforded more than the customary number of such apartments, one of the smaller of them might be so treated with good results. In a certain house in Park-lane there is a little "Chinese" boudoir, with lanterns, ivory carvings, &c., and the break in the traditional style of decoration is as pleasant as unusual.

In plate 9 we have a very effective arrangement for a side wall, and a very ineffectively-designed dwarf cabinet. The treatment of the picture band is commendable, and the wall above is varied in line and colour, and not too extravagantly Japanese in motif.

The design for a stair-head is a sunny sketch full of light and colour, and framed by architectural features approaching more nearly what one could wish them to be.

The author of this series of attractive sketches is evidently unlearned in the higher class of modern architectural finishings, and in the matter of furniture his hand has not kept pace with the age. But he has a gift for ornament, and we should say for colour, and it is much to be desired that he should have an opportunity of displaying his special talent on a ground-work of architectural design by a master in that department of art.

It cannot but be regarded as a blemish on this otherwise attractive work that the author has chosen to print his preface and descriptive sheets in a type so archaic that his V's cannot be distinguished from capital B's, and his W's have a perplexing combination of L and B. These are affectations which do not assist the cause of art, but rather tend to bring it into contempt.

Miscellanea.

An Ecclesiastical Art Exhibition will be held at Reading next week, in connexion with the Church Congress. The loan collection embraces upwards of 300 separate exhibits. Embroidery, both ancient and modern, is largely represented, and amongst the former may be mentioned a vestment of thirteenth-century date, exactly the same as the celebrated chasuble in Salisbury Cathedral. By some chance it came into the possession of the Dutch, and was stolen from one of the churches of Holland during the Wars of Independence, and latterly was in the possession of the late Archbishop of Utrecht. It is the property of Mr. W. Baker. Mr. S. Thompson and Mr. Backley send several specimens of ancient vestments and embroidery. Metal work and enamels are also well represented by various exhibitors, and Mr. Helmore sends a number of books to illustrate the history of the revival of the ancient plain-song. Messrs. Doulton contribute specimens of Mr. George Tinworth's remarkable works in terra cotta.

Royal Victoria Coffee-hall, Waterloo-road.—By the kindness of the trustees of the Gilchrist Fund the committee of the Royal Victoria Coffee-hall have been able to arrange for the delivery of six science lectures by eminent lecturers on Tuesdays, beginning on the 2nd of October. The success of the Gilchrist lecturers in Scotland and the North of England is remarkable, thousands of operatives being attracted by them. In some cases some of the audience have followed the lecturer from one town to another. The committee are, therefore, anxious that lectures such as these, which are rarely within the reach of London working men, should be made widely known beyond the circle of the usual frequenters of the hall.

St. John's Church, Notting-hill.—The report concerning the spire of this church appears to have been exaggerated. Mr. Aston Webb, under whom the work is being done, says it consists in repairing and pointing the stonework, and removing the rolls which had become loose.

The Calcutta Exhibition.—The Viceroy will, according to present arrangements, open in state the Calcutta Exhibition on the 4th of December. The Duke and Duchess of Connaught, who will leave England early in November, are expected to be present at the ceremony.

Triassic Strata in the Neighbourhood of Liverpool.—Before the Geological Section of the British Association's meeting at Southampton, last week, Mr. G. H. Morton read a paper on the subject "Section across the Trias recently exposed by a Railway Excavation in Liverpool." During the last eight years, he said, a very important section of the triassic strata has been exposed in Liverpool by excavations widening the line of the London and North Western Railway Company. The section presents a solid wall of sandstone on both sides of the railway crossing from Lime-street Station to Edgehill Station, a distance of 2,300 yards from east to west. The height of the rock on each side varies. The strata exposed belong to the Keuper and Bunter formations. The pebble beds of the latter crop out for 914 yards along the east of the cutting, and only two faults occur in the whole of the beds exposed. The subdivision ends at Smithdown-lane, where there is a fault, with a downthrow to the west, which brings in the upper mottled sandstone, the highest member of the Bunter formation. The upper mottled is a fine-grained, soft bright red sandstone, very useful for building purposes. The position of the Keuper Mr. Morton thinks of great local interest. The remarkable absence of faults in the pebble beds has an important bearing on the construction of the Mersey tunnel, which will have to be carried through these beds along its whole length. The section shows that, while faults are numerous in the Keuper sandstone, which was frequently fractured during subsidence into a depression, the pebble beds are very little faulted. While under the Mersey a few days ago, Mr. Morton found not a single fault either in the tunnel or in the heading beneath.

Artisans' Dwellings in Islington.—A large block of artisans' dwellings has been erected by the Industrial Dwellings Company near the Grand Theatre, High-street, Islington, and will shortly be ready for occupation. The private enterprise of Messrs. Leverett & Fry has provided another similar block in Field place, White Lion-street, and it is the intention of Mr. W. L. Kellaway, builder, to erect fourteen dwellings for artisans on the site of the old Penitentiary in White Lion-street, acquired on a lease from Colonel Penton. The light ventilation of these dwellings will be enhanced by the construction of a new street leading from Chapel-street to White Lion-street. Messrs. Novell & Robson, contractors, of Warwick-road, Westminster, are engaged in clearing the ground and making new roads and sewer connections on the site of Elder-walk, Somerset place, and on other spots adjacent to Angler's gardens, Popham-road, and Britannia-row, in view of the early erection of blocks of dwellings for the industrial classes. The Metropolitan Board of Works have already let the southern site for the building thereon of artisans' dwellings.

The Late Mr. E. B. Stephens, A.R.A.—A public meeting has been held in the Guild hall, Exeter, to consider the desirability of raising a subscription to purchase for presentation to the Albert Memorial Museum, Exeter, the late Mr. E. B. Stephens's statuary group in marble,—"The Bathers." The work, which is one of Stephens's last efforts, is at present in the possession of the deceased artist's executors. Its estimated value, if put into the market, is about a thousand guineas, but the executors are willing to give it to Mr. Stephens's nativity city as a memorial of his genius for a sum representing the bare cost of material, viz. 400l. After addresses from the Mayor, the Sheriff, Earl Devon, the Rev. J. Ingle, and Mr. Harding, a resolution approving of the scheme and empowering the executive committee to take the necessary steps for raising the 400l. required, was unanimously carried.

Subsides in Northwich.—The Northwich Local Board has decided to obey an order recently issued by the local magistrates to take down or secure the safety of Northwich Town hall, which threatens immediate collapse in consequence of recent subsides. The Local Board have made arrangements with a builder to shore up the town-hall. Now that the salt trade is again active and brine-pumping vigorously carried on, subsides are reported to be of daily occurrence, especially at Winsford, and the expenses entailed are enormous. It is stated that the well-built houses of the district, which are all half-timbered, will fall several inches out of the perpendicular in a few weeks.

Chicago.—Architect H. M. Hansen has completed plans for a building on Peoria-street, north of Indiana, to be used by a Scandinavian publishing house. Mrs. L. Anderson is the owner. The building will cost 30,000 dollars. Mr. Hansen has in hand a building for a photograph gallery and residence for L. W. Felt, at No. 215, East Chicago-avenue,—cost 10,000 dollars. This architect has also plans for a fine residence for Mrs. J. P. Hampson, at No. 326, Indiana-street; also a flat building for G. P. Koney, at No. 835, North Clark-street, to cost 15,000 dollars; also a fine dwelling for Joshua Smith, in Lake View, to cost 13,000 dollars; also for a residence for O. G. Hedenburg, in Lake View, to cost 10,000 dollars. Mr. Hansen has completed drawings for the Swedish M. E. Theological Seminary, to be erected on the grounds of the North Western University at Evanston, to cost 6,000 dollars. A structure is being built on Wabash avenue, which is intended to accommodate a panorama. It is a sixteen-sided polygon, with a diameter of 135 ft. It has been developed in the evidence before the Hill investigating committee at Washington that the custom-house in Chicago has been steadily settling since its erection, so much so as to cause gas and water pipes to break. Architect John Clifford is preparing plans for a palatial residence for a wealthy New Jersey contractor. It will be built in Chicago (the location not yet determined), and will be in the Moorish style of architecture, 75 ft. by 100 ft. in size, with a large court in the centre, which will be surrounded with balconies and covered with coloured glass so blended as to produce a rich Oriental colouring. Architect Chelius will be the designer of the new Colehour schoolhouse, and Mr. Diemstel the architect for the new school-house in South Chicago. The secretary has been instructed to advertise for bids for the construction of these buildings.—*The Sanitary News.*

A Public Hall for Peckham.—In Ryelane, Peckham, there is now in course of erection a public hall intended to meet the necessities of this thickly-populated district in the way of a suitable place for meetings, concerts, &c. The length of the main building will be 90 ft., and the breadth 45 ft. On the ground-floor will be a series of rooms, one of which, 45 ft. long by 26 ft. wide, it is intended to utilise as a reading-room. Three smaller rooms, each 26 ft. long by 14 ft. wide, will be used as committee-rooms. Also on the ground-floor will be provided a refreshment-room, lavatories, and other conveniences. The large hall will be on the first-floor level, and will be 90 ft. long, 45 ft. wide, and 22 ft. high. This hall, which is intended to accommodate from 1,000 to 1,200 persons, will be used for public meetings, concerts, balls, &c. Access will be gained to this hall by two commodious staircases. Above this hall will be another apartment, top-lighted, and available as a supper-room or art-gallery. The architect is Mr. T. Wilkins, of Lyndhurst-road, Peckham. The building will have frontages to Ryelane, and therefore no external effect has been aimed at.

Oxford and Cambridge Club.—In order to avoid the necessity and expense of erecting scaffolding to support the large balconies of this club whenever they are required to view any public procession, the balconies have lately been made entirely self-supporting by a system of wrought-iron joists and built-up cantilevers, concealed from view by cement trusses and mouldings. The club has recently also been re-decorated, and sundry minor alterations have been carried out, the whole under the superintendence of Mr. Matthew Wyatt, of No. 77, Great Russell-street. The decorations were executed under the immediate direction of Mr. Crace, sen., and the builders' work was done by Messrs. Haward Bros. The outlay has been about 5,000l., besides a considerable sum spent by Mr. W. Woodstock, the secretary, in new furniture, &c.

Mersey Drainage Heading.—The progress made during the week ending September 22nd, with Colonel Beaumont's boring-machine, which is at work in the red sandstone under the Mersey, in connexion with the Mersey Railway and Tunnel contract, was 24 yards, although there were only five working-days, as the machine was stopped one day by water being up in the pit. The greatest distance cut in one day was on the 22nd inst., when 18 ft. were recorded. The total distance cut by the machine up to that date was 281 yards.

American Institute of Architects.—The Seventeenth Annual Convention of the American Institute of Architects was a very successful one. The *American Architect* says:—"The amount of business transacted was not large, but the measures adopted were of considerable importance to the future of the Institute. About forty members were in attendance, including several from Ohio, one from Chicago, one from Indiana, and one from Georgia, besides many from New York and Boston. The morning session of the first day, after the delivery of the President's Annual Address, was devoted to hearing the reports of the officers of the Institute and the Secretaries of the various Chapters, all of which indicated quiet prosperity. The membership of the Institute was shown to have increased considerably during the year, many accessions being reported from the Chapters, in addition to the reinstatement of one or two former members whose connexion with the Institute had been allowed to lapse. The number of Fellows was reported as sixty-nine, leaving, under the rule adopted two years ago, but one vacancy. It was obvious to every one that this rule had set the limit far too low, and the report of the Committee appointed at Cincinnati last year to consider the question of an increase in the number of Fellows was peculiarly timely. This report had been printed, for the use of members, and after a good deal of discussion the amendments to the by-laws which it proposed to make were substantially adopted."

The Fire at Cortachy Castle.—An official inquiry into the circumstances attending the fire at Cortachy Castle has revealed the fact that at mid-day on the 14th inst., nearly four hours prior to the time at which the fire was first observed, thick black smoke was seen to rise from the kitchen chimney as if the chimney were on fire. A similar occurrence was seen about an hour and a half before the fire became visible on the roof. Two men who were first on the scene reported that the woodwork of the roof must have been on fire a considerable time before the fire revealed itself, and from what they saw there is no doubt that burning soot in the chimney ignited a wooden beam of the roof. The chimney was reported to have been dirty. It further appears from the inquiry that the apparatus for extinguishing fire belonging to the castle was brought into requisition almost immediately the nature of the danger was realised, but by that time the fire had obtained a firm hold on the building, and the men were driven back and ultimately out of the castle.

The City and the Parkes Museum.—A deputation from the Parkes Museum of Hygiene, on the 20th, waited upon the Court of Common Council at Guildhall, to present a memorial asking the Council to aid the museum by a contribution of money to its funds. The deputation consisted of Dr. Poore, vice-chairman; Mr. Charles H. Parkes, Mr. E. C. Robins, Dr. Steele, Dr. Williams, Mr. Mark H. Judge, the late secretary; and Mr. White Wallis, the newly-appointed secretary of the museum. The memorial pointed out that the museum was established at University College in 1876, where its collection was exhibited free of cost until last year, when the museum was removed to premises in Margaret-street, and opened by the president, his Royal Highness the Duke of Albany, in May last. As evidence of the economical management of the institution it was stated that only 595l. had been paid in salaries during the seven years ending June 30th last. On the motion of Mr. Alderman De Keyser the memorial was referred to the Finance Committee for consideration and report.

Proposed Re-erection of the Wellington Statue at Portsmouth.—Alderman Emanuel has applied for permission to erect the Wellington statue on Southsea-common, the parade ground of the troops in Portsmouth garrison. Mr. Shaw-Lefevre has replied that no decision will be arrived at as to the disposal of the statue until next Session. It should be re-erected in London.

TENDERS.

For road-making and paving works at Kilburn and Willesden, for the Willesden Local Board. Mr. O. Claude Robson, surveyor:—	
Salomon & Co.	£2,114 0 0
Tildesley	2,094 0 0
Boyer	1,915 15 0
Nowell & Robson	1,908 2 1
Felton	1,730 0 0
Neave & Sons	1,897 0 0
Brown & Cousins	1,646 0 0

For addition to Royal Schools, Bath. Messrs. W. G. Habersham & Fawcner, architects, 39, Bloomsbury-square:—

Bath & Co., Bath	£11,027 0 0
Long, Bath	10,952 0 0
Bladwell & Co., Bath	10,600 0 0
Cowlin & Co., Bristol	9,928 0 0
Hayward & Co., Bath	9,848 0 0
Jones & Co., Gloucester	9,844 0 0

For boundary-walls enclosing paddock to Sans Souci and Briar Bank Villas, Stanley-road, Teddington. Mr. Thos. Durrans, architect, 14, Baker-street:—

Wright	£339 0 0
Howard	349 0 0
Edgar	282 0 0

For sanitary works in drainage and water supply, to No. 13, Blandford-square, for Mr. H. F. Amsdery. Mr. Thos. Durrans, architect:—

Moss	£371 0 0
------	----------

Accepted for the erection of a residence at Northampton, for the Right Rev. Arthur Riddell, D.D., R.C. Bishop of Northampton. Mr. S. J. Nicholl, architect, 1, Cavendish-road, London. Quantities by Messrs. Sloner & Sons:—

General Works.
Mr. Robert Finnegan, Northampton.
Masonry.
Mr. E. G. Anstey, Alpha-road, Regent's Park.

For the erection of a pair of semi-detached villas at Chesham, for Mr. Geo. Dawberry. Mr. Henry George Bishop, architect, 15, Emery-street, Cambridge:—

	Villas.	Wall.
Pate, Cambridge	£2,390 0 0	£23 0 0
Yarrow, Cambridge	2,145 0 0	19 10 0
Pamphill, Cambridge	1,814 0 0	25 12 6
Parcell, Cambridge	1,740 0 0	20 0 0

For building Board School, Maynard-road, Walthamstow. Mr. W. A. Longmore, architect, 7, Great Alcock-street. Quantities by Messrs. J. & E. Goodchild:—

Russell	£11,535 0 0
Hack	10,384 0 0
Smith & Son	10,333 0 0
Reed	10,170 0 0
Wood	9,990 0 0
Sawyer	9,972 0 0
Thomerson	9,838 0 0
Brown	9,790 0 0
Bulding	9,777 0 0
Tink	9,683 0 0
Gregar	9,633 0 0
Shurmer	9,540 0 0
Evans	9,339 0 0
Harper	9,330 0 0
Good	9,230 0 0
Gibbons	8,999 0 0
Allan	8,959 0 0
Parker	8,839 0 0
Martin	8,815 0 0
Wood	8,743 0 0
Scott, S. J. (accepted)	8,423 0 0

Forten houses for the Hereford Land, House, and Investment Company, Limited. Mr. W. H. Willett, architect, Hereford:—

John Inwood, Malvern	£1,350 0 0
----------------------	------------

For six houses in Ledbury-road, Hereford. Mr. W. H. Willett, architect:—

J. Ford	£1,009 0 0
W. Bowers & Co.	925 0 0
N. P. Lewis	900 0 0
H. Welsh	895 0 0
J. Davies, Hereford (accepted)	896 0 0

For two houses on Lot 69, the Ryelands Estate, Hereford (exclusive of bricks). Mr. W. H. Willett, architect:—

J. Inwood	£690 0 0
G. Hudson	458 0 0
E. Powell	405 10 0
J. Davies	393 0 0
H. Welsh	380 0 0
W. Bowers & Co.	340 0 0
W. Pritchard (accepted)	316 14 0

For two houses on Lot 163, the Ryelands Estate, Hereford (exclusive of bricks). Mr. W. H. Willett, architect:—

W. Bowers & Co. (accepted)	£340 0 0
----------------------------	----------

For alteration to shop in High Town, Hereford, for Mr. J. J. Cox. Mr. W. H. Willett, architect:—

J. Ford (accepted)	£350 0 0
--------------------	----------

For alteration and addition to house at Putton, Hereford, for Mr. J. J. Cox. Mr. W. H. Willett, architect:—

J. Ford (accepted)	£150 0 0
--------------------	----------

For new shop front and alterations at No. 59, Commercial-road, Hereford. Mr. W. H. Willett, architect:—

J. Ford (accepted)	£115 0 0
--------------------	----------

For cottage, Broomy-hill, Hereford. Mr. W. H. Willett, architect:—

Henry Welsh (accepted)	£239 0 0
------------------------	----------

For the erection of stable and coach-house at Sandfield, Chislehurst, Kent, for Mr. G. S. Hunt. Mr. Richard Croed, architect:—

R. A. Lowe, Chislehurst	£283 0 0
H. Copeland, Beckenham	699 1 6
J. Barnett, Shortlands	639 0 0
W. A. Grubb, Bromley	629 0 0
M. Taylor, Croydon	626 0 0

For alterations and repairs at No. 1 and 2, Nether-street, Finchley, for Mr. J. Radmell. Mr. J. H. Paine, architect:—

D. D. & A. Brown, Camberwell (accepted).	
--	--

For pulling down and rebuilding premises in Jerusalem-court, St. John's-square, Clerkenwell, for Mr. Thomas Caprin. Mr. Henry John Hanson, architect:—

Williams & Son	£2,120 0 0
Turtle & Appleton	1,975 0 0
Langmead & Way	1,860 0 0
Robert Russell	1,850 0 0
Richens & Mount	1,648 0 0

For roads, sewers, surface water drains, &c., on the British Land Co.'s Estate at Hendon. Mr. Henry B. Mitchell, surveyor:—

Nowell & Robson, Kensington.....	£2,792 0 0
W. Harris, Camberwell.....	2,327 0 0
J. Bloomfield, Tottenham.....	1,977 0 0
F. Keeble, Regent's-park.....	1,890 0 0
T. Adams, Hackney.....	1,829 0 0
J. Fitzzy, Hornsey.....	1,825 0 0
C. Killingback, Camden-town.....	1,795 0 0
E. Wilson, Walthamstow.....	1,785 0 0
J. Jackson, Leyton.....	1,765 0 0
Feill & Sons, Bromley (accepted).....	1,860 0 0

For new roads, surface water drains, and bridges on the Chingford Mount Estate, for the Abbey-park Cemetery Company, Limited. Mr. F. M. Whittingham, surveyor:—

T. G. Dunmore, Hornsey.....	£3,860 0 0
F. W. Keeble, Regent's-park.....	2,800 0 0
W. Harris, Camberwell.....	2,790 0 0
Found.....	2,780 0 0
Jackson, Leyton.....	2,770 0 0
Feill & Sons, Bromley.....	2,770 0 0
Killingback, Camden-town.....	2,750 0 0
Fitzzy, Hornsey.....	2,699 0 0
McKenzie, Williams & Co., London.....	2,688 0 0
E. Wilson, Walthamstow (accepted).....	2,550 0 0

For additions and alterations to drying-room at Shepley Mills, Guide-bridge, for the Shepley Mills Linoleum Company, Limited. James Hunt, architect, 4, Warren-street, Stockport:—

J. Broadhurst, Stockport.....	£2,039 0 0
Proggatt & Briggs, Heaton Norris.....	1,793 0 0
W. Storrs & Sons, Limited, Staley-bridge.....	1,689 0 0
S. Robinson, Hyde.....	1,687 0 0
E. Simpson, Hyde.....	1,634 0 0
J. Statham & Sons, Manchester.....	1,615 0 0
A. Haughton, Godley (accepted).....	1,605 0 0

For cast iron gully grates, per ton, for the South Hornsey Local Board. Mr. William H. Pipe, surveyor pro tem. to the Board:—

Thames Bank Iron Co., Thames street.....	£8 5 0
Jukes, Coulson, Stokes, & Co., Clement's lane.....	5 5 0

For works and repairs to thirty-six houses, George-street, Camberwell, for the National Dwellings Society:—

Andrews.....	£385 0 0
Ash.....	555 0 0
Best.....	487 0 0
Adams.....	434 7 9
Allen.....	325 0 0

For completing five houses, Oxford-road, Wallington, Surrey. Mr. J. Waterson, architect:—

Capsey.....	£1,425 0 0
Scudder.....	1,300 0 0
Kemp.....	983 0 0
T. Watson, Dulwich.....	935 0 0

For repairs and alterations, bath fittings, &c., at No. 98, Gloucester-place, Portman-square. Mr. E. Crosse, architect, 32, Bernonsey-square, S.E.:—

Higgs & Hill.....	£244 0 0
Sayer.....	207 0 0
Wright & Co.....	180 0 0
Rhodes (accepted).....	176 0 0

For the erection of show-rooms between Commercial and Union-streets, Hereford, for Mr. R. M. Harding, Mr. W. W. Robinson, 21, King-street, Hereford, architect. Quantities supplied by the architect:—

W. Fencom, Hereford.....	£1,235 0 0
H. Welsh, Hereford.....	1,043 0 0
J. Hiles, Hereford.....	1,025 0 0
T. Lewis, Hereford (accepted).....	1,021 0 0
Deavan & Hodges, Hereford.....	1,020 0 0
W. Bowers & Co., Hereford.....	1,010 10 0
J. Davies, Hereford.....	895 0 0

For building a warehouse, Halifax-place, Nottingham. Mr. J. Bindon Carter, architect, 43, Park-road, Nottingham:—

T. Long.....	£4,973 7 8
Lynam & Kidd.....	4,500 0 0
R. Middleton.....	4,500 0 0
J. Hodson.....	4,444 0 0
Geo. Underwood.....	4,411 0 0
Wheatley & Maule.....	4,350 0 0
Jelly & Co.....	4,300 0 0
F. Mansson.....	4,287 0 0
Taylor & Ward.....	4,210 0 0
Woolf Bros., Curzon-street, Nottingham (accepted).....	4,170 0 0

For the erection of St. Paul's Schools at Chatham, Kent, for the accommodation of 400 children. Mr. Robert Willey, architect, 66, Ludgate-hill, London:—

Perry & Co., Westminster.....	£2,200 0 0
Martin, Wells, & Co., Aldershot.....	2,000 0 0
Bankhurst & Co., Chatham.....	1,895 0 0
Green, Clapton.....	1,889 0 0
Blake, Gravesend.....	1,810 0 0
Naylor & Son, Rochester.....	1,773 0 0
Skinner, Chatham.....	1,580 0 0
Dovey, Brentford.....	1,350 0 0

For the making of roads, footpaths, sewers, and manholes, on the St. John's Hospital Estate, Bedford. Messrs. Usher & Anthony, surveyors:—

For the St. Peter's Estate:—	G. Freeborough (accepted).
For the St. Paul's Estate:—	T. Spencer (accepted).

For alterations and additions to premises, No. 121, Euston-road, for Mrs. Lumley. Messrs. J. Saville & Son, architects, 1, Argyle-square. Quantities supplied:—

Royal.....	£488 0 0
Dorey.....	479 0 0
Steed Bros. (too late).....	447 0 0
Spencer & Co.....	440 0 0
Jackson & Todd.....	424 0 0
S. R. Lambie.....	419 10 0
Ward & Lambie (accepted).....	417 0 0

For the erection of a hall at South Lambeth for Mr. George Cox. Mr. Charles Jones, architect, 151, Ebury-street. Quantities supplied:—

Coulthard.....	£1,300 0 0
Jackson & Todd.....	1,274 0 0
Gregory.....	1,232 0 0
Pickersgill.....	1,119 0 0
Heath.....	1,071 0 0
Williams.....	1,071 0 0
Scheries & Williams.....	1,038 0 0

TO CORRESPONDENTS.

C. H.—J. B. & Sons.—T. J. H.—A. W.—A. O. R.—J. H.—R. C.—Mr. B.—W. F.—T. J. H.—A. W.—A. O. R.—J. H.—R. C.—J. J. M.—E. C.—F. H. O.—Dr. B.—F. H. M.—T. K.—M. W.—D. B.—J. M.—F. C.—J. P.—O. H. V.—F. H. M.—T. K.—M. W.—D. B.—R. E. F.—R. T. N.—C. F.—E. R. H. T.—J. H.—A. J. O.—W. W.—A. B. E. R.—M. W.—J. H.—(too late)—Builder (late should be sent and sum)—R. C. (under our mark)—W. S. (unreadable)—H. A. C. Our correspondents own statements do not seem to give him the right to claim the title of joint architect.

Correspondents should address the Editor, and not the Publisher, except in cases of business. All statements of facts, lists of tenders, &c. must be accompanied by the name and address of the sender, not necessarily for publication. We are compelled to decline pointing out books and giving addresses.

NOTE.—The responsibility of signed articles, and papers read at public meetings, rests of course with the authors.

NOTICE TO ADVERTISERS.

Persons advertising in the *Builder* may have REPLIES ADDRESSED TO THE OFFICE, 46, Catherine-street, Covent-garden, W.C., FREE OF CHARGE.

Letters will be forwarded if addressed envelopes are sent, together with sufficient stamps to cover the postage.

CHARGES FOR ADVERTISEMENTS.

SITUATIONS VACANT, PARTNERSHIPS, APPRENTICESHIPS, TRADE, AND GENERAL ADVERTISEMENTS. Six lines (about fifty words) or under..... 6s. 6d. Each additional line (about ten words)..... 0s. 6d. Terms for Series of Trade Advertisements, also for Special Advertisements on front page, Competitions, Contracts, Sales by Auction, &c. may be obtained on application to the Publisher.

SITUATIONS WANTED. Four lines (about thirty words) or under..... 2s. 6d. Each additional line (about ten words)..... 0s. 6d. PREPAYMENT IS ABSOLUTELY NECESSARY.

* * * * * Banners must not be sent, but all small ads should be remitted by Cash in Registered Letter or by Money Order, payable at the Post-office, Covent-garden, W.C. to DOUGLAS FOURDRINIER, Publisher.

Addressed to No. 46, Catherine-street, W.C. Advertisements for the current week's issue must reach the Office before THREE o'clock p.m. on THURSDAY. The Publisher cannot be responsible for DRAWINGS, TESTIMONIALS, &c. left at the Office in reply to advertisements, and strongly recommends that of the latter COPIES ONLY should be sent.

TERMS OF SUBSCRIPTION.

"THE BUILDER" is supplied gratis from the Office to residents in any part of the United Kingdom at the rate of 18s. per annum. PREPAID. Remittances payable to DOUGLAS FOURDRINIER, Publisher, 46, Catherine-street, W.C.

Best Bath Stone.

WESTWOOD GROUND, Box Ground, Combe Down,

Corsham Down, And Farsleigh Down.

RANDELL, SAUNDERS, & CO., Limited, Corsham, Wilts. [Advt.]

Bath Stone.

Facilities for selection and quality unequalled, having upwards of

350,000 Feet Cube

In Stock of all known descriptions.

PICTOR & SONS, Box, Wilts. [Advt.]

Douling Freestone and Ham Hill Stone

of best quality, in blocks, or prepared ready for fixing. An inspection of the Douling Quarries is respectfully solicited; and Architects and others are CAUTIONED against inferior stones. Prices, delivered to any part of the United Kingdom, given on application to CHARLES TRASK, Norton-sub-Hamdon, Ilminster, Somerset.—Agent, Mr. E. WILLIAMS, 73, Charlotte-street, Portland-place, W. [Advt.]

Douling Freestone, Of best quality, supplied from their own Quarries and Kilns by

HAM HILL STONE, and Kilns by

BLUE LIAS LIME, Agent, Mr. H. MITCHELL, 5, Abchurch-lane, London, W. [Advt.]

(Ground or Lump),

Asphalte.

Seyssel, Patent Metallic Lava, and

White Asphaltes.

M. STODART & CO. Office:

No. 90, Cannon-street, E.C. [Advt.]

Asphalte.—The Seyssel and Metallic Lava

Asphalte Company (Mr. H. Glenn), Office, 38, Poultry, E.C.—The best and cheapest materials for damp courses, railway arches, warehouse floors, flat roofs, stables, cow-sheds and milk-rooms, granaries, tun-rooms, and terraces. [Advt.]

Immense quantities of

DRY WAINSCOT,

DRY MAHOAGANY,

DRY WALNUT,

in all thicknesses.

B. J. HUDSON & SONS,

Whitfield-st., W., and Great Peter-st., S.W. [Advt.]

J. L. BACON & CO.,

MANUFACTURERS OF IMPROVED

STEAM AND HOT-WATER

APPARATUS,

FOR WARMING AND VENTILATING

Private Houses, Churches, Schools, Hospitals, Manufactories, Greenhouses, &c.

OFFICES AND SHOW-ROOMS:—

No. 34, UPPER GLOUCESTER PLACE,

DORSET SQUARE, LONDON, N.W.

And at DUBLIN, BELFAST, and NEWCASTLE.

Illustrated Pamphlet on "Heating" post free.

CHAPPUIS' PATENTS FOR REFLECTING LIGHT.

DAYLIGHT REFLECTORS OF EVERY DESCRIPTION,

ARTIFICIAL LIGHT REFLECTORS.

ALSO

WHY BURN GAS?—CHAPPUIS' REFLECTORS DIFFUSE DAYLIGHT.—They are exclusively adopted by and fitted at Buckingham Palace, all H.M. Government Offices, Houses of Parliament, H.M. First Commissioner of Works, the Metropolitan Board of Works, British Museum, South Kensington Museum, Royal Institution, Guildhall Museum, on board H.M. Ships, also Railway Companies' Offices, Hospitals, Institutions, Banks, Insurance Offices, Manufactories, Private Houses and generally from Noblemen's Mansions to Artisans' Workshops. 30,000 in use in London alone. Patronised by leading Architects, Engineers, Contractors, &c., &c.

N.B.—For Prospectuses and Diagrams, address Stamped Envelope to

P. E. CHAPPUIS, Patentee and Manufacturer, 69, FLEET-STREET, LONDON.

NOTICE.—THE POLYGONAL REFLECTOR (Latest Patent) FOR ARTISTIC and PICTURE GALLERIES.

Its construction allows of the angle of light being readily altered so as to reflect in any desirable direction.

The Builder.

Vol. XLV. No. 2122.

SATURDAY, OCTOBER 6, 1893.

ILLUSTRATIONS.

Street Architecture at Ratisbon: Thirteenth and Fourteenth Century	430
Manor House, Everleigh, Wiltshire.—Mr. John Birch, Architect	432
Church of St. Peter and St. Paul, Northleach, Gloucestershire.—Mr. James Brooks, Architect	434
Westminster Jews' Free School.—Mr. H. H. Collins, Architect	450, 457
Villa Residence for Mr. B. B. Brett, M.P., at Winkfield.—Messrs. Byrne & Wilmot, Architects	459
The Prince's Head Tavern, and Shops adjoining, Battersea.—Mr. H. L. Newton, Architect	461
Hôtel de Ville, Paris: Council Chamber.—Messrs. Ballu & Deperthes, Architects	463

CONTENTS.

National Collections as Classified and Criticised	441	Street Architecture at Ratisbon: Thirteenth and Fourteenth Century	430	The Advantages of Low Ceilings in Small Houses	457
The Explosion at Woolwich, and its Practical Lessons	442	Century	432	Munich Fine-Art Exhibition	457
The Château of Chambord	443	Westminster Jews' Free School	450	Awards at the Glasgow Sanitary Exhibition	458
The Architectural and Engineering Congress at Frankfurt-on-Main	444	Manor House, Everleigh, Wiltshire	434	The Supply of Hydraulic Power	458
The Building Academy at Munich	445	Villa Residence, Winkfield	459	Staining Wood	458
Evolution in Art	445	Church of St. Peter and St. Paul, Northleach	435	Water Supply	458
The Glasgow City Improvement Act: and its Effect on the Health of the Inhabitants	445	The New Hôtel de Ville, Paris: The "Salle des Séances"	461	New Hospitals	459
Edinburgh	447	The Prince's Head Tavern and Shops adjoining	461	Obituary	459
The Late Dr. Begg	447	The Dwellings of the Middle Classes	459	Cases under the Metropolitan Building Act: Plaster and Timber	459
Lewisham Public Baths Competition	448	The Competition for the New Government Offices	459	Provincial News	459
The Buda-Pesth Exhibition of 1895	448	The Proposed Manchester Ship Canal: an Amended Scheme resolved upon	457	Stained Glass	470
				School Building News	470
				Miscellaneous	470

National Collections as classified and criticised.

AMONG the consolations to many of a return to a London home at this season is to be reckoned finding the National Gallery again within reach. It is among the boons of the present direction that we do not now return to

find the doors closed. Not only is it open, but new acquisitions of great interest have taken their positions on the walls, and re-arrangements are in progress which will be to the advantage of old as well as new.

National Museums and National Galleries of Art have an inevitable tendency as time goes on to become more and more crowded; whatever enters is retained, and the stream of additions, though sometimes more rapid and more copious than at others, is seldom intermittent in any case for long together, and in the most important cases never. The contents press on the limits of available room, which do not very readily expand; the result, in the more unfortunate instances, is inevitable confusion among the contents; the best uses of the institution, be it scientific, artistic, or literary, are hampered. Treasures obtained at great cost, recovered with great labour, are reburied in magazines, covered up in crowded cases, and even lost sight of by the very custodians themselves.

It is well if seclusion and enforced neglect do not induce irreparable damage; in the meantime the purposes which such national institutions should subserve are in a large degree frustrated; opportunities of intelligent study and research are forfeited together with the no less important humanising influence of refined enjoyment and stimulant admiration.

The utmost that a director can do under difficulties which he may pardonably find exasperating, will be an unsatisfactory compromise; it is a happy day when fretfulness and impatience within the institution and without become so effectively irritant that supreme authority at last seeks its own ease by conceding the additional space and expense required. A new responsibility then accrues for dealing with new problems of distribution and classification, and even so the conflict will not still be quite extinct between the necessary and the desirable, or between estimates of the desirable as presented to different points of observation.

Let us leave aside for a time the multifarious

collections of the British Museum and South Kensington, and take the simpler example of the National Gallery. On how many different principles may the pictures be classified? Even so far as arrangement has already proceeded, we may observe that no single principle has been or is likely to be pedantically adhered to, but that the value of more than one has been duly appreciated, and each allowed more freedom of scope as it can vindicate its relative importance.

The simplest rule of all, and it would seem the most authoritative, is the chronological. Why should we not take time frankly by the hand, and place the pictures on the walls in proper historical sequence, as nearly as possible can be ascertained in the order in which they were painted? The dates of many of the most important are known to a year, or within a year or two, and confining limits are given for others by the birth and death years of the painters. But History will not so be satisfied. History, it has been said, relies on the services of two handmaidens equally indispensable; one of these is Chronology, but Geography is the other. Collocation in space is as important a consideration as proximity in time, whether we study the revolutions of empires or the developments and reactions of schools and styles of art. If an arrangement is guided by dates alone we shall be presented with a series of works in styles so perplexingly intermingled that whatever glimpse of true historical relation may flatter us at one moment will be baffled and evaded the next, and the scheme as an aid to study will be naught.

An alternative seems to present itself which has also the advantage of avoiding too rigid formality by a reasonable compromise. Works of art may be classified and distributed by Schools: so the intimate relations dependent upon national or provincial origin will have the best chance of appreciation by the student, and arrangement in chronological sequence within these limits will assume peculiarly instructive significance. This scheme will have the advantage of exhibiting most clearly the successive phases of the art of particular masters. When the productions of one artist are numerous they will constitute an illustrated artistic biography. The interest for the student is great, and may even become absorbing, in following the development or variations of mere technical processes and skill, still more in tracing the history in a particular case, of mastery in the employment of technical excellence for the realisation of the artistic idea. The points of view thus taken may not be the most important or the loftiest, but they are, nevertheless, of great importance, and, in consequence, go very far to justify the predilection which is so constantly observable in galleries of art, for arrangement of pictures according to schools. This is especially helpful for the more exclusively intellectual students of art and art history, and these

students form a numerous and influential class. They may be divided into the sub-classes of those who set themselves to know, and who are satisfied with knowing whatever is to be known about art, and thus consider especially its external history and the catalogue of its extant monuments, their vicissitudes and whereabouts; and those students upon a slightly more elevated platform, who are not endowed with immediate sensibility of refined and ideal art, but who have a certain faculty for estimating and taking account of the effect of works of art on the sensibility of the more gifted. Students of this class have a certain sense of beauty which, in their cases, is oddly balked of its natural effect of exciting any particular enthusiasm for it. The faculty seems equivalent to a keen mercantile instinct for the permanent attractiveness of qualities for which the dealer himself has no other than a mercantile respect.

But the arrangement of pictures by Schools, advantageous compromise as it may be, like all compromises is not entirely satisfactory, even for the colder criticism which occupies itself chiefly with authenticity of works and manners and styles of masters. It is rarely that the development of a school is self-contained. It is susceptible of influence from even remote localities; the school of art in one province may be a true revival of a movement which has died out in another. Then there need be no disturbance of the chronological arrangement. But in other cases the contemporary schools of remote localities,—remote as Flanders from Italy,—re-act on each other. So far there would be instruction in breaking through the separation of schools and placing contemporary pictures side by side in illustration of the communicated sympathy. But, indeed, there would also be instruction in exhibiting not only the sympathies of contemporary schools, but illustrations of how utterly alien in spirit and in style may be the works of schools which, as well remote from each other as also in close proximity, are working on in full vigour contemporaneously. Nay, there is a still more surprising and it may be more instructive class of instances, because such as help to widen our conceptions as to what we may call the physiology of fine art; works of the same province and the same school and absolutely contemporary, are yet representative of different epochs of art development in consequence of the fond or the inevitable retention by one master or another of the earlier style and maxims, while men more adventurous or more gifted are pressing eagerly forward for novelties of freer and wider scope.

On the whole, then, it seems probable that the exhibition of pictures in an arrangement according to local schools is the most desirable, whether it be possible or not to observe also any chronological sequence; at the same time, a strong word may be put in for the interest that would attach to one saloon being devoted to the

exhibition of nearly contemporary pictures from a variety of schools. The selection of a date must necessarily depend upon the number and importance of the pictures which could be assembled on this principle. There can be little doubt, however, that no difficulty would be experienced with the resources of our Gallery in coming to a satisfactory decision. The guiding rule in the selection of particular pictures as exemplars where special date is not to be determined would, of course, be the known dates of the career and acme of the several painters.

We need not, however, be dependent upon changes of hanging in the galleries, which would certainly induce disturbances not easily compensated for. Even reference to the catalogue may be dispensed with for our purpose. The pictures are inscribed with the names, schools, and life-dates, as known or approximate, of the several painters.

Here are some of the contrasts which appeal to us as we pass along, with warning to be cautious how we theorise on the reflection of a period in its art. Leonardo da Vinci and Raffaele may be said to have closed their lives within a year of each other,—1519 and 1520; they were contemporaries in art in the truest sense, and, among others, so were Michelangelo and Titian, whose lives were prolonged for half a century and more beyond (1564 and 1576). But not so Botticelli, who only died five years before Raffaele (1515); nor Francia and Fra Bartolommeo, who predeceased him only three years (1517); nor Gian Bellini, only four (1516); nor Carpaccio, who actually survived him two years (1522); nor Pietro Perugino, his own master, who survived him five (1524). It is curious to speculate where theorists who should have no literary records to guide them would distribute the Italian and other painters in sequence on the simple presumptions of characteristic style. Would the life of Albert Dürer be suspected of overlapping that of Raffaele at either end (1471 as against 1483, and 1528 against 1520)? Would it be suspected that Carlo Crivelli was painting in 1493 when Leonardo was forty years old and Mantegna sixty?

The tendency of these reflections may well carry us onward to entertain still another theory of how to derive delight and instruction together from our noble national possessions housed in Trafalgar-square. The exclusive adoption of the historical point of view is apt to foster what is after all but vanity in the sorry accomplishment of being able to catch sight quickly of those most superficial of all characteristics by which a work is assigned to one painter rather than another, or to one especial phase in his transitional styles, or by which it is identified as retaining the vestiges of a school that is no longer vital, or betrays in anticipation the change about to supervene. Criticism which is so directed and satisfied to be so limited never penetrates to the true source of inspiration of the painter, or attains to full communion with all that is elevating and ennobling in his ideal.

The true appreciation of a fine picture as of any great work of art is obtained, if ever, by regarding it less as an historical link than as an independent poetical creation. In this case, as in several others, the dictum of Aristotle holds good that poetry is a far more serious and significant affair than history. We may dismiss all interest and concern as to the circumstances of rivalry with Raffaele that affected the production of Sebastiano del Piombo's Raising of Lazarus, the question of the amount of assistance given to him by Michelangelo, the relation of its style to that of other works by the master and his contemporaries, &c., and still be all the more securely on our way to set our minds to the mind of the painter, to seek the thoughts and experience sympathetically the emotions by which he was possessed when he embodied the expression of them in his masterpiece. In this respect it seems even to be an advantage for one who would derive the best enjoyment of art, to be more than unfamiliar with, to be even ignorant of, the technicalities of art, the secrets of vehicles and grounds and glazes. The practical artist of necessity is plunged amidst incessant cares about incidents of manipulation and problems of combined materials; even though such anxieties are annihilated in the fervour of the imaginative crisis which sets them to work, they are always ready to reassert themselves. The late Mr. Leslie used to relate how he once met Stothard and eagerly told him of the delight he owed to a small oil picture of

a tender parting which had recently been exhibited. "I am glad you liked it," said Stothard calmly; "I'll tell you how I did it; I had white of egg and then, &c.," as if he was himself unconscious of any success that was not due to what might have been scraped up with a palette-knife.

It is by no means intended to put forth that a picture can be duly appreciated, fully and sympathetically felt, independently of any intellectual exertion on the part of the spectator,—that we have only to sit down before it and look at it long enough, and that we shall so drink in insensibly all the beauty and all the sentiment which it is competent to inspire. It is much if we may in this manner attain to the completeness of that mere sensuous enjoyment which dwells contentedly on colour simply as colour, texture as texture, artful arrangement as merely agreeable composition of lines, and imitation of material qualities generally as imitation and no more. Where figures or groups are in question, some attention will often be demanded if we are to recognise correctly what is the preoccupation that decides their individual and relative actions; and where specific occupation and action are not represented there is still a decision to be arrived at as to the sentiment of a pose or a gesture. It is due to the delicacy of expression which the great masters delight in that a demand is made upon delicacy of observation. Not from them are we to expect an enhancement of emphasis to make sure that the intention cannot escape "the meanest capacities." They take the risk of limiting their truly sympathetic public, and so it is that the great mass of admirers of the greatest works are but worshippers in an outer court, and that their awe is commanded by mere externalities, while the true initiates are but a few,—the scanty group of accepted Bacchics, in the ancient phrase,—as compared with a general mob who are flourishing the thyrsus. In the grand picture at Dresden of the Madonna di San Sisto, a Pope on one side looks towards the Virgin, and at the same time extends a hand in the direction of the spectator,—with what significance? A critic will confidently tell us he is pointing out the worshippers to the favourable attention of the Virgin, and so, if we listen, we are sent wrong disastrously. But we scrutinise the gesture on our own account, and then the action of the hand is seen to be gently repressive, the gesture is that of warning to silence and devout expectation, and then the absorbed expressions of both the Virgin and the Divine infant are no longer out of harmony with a futile appeal by a zealous attendant. The subject might be pursued in its application to the appropriate study of the sentiment even of landscapes which are not dependent for their interest on groups or single figures; but here for the present the argument may be left.

THE EXPLOSION AT WOOLWICH, AND ITS PRACTICAL LESSONS.

THE recent destruction of the rocket storehouse in the Royal Arsenal at Woolwich suggests some considerations of importance from the *Builder's* special point of view. The line which separates architecture from engineering may often be easy to indicate; and in the latter art the province of the Royal and of the Civil Engineer may usually be discriminated. But when it comes to the fact of a town like Woolwich being subjected to what some military witnesses have described as worse than a bombardment, while steel rockets weighing 25 lb. and upwards soared for miles through the air, terrifying the inhabitants of a large area of country, and more wonderful for the small amount of damage inflicted than even for the range of their unexpected flight, it is time for the civilian to express his views, and for those who perform,—in the Press, maybe, or in any other service,—something of the functions of the Edile, to say distinctly what they have to say on the subject.

One consideration is very obvious, although we put it forward with due reserve. With the annual increase in the power of weapons of destruction, and in the force of explosive compounds, the danger of having too many eggs in one basket palpably increases. In a siege, the explosion of a magazine is not an unknown occurrence. It is one, however, which is very likely to determine the rendition of the place. And the new point in the case is, that the

more potent the explosive force, and the greater the store of ammunition and of projectiles, the greater is the danger arising from any partial explosion, and the greater the risk of communication from store to store, until utter destruction ensues. It is not necessary to have gone through a course of instruction at the Royal Military Academy to understand this. It is a general statement of which the truth is indubitable, however it may be hedged in by wise practical precautions.

As to these, it strikes us that one of the first would be to provide a new site for a fortified arsenal, out of the reach of the fire of vessels, and forming a military point of resistance, in the event of any invasion or intestine trouble, of at least equal value to Chatham. This, however, we only venture to suggest. But the points where the great barriers of the Surrey downs are cloven,—by the Mole, at Dorking, and by the Wey, at Guildford,—or where they are turned, at the western dip, are situations of strategic study. Birmingham, again, is at once a sort of geographical centre, and a point which the levels of the country render important. If our English railways had been laid down with the same attention to the true requirements of the country, strategic as well as commercial, that was successfully given to the Irish railway system by the anxious care of Field Marshal Sir John Burgoyne, the centre of the web, whence the great spider of the intelligence department would watch every radiating line, would have been placed somewhere in the neighbourhood of Birmingham.

This, however, is a large subject. It is one rather for the consideration of H.R.H. the Commander-in-Chief than for that of amateur advisers; and even if adopted by the highest military authority, would still have to be thrashed out before Parliament. We will confine any positive recommendations to minor matters; yet, minor as they are, they may mean life or death to many.

In the first place, it seems to us that sufficient attention has not been given to the structural strength of the storehouses in our arsenals. For powder, no doubt, very great precautions are adopted. But for those quiet-looking steel cases which seem so unlikely to come to any mischief, the recent explosion teaches us that something of the nature of bomb-proof stores should be provided. And that is not all. Sub-division of structures is essential. Separate store-rooms should be so walled from one another that, supposing one of them to be the scene of an explosion, the mischief should not extend further. This we hold to be of the utmost importance. We can only fancy one plea put in by way of demur, and that is, "Look at the expense!" As to that, what was the expense of the explosion of the 24th of September? And what would it have been but for—shall we venture to say the chance?—that allowed of the flight of so many deadly projectiles with little more recorded mischief than if they had been so many rocks? We cannot count on such immunity again from such an example.

Besides this obvious precaution of the sub-division of bomb-proof stores, the very nature of the rocket demands a special provision against undue loosing of these fiery messengers. They are, we were told on the inquest, packed in boxes,—four nine-pounders, or three 24-pounders, in a box. The construction of these boxes of sheet-iron would, so doubt, have had a material, if not an absolute, effect in limiting the range of the explosion.

Those that were not in boxes were placed horizontally on rails. Thus, if they were by any means,—as, indeed, was the case,—to be touched with fire, their passage through an ordinary wall would be little more interrupted than by a sheet of brown paper. Would it not be well, in handling these automatic projectiles,—engines of mischief of which the propellant power is carried by the propelled bolt itself,—to remember the course which the rocket would take if it were fired? When out of the boxes, which we think, if made of sheet iron as we suggest, would give a very high degree of safety, would it not be well to establish the regulation that the rocket should always be placed point downwards? If the floor of the room were covered by some 4 ft. or 5 ft. of sand, or if, beneath a wooden floor to the store, properly tongued, and covered with waterproof felt, to keep out damp, a tank of water were placed, the explosion of a rocket would be at once followed, either by its expend-

ing its energy in a comparatively harmless way, or by its speedy extinction.

It is rarely the case that, in reviewing a disaster causing sudden and violent deaths, no shadow of blame is cast on any one. The present case is one, indeed, according to the high authority of Sir F. A. Abel, in which danger of chemical decomposition is pronounced to be impossible. Whatever produced the fatal spark must have been due, we conclude, to the energetic industry of one of the victims. To the verdict, found within a quarter of an hour, of accidental death, the jury added a commendation of the conduct of the police, and of the foremen Hale, Bishop, and Buchanan. We are very glad that this should be so; nor, in our preceding remarks, do we intend to throw any aspersion on the authorities of the Arsenal. Of a mighty industry like that carried on at Woolwich it may be said *nascitur non fit*. It grows almost like an organic being. Points are continually turned and passed where danger, and very great danger, is imminent. It can hardly be otherwise when dealing with instruments of death.

It is not twenty years since an engineer officer, who has since done good service in Egypt and elsewhere, was one of four cadets at Woolwich who, in artillery practice, were loading a large gun with a live shell. By some mistake three of the cadets left hold of the deadly explosive as they were lifting it into the gun. By a wonderful exertion of strength the fourth kept his hold, and thrust the heavy mass into the muzzle of the gun. He thus saved from instant death not only himself and his three comrades but probably many more. Had the shell been allowed to fall to the ground it would almost certainly have exploded. But shells must be put into guns, and officers, as well as men, must be drilled how to use them.

Then, all along the line comes the fear of the estimates. An officer is very reluctant to say such and such steps must be taken in order to ensure the safety of the establishment. And supposing he does so, having waited, no doubt, until the danger has become evident to his instructed foresight, the very delay will have increased the cost of the proper precautionary measures when they are adopted. Let us suppose that the report goes in, that it is approved, and that it is decided that the work shall be carried out. Ten to one the matter must, as a part of office routine, then stand over for the estimates of the ensuing year. There is not, as far as our knowledge of the case goes, that freedom of action accorded to the authorities that would enable them to take a step,—even the most necessary for the public safety,—which had not the previous sanction of Parliament, by way of estimate. If that be so,—and that it was so, not long ago, we speak of from positive knowledge,—is it not of the utmost importance that timely attention should be given to such considerations as we have above ventured to suggest?

THE CHÂTEAU OF CHAMBORD.

MANY of our readers will doubtless have heard the report which has recently been circulated to the effect that the French Government intend to take steps to claim as national property the château of Chambord, from which the late Count derived his title. It is not the first time that a similar claim has been made; some half-century ago a litigation, which lasted over twenty years, confirmed the Comte de Chambord in his title to the property, but it is possible that a fresh appeal might now restore to the nation what the nation presented to the late exiled prince on his "miraculous" birth seven months after the assassination of his father the Duc de Berri. The illustrious and unfortunate owner, it is true, never occupied his famous and beautiful gift, except during two nights some twelve years back, and ruin and decay, vainly stayed by temporary and partial restoration, have been slowly destroying one of the most exquisite gems in that jewel-case of French architecture the crowd of Renaissance châteaux which cluster on the banks of the Loire and in the neighbourhood of Chambord and Blois; Amboise and Chenonceaux, Bury and Beauregard, Chaumont, Cheverny and Crotteaux, Fongères, Menars, Les Montels, Montichard, and Savonnières.

To the general still more to the professional reader, the architectural fame of the château of Chambord is familiar. Its interest is exceptional, as it was erected in a period of strange transition from the sturdy northern gloom and solidity of

feudalism to the light airy refinement of the Italian Renaissance. A creation of which the Emperor Charles V., who saw the plan but half completed, regarded as "the abridgment of all that human industry could effect," of which every traveller who has visited the spot has left the warmest expressions of admiration, it is,—speaking with perfect indifference to the political or legal bearings of the case,—with sincere pleasure that we hear the proposal to constitute such a relic of the past a national monument. In spite of the generous efforts of the late owner, who devoted, we have been led to believe, the whole revenue of the property to its maintenance and restoration; in spite of the numerous attempts to stay the gently destructive hand of time, the task is too large a one for a private fortune even so considerable as was that of the late Count. The restorations so far carried out have been merely partial; the interior of the vast château remains still as gaunt and dreary as after those terrible days when during the Revolution the contents of each of the wonderful 440 rooms were, by Government order, sold by auction, and where not sold, publicly burned. Many a treasure of artistic skill, many a rare specimen of the cabinet-maker's craft and the art of the enameller, the chaser, the carver, the painter, and the sculptor which now grace our great country houses, crossed the Channel during those ruthless days when the rapacious dealers were the only too-ready agents of the rich "milords" and Russian nobles who were alone able to buy such treasures. Chambord was stripped of all its interior decorations, its tapestries, its wall hangings, and its furniture, the very parquetry being ripped up, and the shutters and doors torn off their hinges; and now to this day the grim, gaunt, cold, naked walls, the silent gloom of the empty rooms once so brilliantly adorned and peopled with historic characters, breathe an air of departed grandeur which seems sadly in keeping with the fortunes of the prince who, till within a few weeks past, was the absent exiled owner of these now faded glories.

The suggestion that the château, when restored, should be formed into a museum is one which we feel sure will be welcomed by all lovers of the beautiful art of the Renaissance, of which the château of Chambord may be said to be one of the most characteristic creations. During the Second Empire it was, if we mistake not, the intention of the Emperor to gather together at Chambord all the relics obtainable, which had in any way been associated with the private lives of the kings of France; but the project was never realised, and since then time has continued its action on the deserted pile to which no private owner is likely to restore the breath of domesticity.

A jewel of architectural beauty, Chambord is redolent of historical recollections. Built three centuries ago by an art-loving king, each of his successors has in turn enriched the château with the memory of his presence and the proof of his taste. The roll of illustrious names associated with Chambord is a lengthy one. Of the early days of the château, when it was a grim feudal manor-house in the fourteenth century, it is needless to speak; local superstition still whispers tales of the wild Thiebaut de Champagne, who, with his crew of huntsmen and dogs, still whirls through the forest at inauspicious moments, but it is not in such feudal memories that Chambord is rich. When pleasure-seeking Francis I. returned from his Spanish captivity, the early recollection of the happy days of his youth, passed on the sleepy banks of the Loire, led him to choose Chambord as a country retreat, and soon the masons were busily at work transforming the grim old feudal fortress into a brilliant jewel of Renaissance art. Who the architect of the new plan might be no direct information tells us; tradition has long assigned the merit to Primaticcio; but apart from the fact that recent historical research has proved the building to have been commenced some years before the Italian artist's appearance at the court of Francis, a study of the style of the château renders it apparent that, however marked may appear its general Italian character, there is an equally marked national element in the whole design. Documentary evidence has within a few years disclosed the existence of two "master-masons" bearing French names, and employed during the early years of the work, but in the doubtful acceptance of the terms "architect" and "master-mason" as used in those days it must remain a

moot point whether we are to see in Pierre Nepveu and Jacques Cogneau other than what they profess literally to be. So eminent an authority as Viollet-le-Duc has given it as his opinion that the work is not alone of French origin, but clearly produced by the local school of the banks of the Loire, a school of more than ordinary activity, which created many architectural master-pieces still in existence, and can boast among its members such artists as Jean Juste, the designer of the tomb of Louis XII. at St. Denis; Michel Colombier, who at Nantes erected the superb tomb of the Duke of Brittany, Francis II.; Pierre Valence, the architect of the château of Gaillon, and who built at Paris the Pont Notre Dame,—artists who, together with many others, excelled in painting, in glass work, in carving, and so forth.

If we are to believe Bernier, in his History of Blois, no less than 1,800 workmen were employed for twelve years on the building re-erected by Francis, a sum being expended equivalent to hard upon a quarter of a million of our money. Rising out of its water-filled fosses, on the old feudal foundations, the new castle gradually grew in beauty as story after story was added, the traditions of the sturdy fortress mingling gracefully with the elegance of the Renaissance. Above the whole frowned the huge donjon or keep, flanked by its towers, the reminiscence of the old fortress days, but decorated with all the wealth of Renaissance design which the study of Classic art had infused into the new architecture; graceful campaniles and domes, and spires and sculptured chimneys rose amidst the great strong towers reflected in the moat beneath. The moat has long since disappeared, much to the loss of the general effect, but the rest of the château remains exteriorly unaltered.

To speak of Chambord without a reference to its famous double winding staircase would be a mistake. This *tour de force* has been the delight of professional writers for three centuries. Du Cerceau, in his "Le plus excellent Bastimens de France," and Blondel, in his "Leçons d'Architecture," describe minutely the mechanism by which the two staircases interwine and wind round each other, constructed much after the fashion of the "worm" used in the days of muzzle-loading guns to withdraw the wad. Two persons are thus able to ascend and descend at the same moment without meeting. Chateaubriand has left us a fantastic picture of Chambord, drawn with all a poet's exaggeration of its beauty, a description terminating with the somewhat questionable statement,—"*If ever Chambord were destroyed, nowhere else could be found the first style of the Renaissance, for at Venice it is not pure.*" Certainly the château is calculated to arouse poetic inspiration, rising, as it does, in fairy-like beauty from the sandy, heath-covered plain in which it stands, its terraces and towers, its domes, its chimneys and pinnacles piled up in picturesque confusion, a Gothic castle tricked out in all the glory of a Renaissance costume. Chambord, it must be remembered, was built at a peculiarly interesting period, not alone in the history of art, but of civilisation generally, the transition,—in which the builder of the existing château, Francis I., took so conspicuous a part,—from a rough, uncultured, independent feudalism to a refined and polished court-life. The fashion set by the monarch was followed throughout the country, and château after château of the feudal nobility added to the grim strength of its towers the graceful decoration of the new style derived from Italy. Blois, Gaillon, Azay, Le Rideau, Chenonceaux, Bury, Amboise, Loches, the Château d'Ussé, and many other castles erected, or reconstructed rather, at the commencement of the sixteenth century, offer, as has been truly said, a most interesting field of study to the architect. "They are," as remarks Viollet-le-Duc, "the most brilliant expression of the French Renaissance; and what is noteworthy, the most reasonable application of antique art to be found in our country."* Chambord offers a remarkable specimen of this transitional architecture, and as such holds a position of exceptional interest among the historic monuments of France.

The claims of Chambord, however, as the residence of so many of the French monarchs, add a fresh feature to the old château. Francis I., after rebuilding Chambord, was a constant

* *Diet. Raisonné de l'Architecture*.—Word "Château." Vol. iii.

visitor; here he received his ally the Emperor Charles, and here, among many other legends, some sadly indecorous, which connect his name with the place, is told the cynical story which varies so strangely in different versions,—of his scratching on a window-pane those familiar lines,—“Souvent femme varie. Mal habill qui s’y fie.”—two lines which tradition says Louis XIV. caused to be removed at the request of Mdlle. Lavallière. Henry II. occupied Chambord very frequently, the traces of his presence, the crowned H and the crescent,—regarded as the emblem of his beautiful and accomplished mistress Diane de Poitiers,—being as freely scattered over the château as are the crowned salamanders of his predecessor Francis. Charles IX., Henry IV., and Louis XIII. each and all have left the memory of their presence at Chambord. Louis XIV., though a frequent visitor, would not appear to have admired the château, doubtless from an absence in its decorative simplicity of that exuberant splendour which so endeared to his heart the Palace of Versailles; his architect Mansart was none the less ordered to effect some little “improvements” in the plan, “improvements” which it was one of the first duties of the late owner to demolish. During one of the visits of Louis to Chambord, it must never be forgotten, Molière produced for the first time his historic comedy of “Le Bourgeois Gentilhomme,” and many are the anecdotes (which space forbids our repeating) told of the reception given by the Count to this inimitable creation of comic genius. Under Louis XV. the château was occupied successively by Stanislas, king of Poland, and a very different tenant,—Maurice of Saxony, the memory of whose excesses is not yet forgotten in the neighbourhood. When the Revolution broke out, the château had long since lapsed to the Crown, and it was at one time determined by the Revolutionary Government to demolish Chambord; fortunately the plan was not carried out, but, as we have already stated, the entire contents of the château were put up to auction and ruthlessly dispersed, leaving the rooms to this day their sole decoration, the monumental Renaissance fireplaces with which each of the 440 apartments at Chambord was generously provided. After numerous other narrow escapes from destruction,—not least among them several plans for the restoration of the castle, plans abandoned on the score of their enormous cost,—the château was presented by Napoleon to Marshal Berthier, whose widow, however, begged to be relieved of the charge of so expensive an estate. Once more the château was threatened with demolition, when the suggestion was made and eventually carried out of purchasing Chambord with funds collected by national subscription and presenting it to the Duc de Bordeaux, the newly-born son of the Duc de Berri. Such was the mode in which the late Comte de Chambord came into possession of his estate on the banks of the Loire, the sole spot of ground in France owned by the descendants of the Bourbon rulers of the country, and which once again, it is suggested, shall become State property and be preserved as a national monument.

A Lancashire Art Collection.—The interest of the statuary at Ince Blundell has been acknowledged, says the *Manchester Guardian*, by Waagen and Michaelis, the latter of whom has given a good account of it, but it is comparatively unknown even to students, and to the members of the British Association who visited it the other day it would be almost a revelation. The collection was chiefly formed by Mr. Henry Blundell, who about a century ago was no mean rival of Towneley of Towneley and Smith-Barry of Marbury Hall as an art collector. In the year 1777 a certain Mr. Jenkins, a sort of dealer and agent for the wealthy English collectors, took Mr. Blundell to see the Villa Mattei at Rome and the Villa d’Este at Tivoli, which were then on sale. Mr. Blundell bought largely from these places, and added to them bold and judicious purchases from other quarters. The extent of the Blundell collection may be judged from the catalogue, which contains 553 entries. There are some modern specimens, such as the “Psyche” of Canova; and paintings by Andrea del Sarto, Raffaele, and Gerard Douw, which are both noteworthy and attractive; but undoubtedly the chief interest centres in the antique sculptures.

THE ARCHITECTURAL AND ENGINEERING CONGRESS AT FRANKFORT-ON-MAIN.

THIS Congress, which met on the 14th and 15th ult., was devoted to the discussion of a number of interesting subjects, and to the drawing up of plans for the investigation and solution of various questions which have for some time past been engaging the attention of the Central Union of the Architects’ and Engineers’ Societies in Germany. Within the limited time of two days there could, of course, be no thorough discussion on any one subject, and hence the deliberations were to some extent wanting in the interest which attached to the Dantzic and Hanover Congresses.

There were 36 voting members present, who represented 19 societies, with a total of 63 votes. Professor Baumeister, of Karlsruhe, occupied the presidential chair, Herr Häsel, of Brunswick, and Herr Barkhausen, of Hanover, acting as secretaries. The report as to the constitution of the Central Union alluded to the fact of its numbering 6,771 members, being 32 more than at the corresponding period of 1882, and the financial state of the organisation was also referred to officially as showing a balance in hand of nearly 100.

The first subject which came up for discussion was divided into two sections, dealing with the legal responsibility of architects and the laying down of the principles on which contracts should be drawn up between technical men and those persons who employ their professional services in connexion with building. The Hamburg Society had, within the last couple of years, been engaged in drawing up a normal form of contract, as well as in dealing with the question of responsibility. It was agreed to defer the consideration of the last-named part of the subject until the other portion had been fully dealt with.

In bringing forward the series of normal conditions formulated by the Hamburg Society, Herr Haller remarked that although these terms of contract were not at present binding upon the public, still it might reasonably be expected that they would tend to establish uniformity in the manner of dealing with the questions at issue, and thus facilitate legislation at a later period. Even if this result was not attained, the measures now being taken would call the attention of technical men to the necessity of using caution in entering upon engagements of the kind referred to, and of making themselves fully acquainted with the nature and extent of any responsibilities incidental to the work undertaken by them. In the ensuing discussion, Herr Hobrecht, of Berlin, expressed his opinion that sufficient time for preparation had not been given to allow of a discussion of the proposals in question. At the suggestion of Herr Schwering, it was arranged that the Hamburg Society (in conjunction with the Berlin and Hanover Societies) should proceed to draw up in due form the conditions in question, accompanied by explanations as to the motives which have led in each case to the adoption of the form recommended for the separate clauses.

The erection of the Semper Monument at Dresden was the next topic of discussion, and reference was made to the efforts now in progress amongst the various societies in order to raise 1,000*l.* by June, 1884, for the purpose of erecting the Semper memorial in proximity to some of his notable works.

The question of the collection and publication of statistics and plans of buildings in Germany was then dealt with, it being finally decided that efforts are to be made to publish the materials now collected, while further researches are to be for the present suspended.

Amongst the other subjects of interest which claimed the attention of the Congress was the question of trials as to the resistance of friction on the inner walls of iron pipes when water is flowing through them; due account being taken of the successive increase of friction arising from the gradual change of the inner surfaces. These points were understood to refer both to water-supply and drainage. Rules for the carrying out of the tests were brought forward, as well as model forms for recording the facts arrived at. The question of normal conditions for the delivery of iron constructions was likewise dealt with. This subject has engaged the attention of various societies, as well as of the Central Union. There being still a want of unanimity upon various points, it was resolved to print and distribute the proposals as they

now stand, together with the marginal notes of the Baden Technical Society. It is expected that the definite expressions of opinion of the various societies will be in the hands of the special commission (the Saxon, Baden, and Alsace-Chapelle societies) by the 1st of April, 1884. These three bodies will then draw up a complete scheme for submission to next year’s Congress.

The restoration of Heidelberg Castle was referred to by Herr Hemberger, of Karlsruhe, and the opinion was expressed that the preliminary works would occupy two years. The regulation of public tenders was also fully discussed. In bringing forward a series of proposals (drawn up by the Commission acting under his presidency) Herr Reiche, of Hamburg, referred to the great number of drawings, estimates, &c., asked for by persons requiring tenders or sent in by competitors. After a prolonged discussion the proposals of the Commission were accepted with certain modifications. The Congress terminated with the arrangement of the subjects for next year’s deliberations.

NORMAL REGULATIONS FOR CONTRACTS BETWEEN ARCHITECTS AND ENGINEERS AND THEIR EMPLOYERS.

At the congress of the German Architects’ and Engineers’ Union, already referred to as recently held at Frankfort-on-the-Main, one of the principal subjects of discussion was the system of normal regulations, drafted by the Hamburg Society, for settling the responsibilities of the members of the two professions in the matter of contracts between them and those who engage their services. The object of the proposers is to induce the two professions throughout the German Empire to adopt a uniform method of procedure in the case of all contract engagements. By this means it is with good reason expected that in the course of time the principles now explicitly laid down will ultimately obtain the force of law, after having first acquired the character of the universal usage or custom of the professions.

This new system of normal regulations is divided into two parts, the one laying down special, and the other general, rules. The following is a translation of the

SPECIAL REGULATIONS.

1. *Drawings.*—Drawings must be executed with a clearness and comprehensiveness of detail appropriate to the purpose in view, and they must be such that the design can be carried out from them in accordance with the generally acknowledged rules of architecture, the prescriptions of the law, and the use to which the structure is intended to be put. Apart from those drawings which represent an object (structure) in its actual dimensions, the professional man (architect or engineer) is responsible only for the measurements he assigns in writing, and not for those deduced.

The fact that sketches or experimental attempts at the solution of a technical problem are imperfect does not establish any responsibility on the part of the professional man.

2. *Estimates of Cost and Value.*—In general estimates of cost and prices, the professional man, in the absence of an agreement to the contrary, is not responsible for any mistakes or errors that may be made in calculation. In the case of detailed estimates of cost, the professional man is responsible for the correctness of the measurements or computed quantities, and likewise in case he fails to include any objects required for the proper execution of the design. But his responsibility in these matters is limited to his making good the additional expense to which his employer is put by having to pay for the materials or objects omitted more than he would have had to pay if they had not been overlooked, or, in the opposite case, by having to sell again at a low price materials or objects he ought not to have been called on to procure. For the scales of prices charged, and the calculations based thereon, the professional man is not responsible.

3. *Terms and Conditions of Building Contracts.*—The professional man is responsible for any loss his employer may be put to by any violations of the generally acknowledged rules of architecture which may be found in the terms and conditions of building contracts drawn up by him. For losses inflicted on the employer through omissions, or through errors in writing or calculation, or through the neglect of legal prescriptions in the conditions of

building, and the contracts drawn up by the professional man, the latter is so far responsible that he must make good the extra expense the employer is put to through having to pay for the materials or objects a higher price than he would if such mistakes had not been made.

4. *Opinions and Reports.*—In the absence of an agreement to the contrary, the professional man is not responsible for losses arising from oversights in the preparation of opinions or reports.

5. *Direction of Building Operations.*—(a.) In General.—Without the general or special authorisation of the employer, the professional man charged with the direction of the building operations is not justified in ordering any departure from the particulars as to the manner of carrying out the work prescribed in the drawings or in the contract. A general authorisation given to the professional man by the proprietor does not, in any cases of doubt, include the authorisation to order any deviations such as will entail extra expense. During his hours of business the professional man is bound, either in person or through his assistants, to give in his office such information as may be desired by the proprietor, or by those employed in erecting the building, respecting the details of the construction.

(b.) *Explanations of Designs.*—The professional man charged with this department has to explain the drawings and terms of the contract to those whose duty it is to carry out the practical operations.

(c.) *General Supervision.*—The professional man charged with the general superintendence has periodically to visit the scene of operations, or place of work, at intervals left to his own judgment, or to cause such visits to be made by his assistants; he has to give appropriate directions for carrying on the operations, and, during the visits of himself or his assistants he has to make experiments with a view to test the materials, and the quality of the work done; he has also to give directions so as to remedy any mistakes which those experiments may bring to light. His responsibility in reference to faults in materials or work is limited to those discovered by the tests or examinations made by himself or his assistants, and which he has neglected to take measures to remedy.

(d.) *Special Supervision.*—The professional man charged with the special superintendence has to examine the materials and work, with a view to ascertain their suitability and their conformity to the terms of the contract, and he is so far (but no further) responsible for every mistake that he has to replace at his own cost that which is defective by what is satisfactory. In the absence of an explicit agreement to undertake the duties of special supervision, the task of the professional man who is charged with the superintendence is simply that of general supervision.

6. *Purchase of Buildings, &c.*—(a.) General.—The professional man employed on the general examination of a building has to test by experiment the visible parts of the building, or other object purveyed, with a view to ascertain if there are any defects. For such deficiencies as he does not inform his employer of, though he may have noticed them, he is responsible, with this proviso: that he will have to refund the extra expense to which his employer is put on the subsequent discovery of the defects, in consequence of the rise of price in materials or labour, as compared with what his outlay would have been if he had received information in time.

(b.) *Special.*—The professional man charged with the special examination has to examine in detail all parts visible, and not visible, of the building or object purveyed, with a view to detect any defects that may be present. Such defects as he fails to bring to the knowledge of his employer he must remedy at his own cost; his responsibility, however, is limited to repairing the building or material purveyed. In the absence of an express agreement as to the special duties the professional person's responsibility is limited to the general duties.

7. *Revision of Accounts.*—The professional man charged with the revision of accounts is responsible for the loss his employer suffers when errors of calculation in the accounts are not pointed out. The revision of accounts likewise includes that of the prices given in such accounts, so far as regards their conformity to the contract, or their fairness in cases where there is no contract. The examination

of the quality of the articles mentioned in the accounts is not included under the revision of the accounts, and only in case of special agreement is the correctness in point of number or quality of the articles mentioned in an account to be included in the revision. A professional man is responsible for oversight in such revisions only in case of the insolvency of the party sending in the account.

8. *Duration of Responsibility.*—The responsibility of the professional man terminates a year after the handing over of the building or other object. In cases of the revision of accounts, as well as such work as does not refer to a building designed or erected by him, the professional man ceases to be responsible twelve months after the performance of his task.

9. *Final Article.*—All rules contained in these special sections are subject to the provisions of the general regulations.

GENERAL REGULATIONS.

1. Losses arising from delay in executing work that has been undertaken are not made good, except there is an agreement to that effect.

2. The professional man is not responsible for any loss occasioned to his employer by a violation of aesthetic laws.

3. Losses arising to an employer through the non-attainment of some object he had in view, but of which he failed to inform the professional man when concluding the agreement, are not recoverable.

4. If buildings or other objects are defectively executed, owing to some circumstance for which the professional man is responsible, then the latter is held responsible for making good the damage upon the building or other objects itself.

5. Losses are not made good which arise from the non-observance of laws or regulations that are not in force in the professional man's district, and which the employer failed to bring to his notice.

6. For losses caused by a professional man's assistants in the execution of their professional functions, he is responsible just as though he had caused them himself.

7. A professional man who has not the responsible direction of the operations on a building is not responsible for damage occasioned by defective performances of his own, if the latter could have been avoided by placing the management in his hands.

8. Losses arising from defective execution fall upon the professional man only in case of the insolvency of the actual builder.

9. When a proprietor employs labourers or tradesmen to carry out the design of a professional man, then, if the latter has not approved of them, and there is damage done, the onus of proving that competent labourers or tradesmen have been employed will fall upon the shoulders of the proprietor.

THE BUILDING ACADEMY AT MUNICH.

This academy is one of the oldest of its class in Germany, having been founded as early as 1823. It has in the course of time undergone many changes in its organisation. Until 1877 it had two classes, and was independent, but in that year it was in some measure attached to Munich Royal School of Industry, the director of which was appointed head of the Building Academy. In other matters the school remained independent, and another class was added. According to the *Deutsche Bauzeitung*, a fourth class will be added during the coming winter.

For entering this school it is necessary to possess such knowledge as is to be gained in the upper classes of a public school, and proof of practical skill in the building trade is not required. It is remarked that this is the more surprising as the Academy does not possess any model workshops such as those of the Institution at Kaiserslautern. The number of weekly hours of study is fifty-four, and is said to be more than is usual in North German schools of the same description. About one-half of the time is devoted to drawing exercises. The instruction for each class is similar throughout, no attempt being made to divide the scholars according to the various branches of the building industry for which they may subsequently be intended.

In the Munich Academy (as also in that of Nuremberg) students in the highest class have to undergo a public examination, which is under

State inspection, as is the case in Prussia. The attendances in the academical year 1882-83 numbered ninety-four, and nineteen masters were engaged in tuition during that period.

EVOLUTION IN ART.*

AN attempt to apply the doctrine of evolution to art may possibly be regarded as a straining of science; for the nature of art appears at first sight, to be too subtle and involved to be scientifically grasped and grappled with. This view might have long remained undisturbed had I not many years since discerned that the principles of art and the essential characteristic of evolution are capable of being mathematically expressed.

The contemplation of the doctrine of evolution from a mathematical standpoint is, I believe, of my origination. When it is surveyed from that position of vantage, the conception of existence is considerably simplified; for from that point of view it is very soon perceived that but two fundamentally opposite tendencies are possible in the fluctuations of any species of existence, viz., the one to the *proportioned*, the other to the *disproportioned*.† Evolution, in its widest and mathematical sense, may, therefore, be defined as the *BECOMING OF THE PROPORTIONED*; that is to say, if by evolution we mean an improving progression, for every advance towards the perfectly-conditioned and well-being is found to be an advance towards symmetrical or proportioned conditions, and thus the human nature advances by successive increments of improvement towards proportioned organisation and proportioned conduct. The contrary tendency, or *devolution*, may be defined as the *retrogression* towards extreme disproportion. The two definitions, then, express the essential characteristics of progress and of decadence in all things, and, therefore, of progress and of decadence in art.

From the mathematical standpoint, the foregoing definitions would appear to be necessarily true, and so self-evident that it is scarcely possible for any well-instructed mind to accept any tendency to disproportion as a tendency towards improved conditions in any species of existence, as indicative of progress in anything. The lapse into disproportion is, throughout nature, the outward and visible sign of decadence. Progression and retrogression may go on side by side in the transition of nature, but according to the mathematical and optimist view all things are working together for the ultimate good; existence is in the aggregate advancing towards proportioned conditions, and in this we recognise the strongest evidence of the presence of an overruling providence.

The characteristics of the *progressive development* of art, on the one hand, and of its *decadence* on the other, fully confirm the definitions already given of *evolution* and *devolution*. In fact, we find, as we should expect, that art, as the index of the intellectual status of a nation, progresses *pari passu* with the evolution of the national intellect, or, in other words, that the national intellect and the national art simultaneously attain the proportioned condition. Thus, if we carefully study the successive steps of Grecian and of Italian art in any of the great European galleries, we find the archaic and eccentric, *i.e.*, the disproportioned art of the infancy and youth of both these nations is step-by-step supplanted by more symmetrical work, and that the culminating art in both instances is the best proportioned art.

The doctrine of evolution, when applied to the development of the intellect and of the fine arts, for ever dispels the illusion that genius springs into existence in the fulness of wisdom, as Minerva is fabled to have done from the brain of Jupiter, for the works of the most consummate masters exhibit progressive development, a progression differing only from that of less perfectly constituted natures by its rapidity and the flying straight to its mark. But although the great masters may have naturally possessed a superior, a better-proportioned, organisation, there is no recorded instance of any of them being able to dispense with application and culture. Moreover, if the earlier and later efforts of the great masters be compared it will be found that the law of progressive development holds equally with respect to individual

* By Mr. W. Cave Thomas, read at the meeting of the Social Science Congress, Buda-Pesth.

† There are in the widest sense the moral and immoral tendencies.

genius, as it does in the aggregate with the school. There is a vast interval of tentative or of imperfect experimental work, between the first crude representation of a human being as found scratched upon either the walls of Pompeii and of Herculaneum or on those of any modern city, and the masterpieces of Greece and Italy.

As the works of an artist, at different periods of his career, are faithful indices of his mental progress or of his mental decadence, so also is the art of a nation the faithful exponent of its intellectual rise and fall. We may learn, from the monumental remains of ancient Greece and of Medieval Italy, that the art of both nations had to pass on by stages of tentative, incomplete, and disproportioned work, to the perfections of Apelles, of Phidias, of Raffaele, and of Michelangelo, and that every step in that progression is characterised by an advance towards better-proportioned art. There is an unmistakable parallelism in the art-progress of Greece and of Italy.

There are persons who are quite unable to discriminate between art and art; it is a sufficient passport to their admiration if a work be labelled either Grecian or Italian; all works bearing either of these designations are to them of equal value. It is indiscriminate admirers of this kind who would cram our galleries with the archaic and imperfect work of the early masters of the two great art-epochs,—and for what, forsooth? “To elevate the taste of the masses.” As if any but perfectly proportioned art were calculated to effect this end! The sole object of importance in exhibiting examples of the archaic and of the early art of Greece and of Italy is that of illustrating the subject of our present contention, viz., that the development of art is progressive, and that its progression is towards the proportioned; but this *raison d'être* and moral of their presence in our galleries is entirely overlooked. That the development of art is progressive is a fact which utterly dissipates the vulgar fallacy that art is the cause of civilisation; it is the effect, for the graduated succession of examples from the crude to the complete in our galleries unmistakably demonstrate that as intellect progressed art progressed.

As the ascending progression of art is manifested by the closer and closer approximation to the perfectly proportioned, so its decadence or declension marked by ever greater and greater disproportion. In the decadence of art the kind of disproportion exhibited consists chiefly of exaggerations of the proportioned virtues of its halcyon period of exaggerations, which, having overstepped the modest mean of rightness, have fallen over on the other side, and into ridiculous excess. It is disproportion of a different kind to that exhibited in archaic art, but it is, nevertheless, disproportion. The decadence of power in the artist himself is always marked by a decline in his sensitiveness to just proportion in the combination both of forms and of colours.

The gestation of any great work, either of painting or of sculpture, exhibits to some extent the principle of evolution in art; the preliminary sketches show how, after its first conception, the work takes form; we note the successive modifications and improvements that it undergoes before it is delivered to the world a full-grown and perfectly proportioned work. It may be true that with artists of limited powers a first sketch may represent their talent at its best, but this is to only say that they are incapable of carrying it beyond suggestiveness, and to endow it with full and complete existence.

Poetry, too, like the other arts, is in the main subject to the law of evolution, and generally exhibits in its earlier manifestations similar proportions to those that disfigure the earlier works in painting and sculpture; in fact, the three arts generally progress in parallel lines. The principle of evolution when applied to poetry might at first sight appear to fail, as a great poet has occasionally shone out upon the world in the earlier days of civilisation. It should be recollected, however, that the evolution of the national intellect, through the generations, is only the same kind of evolution which occurs in the life-time of a single master-mind. The exercise of the poetic faculty is not hampered, like painting and sculpture, with the impedimenta of technical processes, which can only be slowly mastered; the poet's intellect is therefore free to pass without let or hindrance through all the stages of mental development to the golden goal of proportioned completeness.

As there is a personal equation which has to be considered in astronomical observations, so also is there a personal equation which has to be considered in the observation of nature. All individuality, either in feature, in thought, or in act, is in some sense a personal equation, a false quantity. The personal equation in the study of nature is as much an element of imperfection in art as it is of error in the observation of a star. It inheres in some disproportionate organisations in that disproportionateness, indeed, which constitutes individuality. Persons who are not in the habit of thinking deeply mistake this false quantity for the essential and static element in art; whereas, the personal equation is a source of error that has to be guarded against. It is least perceptible in the finest art. It is this false quantity that an erratically critical imagination lights upon as the true object of admiration because it is “so original,” and which artists of a similarly disproportionate mental constitution exaggerate and develop into a species of art,—a manner,—till in its extreme manifestation it becomes too absurd and disproportioned to live; it therefore dies out of public esteem and gives way to the survival of a healthier, of a more perfectly-proportioned art. One kind of personal equation is dealt with and exaggerated in caricature, the false quantity existing in any particular feature being made a still falser quantity. But if the false quantity in any feature of an individual may be exaggerated in caricature, so also do we perceive that, by a reverse process, it may be mitigated, and in observing this principle consists the amenities of portraiture. For the artist in this wise follows the principle of evolution, and mitigates the individual disproportion, the individuality, by bringing it one step nearer to the symmetrical or typical form. Caricature, both in art and in literature, may be regarded as a disproportion, and consequently as a downward tendency.

There is yet another phenomenon bearing upon the doctrine of evolution in art, which may be observed in the works of some painters and sculptors, and in the art of some nations. I refer to what may be appropriately termed arrested development. It may be noticed that some artists do fairly well up to a certain point, when they come to a dead stop. They attain a limit, beyond which there is with them no further progress. It may be said, indeed, that the art of all but the greatest painters and sculptors is arrested development. The cause of this phenomenon in the works of artists is frequently inscrutable, but the causes of the arrested art-developments of nations are easily to be divined. The Egyptian, the Chinese, and the Gothic styles may be regarded as arrested art-developments. Let us, however, for the present, concentrate our attention on the arrested evolution of Egyptian art. The Egyptian civilisation endured longer than that of any other recorded in history. It endured more thousands of years than the Grecian civilisation did centuries, and yet its art never transcended the elementary; Egyptian painting and sculpture having attained to this stage of evolution, became, as it were, petrified,—immovably fixed. But, of this arrested development we know the cause. The free exercise of the intellect was interdicted. Freedom of thought and of action were impossible in ancient Egypt. Therefore, as intellectual progress was arrested, Egyptian art, as an inevitable consequence, was also arrested. It was decreed by the priestly caste that the human figure should always be represented in the same manner; with the same colours, the same contour, the same measures. Thus the artist's intellectual limit was fixed, the evolution of art effectually arrested. Evolution in art is, indeed, but an epitome of evolution in the *kosmos*, for in the wide expanse of nature there are unmistakable evidences of progression towards proportioned existence.

The foregoing paper has been detached from a work on the mathematical theory of existence and of evolution upon which I have been for many years engaged, and in which I have applied the doctrine of proportion to art, to ethics, to education, to hygiene, to policy, and to natural theology. It may suffer from being detached from its supports, but it is a section of my work in which the doctrine appears to be most evidently applicable.

The Manchester Technical Schools were opened on the 27th ult. by Mr. Bernhard Samuelson, M.P.

THE GLASGOW CITY IMPROVEMENT ACT, AND ITS EFFECT ON THE HEALTH OF THE INHABITANTS.

PROFESSOR W. T. GAIRDNER, in the course of his address as President of Section I. (Sanitary Science and Preventive Medicine) of the Glasgow Health Congress, after describing the dilapidated and overcrowded state of a large portion of the city prior to the obtaining of the Improvement Act, said:—

It was under these circumstances that the late Provost Blackie, in conjunction with Mr. John Carriek and other well-known and philanthropic men, devised the now famous, and I believe, really most effective City Improvement Act. [An interesting account of an early experiment in the same direction, on a small scale comparatively, but guided essentially by the same principles of active benevolence as were at work in promoting this Act of Parliament, will be found in the Transactions of the Social Science Association for 1859, by Sir James Watson, whose administration afterwards of the City Improvement Act did much to reconcile it to adverse public opinion],—to sweep away (but not so suddenly as to give rise to great inconvenience) a large number of those closes and wynds where the worst sanitary features existed, and where, at the same time, there was a prospect that after the clearances a better class of houses might probably take the place of those removed. The administration of this Act has been much canvassed, and even unfavourably criticised in detail; but that it has very greatly diminished the hold of epidemic disease on the parts of Glasgow which it affects no longer admits, in my opinion, of any reasonable doubt. Now, epidemic disease, from the enlarged and modern sanitarian point of view, is not only a great evil in itself, but also an index to other evils of at least equal importance. My attention, as medical officer for the city, was strongly directed to this fact in March, 1869, when a wave of apparently climatic disease, specially characterised by an enormous increase in the mortality from acute diseases of the chest, swept over the city, and arrested much attention and remark. The Registrar-General, in his reports at the time, had ascribed this phenomenon almost exclusively to the “northerly and easterly winds” then prevailing. This and many other popular theories of the matter appearing to me inadequate, I made as careful a research as the available returns allowed, into the whole details of this singular increase in the death-rate, hitherto, there was reason to believe, almost unexampled in Glasgow. I found that while it amounted to 30 per cent. excess in 1869 as compared with the corresponding period in 1868, in Greenock the excess was 25 per cent., while in the large towns of the east coast,—Edinburgh, Leith, and Dundee,—the excess was scarcely more than half as much, and in Aberdeen the difference was quite insignificant. Further, it appeared on more careful analysis that while the excess of mortality was greatest in acute pulmonary diseases, and specially great among the young, the zymotic diseases contributed to it not a little, and also tubercular affections, and among these in a very marked way the nervous diseases of infancy, as contrasted with those of advanced life (apoplexy, paralysis, &c.), which latter showed no tendency to increase. It seemed impossible, therefore, to overlook the evidence that besides possible climatic causes there were others operating largely in the case of Glasgow and Greenock to determine so much larger an increase of the death-rate in their case than in that of towns more exposed to cold winds, and that while these could not be excluded from consideration, “the true sources of the excessive liability of Glasgow to such tides of disease and death are to be sought, not in these comparatively accidental circumstances, but in the permanently acting causes of high death-rates, and especially in the low standard of domestic comfort, the overcrowding, general squalor, and physical degradation which are the unhappy characteristics of a large part of the population; and that these again are the direct results of permitting generation after generation to be brought up in houses of the worst construction, in which morality, decency, and cleanliness are alike impossible.” [Report on the health of Glasgow for the first quarter of 1869, with special reference to the unusually high rate of mortality in March, 1869. Presented to the Board of Police by the Medical

Officer, May, 1869.] These conclusions were largely confirmed by further researches made during the years 1870 and 1871, and published in reports published in the latter year and in 1872. An increase of the death-rate was again subjected to a careful examination, with improved means for its detailed analysis, and at once revealed the large share taken in its production by pulmonary and tubercular diseases, prevailing with increased force wherever the general death-rate was highest, and the density of population was greatest. Thus it became probable that not only as against zymotic diseases, commonly so called, but also as against those inflammatory, and even those chronic, affections of the lungs, which form by far the largest factors in the death-rate, the true preventive medicine was to be found chiefly in improvements directed towards the ventilation, cleanliness, and general comfort of the homes of the poor; and that overcrowding and overbuilding of ground space especially were to be corrected, not only as conducing to typhus fever, but to many other diseases. This was the great object aimed at by the City Improvement Act; and while it was not permitted to me to witness during my official career its extended operation, I am, nevertheless, in a position to declare my belief that the policy so initiated was eminently beneficial, and that it is only by steadily following out the same principles that our great cities can gradually uproot the evils of centuries, and become even moderately healthy abodes for those who are attracted into them in search of work.

In the face of the foregoing remarks by Professor Gairdner, it is somewhat disheartening to find that Mr. G. W. Muir, of Glasgow, in the course of a paper on "The Sanitary Condition of Glasgow, and the means of Improving that Condition," said that the Health of Glasgow had for some time been unsatisfactory, notwithstanding the great expenditure of money in attempting to improve its condition. It must be distressing to the authorities to find that the city under their charge compared unfavourably, in point of health, with other centres of population and with other places in the immediate neighbourhood. At the time the deaths in Glasgow were at the rate of 25 per 1,000 per annum, the rate in Edinburgh and in the suburban burghs to the west and south of Glasgow did not exceed two-thirds of the rate in Glasgow. Some part of the unusual mortality, it was said, might be ascribed to the east wind, but that, it was found, could not be the case, seeing that the rate in the neighbourhoods equally exposed to the east wind, and in Edinburgh, where that wind was notorious for its severity, the mortality was so greatly less than in Glasgow. The venerable Sir James Watson, —at one time Lord Provost,—did much to make it believed that the great improvement scheme had been successful, both financially and sanitarily. Time had shown that in both respects it had been a failure. The cost to the ratepayers was many thousand—probably half a million—pounds. The only persons who benefited financially were the owners of the old property purchased. The buyers of sites from the Commissioners had almost in all cases lost heavily by the investment. In many cases the rents drawn from the new tenements were not sufficient to pay the ground-rent. He had no hesitation whatever in saying that, so far as health was concerned, a better result would have been attained by the preservation of the old buildings, coupled with more attention to cleanliness. As regarded house-drains, recent inspection had shown that the houses in some of the best parts of the city were in the worst state. The application of the smoke or smell tests had surprised not a few proprietors and tenants, when they by these tests discovered the condition of the drains passing under the houses from the conveniences at the back to the street sewer at the front. As regarded sewers, Glasgow might be considered well off, although the central and western districts were frequently subject to very offensive smells. The district which might be called the north-west, lying between Saint Rollox on the east and the Kelvin on the west, was peculiarly exposed to these bad smells. They were caused by the combination of refuse from manufactories of almost every description combining with the domestic refuse of a population numbering over 100,000. The provisions of the Public Health Act, 1867, were violated daily and hourly by the sanitary authorities of Glasgow. It was true that an exception in the Act was

implied as justifying the situation within the city in great heaps of most offensive refuse. Why such an exception should be considered to be an advantage was a puzzle to him, and the fact of its being taken advantage of furnished a proof of the low state of feeling or opinion of the sanitary officials and the members of the Local Authority. In the collection of the most offensive portion of refuse (the contents of the latrines in factories), no attempt was made to deodorise before conveyance through the streets to the works; and this was defended on the ground of economy. It would have been well for the city had this same profound desire for economy been followed in other matters of much smaller importance for the well-being of the inhabitants. The local authorities could sue private individuals for penalties if the Public Health or local Police Acts be infringed, these same authorities being, in many cases, the greatest violators of the provisions intended to protect the public weal. It might be too much to say that the high death-rate prevailing in Glasgow was to be ascribed to the action or inaction of the Local Authority; but it could not be denied that, if great collections of refuse near to dwelling-houses, and within the limits of the city, were nuisances and injurious to health, then some portion of the death-rate might justly be said to have been caused by the default of those to whose care the public health had been entrusted.

Surely some explanation is needed of the discrepant statements contained in these two papers as to the effect of the Glasgow Improvement Act on the health of the city.

EDINBURGH.

FRIDAY, the 28th of September, was one of those days in which an artist delights. An opaline haze hung over the low ground, whilst above there was a clear sky, chequered with the whitest cumulus, which floated slowly along, overshadowing portions of the landscape, which now and again became strikingly prominent under a gleam of sunshine. Wending our way to the Calton Hill, we from that point of vantage overlooked a scene such as rarely meets the gaze of the most experienced traveller. The less interesting objects were obscured just sufficiently so as to give play to the imagination, whilst battlemented crag, domes, towers, and spires stood conspicuous, sometimes in shadow, and again glittering in sunshine. Well might Sir Walter call it "mine own romantic town," and it has not lost, but gained, in attractiveness since his time. Our immediate object was to ascertain what progress had been made with the addition to the house of the observer at the Royal Observatory, and the new pavilion at the Calton Prison. These works are under Government control, and, judging from precedent, we were dubious as to their being carried out in an artistic spirit becoming the position they occupy. There is nowadays much difficulty in ascertaining the authorship of the designs of buildings executed under the supervision of the Board of Works, but be the authors of the works in question who they may, they have no reason to be ashamed of their productions. The observer's house was a particularly difficult problem to deal with. It is an ugly, rudely-built specimen of Batty Langley Gothic, and situated as it is in close proximity to the Observatory and the Playfair and Stewart monuments (erections of a purely Classical type), it would have been better to have swept it away, and begun *de novo*. But our economical Government seldom proceeds in this manner. Whilst adhering generally to the style of the original, the designer of the additions has infused into them a little of the Scottish Baronial style, and has succeeded in imparting to the building a degree of picturesqueness which it did not formerly possess. It is still, however, to be regretted that an entirely new building more in keeping with the surroundings had not been decided upon.

The Calton Prison, as most of our readers are aware, consists of three portions designed in the castellated style. The centre block is the one now in course of being superseded by the new erection. From the portion built we augur favourably of the ultimate result; it is bolder in detail than the flanking pavilions, and promises to group harmoniously with them.

Operations have just commenced for pulling down the Old Waverley Hotel in Princes-street.

The design for the new hotel appeared in the Architectural Exhibition last winter, and was of a florid French Renaissance character, rather immature and weak as regards grouping and detail. These defects may have been remedied since then, and we trust that a building occupying so important a site, one of the most important in the city, may be worthy of its position.

Architects here, one and all, deplore the dulness of the times, and as yet there appears no sign of a change for the better.

THE LATE DR. BEGG.

THERE died at his residence, in George-square, Edinburgh, on Saturday, the 29th ult., the Rev. James Begg, D.D., certainly one of the most remarkable men in Scotland, in a variety of ways. The readers of the *Builder* know him, perhaps, chiefly as a sanitary economist and as a somewhat bold and original social reformer; but he was principally known to his countrymen, and beyond his own country, as one of the sternest stoops of the old Calvinistic theology. The best words we can say about him in these columns must be regarded in the light of our sincere admiration for his noble efforts to obtain better houses for the working classes. To this subject we can assert with every confidence, arising from long personal knowledge, he devoted many years of the best part of his life, and this brought him into close alliance for a time with the conductor of this journal. He was never weary of well doing in this direction. His diatribes on the botchy system,—that is to say, the system of squatting farm servants in huts, without regard to sex, and feeding them upon oatmeal brose,—were most certainly the main cause of bringing about the great and sorely-needed amelioration in the condition of the agricultural labourers of Scotland which took root about thirty years ago, and which, we may point out, has enabled the Royal Commission on the Highlands and Islands to prosecute their labours in peace. His little work, entitled "Healthy and Happy Homes," which was reviewed in our columns at the time of its publication, and which, we believe, has gone through several editions, was probably the favourite of the numerous pamphlets he has published on many topics of social economy, and the outcome of that work was a society for building houses in Edinburgh, which has not only done good work, but also paid a fair and reasonable interest. He was, of course, a theologian of the strictest sect of the Free Church of Scotland,—a theology which most Englishmen now think antiquated and, generally speaking, antagonistic to the vital principles of human progress; but that consideration, some how or other, was nothing to Dr. Begg. He was, as he always said, a soldier of the Cross of the old school of the Covenant, and he conceived it to be his duty to be on guard. His recent agitation on behalf of the Strome Ferry rioters is too well known to need any comment on our part; but it was, no doubt, the proximate cause of his death, the immediate cause, it is said, being congestion of the lungs. He died in his seventy-fifth year, in full controversial harness.

"With his back to his friends and his face to the foe,
Leaving in battle no blot on his name."

New Sheriff Court-houses at Paisley.—

On Michaelmas Day the foundation-stone of the new Sheriff Court-houses at Paisley was laid, with full Masonic honours, by Sir Archibald C. Campbell, bart. The site of the structure is in St. James's-street. The general style of the building is Roman, the front elevation showing two wings and a recessed centre-part. The latter shows on the ground-floor a colonnade of Doric columns, resting on a low stylobate, with an elaborate entablature and balcony with balustrade above, and on the upper story a range of boldly-moulded windows. The main cornice is carried by carved double surmounts, with pannelled work between them. The projecting wings of the building have rustic work below at each end, and are enriched at the angles by four sets of coupled Ionic pilasters, the whole crowned by a well-proportioned entablature and dentiled cornice, with a parapet at top. The buildings have been designed by Messrs. Clark & Bell, architects, and the cost is estimated to reach 15,000*l*.

LEWISHAM PUBLIC BATHS
COMPETITION.

THE Commissioners for Baths and Wash-houses of the parish of Lewisham have given the first premium to the designs marked "Cives," by Messrs. Wilson, Son, & Aldwinckle, who have been instructed to prepare the contract drawings at once. The baths are to be built at Ladywell and Forest-hill. The estimated cost for those on the Ladywell site is 7,250*l.* and for those at Forest-hill, 6,650*l.* The front elevation, Ladywell site, is designed of a simple character, in Early French Gothic. A circular tower is designed to receive a large cold-water tank, which will be necessary when the well is sunk. The facings will be of red brick, with a very limited quantity of dressings in red Dumfries stone. Unnecessary ornament has been avoided.

The second premium was awarded to the design bearing the motto "Nator," by Mr. A. L. Guy, of Walbrook; and the third premium to those with the motto "Stady," of which Messrs. Bell & Hopton, of New Broad-street, are the authors.

THE BUDA-PESTH EXHIBITION OF
1885.

ACCORDING to the *Deutsche Bauzeitung*, the details have been published of the competition which is now open for the building of the above exhibition. Plan of the site and programme of prizes, &c., are to be had from the Exhibition Office at Buda-Pesth (Franz-Josefs, Platz 6). It is not only designs that are required, but also offers for the execution of the separate buildings. The limit of time for sending in is fixed for Monday, October 30th, at noon.

STREET ARCHITECTURE AT RATISBON.
THIRTEENTH AND FOURTEENTH CENTURY.

DURING a large portion of the Middle Ages Ratisbon was the seat of the Imperial Diet, or great Parliament of the German Empire. As the city does not seem at any time to have been a very large one, and as it was necessary for all the important members of the Diet, all the Ambassadors, Electors, &c., to have houses in the town, ground must have been of immense value; in all probability, in the fourteenth century, land fetched a higher price in Ratisbon than it does in the Strand now. For some reason or other, probably the difficulties of the site, the fortifications do not seem to have been enlarged, and thus the space within the enclosure of the walls became more and more valuable. Curious examples of the way in which space was economised are to be seen, showing us that in what we are in the habit of regarding as the romantic ages, there was a very fair amount of common sense about, especially as regards building. This accounts for several architectural peculiarities; amongst others it will be noticed that the transepts of the cathedral do not project beyond the aisles, that the building itself is very short in proportion to its great height. Some of the churches, the "Alte Pfarr-Kirche," for instance, are surrounded by galleries coeval with the buildings themselves, but the most interesting peculiarity to which we would draw attention is the fact that the houses of the nobility were erected in the form of towers, often of considerable height. The architecture of these tower-houses is often very rich and beautiful, with large tracered windows in each story, showing that these towers were not erected so much with a view to offence or defence as from purposes of economy. In one of the examples which we give it will be noticed that the tracery of the windows is singularly elegant. The cusped arch of the little window (A) which probably lighted an oratory on the top floor, is a charming example of the very best period of Gothic. The circular cusped light (B) is also a good example of tracery; the two large windows of the upper stories have, unfortunately, been deprived of their mullions, but they would appear to have been originally divided into three lights, the heads being adorned with three cusped circles, all very richly moulded. One of these windows is represented in our sketch (C).

The house on the opposite side of the street is earlier in date; some portions of it appear to date from the twelfth century, but it has

evidently been nearly rebuilt, and greatly heightened during the thirteenth century. The house is very lofty, and about half of it is carried up as a tower. We give a sketch of one of the windows of this house which is very characteristic (D).

Now what the Medieval architects did at Ratisbon in the thirteenth century we ought to be doing in London in the nineteenth century. In this town many of our houses ought to be carried up as towers. We know how to get over many difficulties which must have troubled the builders of former times; we have the "lift," artificial lighting and warming, and we are supposed to know everything about ventilation and sanitary arrangements. Ground with us is immensely valuable, so why should we not build towers for our houses? Is London to spread all over our island, and are the charming surroundings of this vast city all to be converted into wretched suburbs, consisting of mile upon mile of one-storied houses? How intensely foolish is this plan of building thousands of little low dwellings. Let us remember that if the houses in London had all been double their present height, London would cover just half the space which it does! and people who now have to live out at Hammersmith or Shepherd's Bush would be residing somewhere about Baker-street or Park-lane! Something will certainly have to be done in the way of economising land in and about London, and the question is one which claims the serious consideration of all interested in building operations, and the welfare of this vast metropolis.

WESTMINSTER JEWS' FREE SCHOOLS.

MOTIVES of economy have influenced the conception of this building from first to last; all ornamentation has been studiously eliminated, and the expenditure made has been entirely devoted to affording accommodation suitable for the requirements of the institution.

The architectural features cannot be described as belonging to any particular epoch, but the effect is pleasing, and the architecture clearly demonstrates the object for which the building has been erected. The front elevation to Hanway-place and John-street is built of stock bricks, with terra-cotta and red Farnham brick dressings. An ornamental band runs above the arched which forms the playground, hereafter to be referred to, on which is an inscription,—"The Westminster Jews' Free Schools. Founded 1811, rebuilt 1882."

The boys' entrance is in Hanway-place, and the girls' entrance is in John-street.

The general disposition of the plan has been actuated by the peculiar configuration of the site and its surroundings. Hanway-place and John-street being rather narrow thoroughfares, advantage was taken of a direct entrance to place the schoolrooms at such a height that the buildings on the opposite side would not interfere with the light and air. Moreover, the circumscribed space at command rendered it necessary to appropriate as much of the land as possible for playground purposes; accordingly, the whole of the ground-floor has been arranged so as to throw the same into playgrounds.

Two large covered playgrounds, one for girls and the other for boys, have been placed under the main building, each covering an area of about 1,200 ft., open upon all sides, and yet protected from the inclemency of the weather. These are fenced in from the streets, where they adjoin them, by strong ornamental railings, the level of the playground floor being kept considerably below the level of the pavement, so that the children may not be interfered with by persons from without. The other portion of the ground-floor has been equally divided as open playgrounds between the boys and the girls. These playgrounds are fitted with gymnasiums, the gift of Mr. Edward Wagg.

The boys enter the building under the covered playground in Hanway-place, where is conveniently situated their cloak-room, which is heated by hot water, so that in the winter weather the clothes may be dried whilst deposited there. It is fitted with umbrella stands, a seat so that damp boots may be removed, and with all necessary hooks and rails for hanging clothes on. Adjoining this room is a luncheon-room, with fireplace, and solid wood flooring. Next to this luncheon-room is the lavatory, fitted with Shanks's tip-up basins, and galvanised iron framing.

The whole of the playgrounds have been paved with asphalt, and drinking-fountains for the supply of filtered water have been provided for the use of each sex. The girls' side is precisely similar to that of the boys, and contains similar accommodation.

On the first floor are situated the girls' schoolrooms, which are arranged so as to afford a maximum of light, air, and ventilation. The front range is 80 ft. long by 22 ft. wide, and 16 ft. in height, and is divided into three class-rooms, fitted with platforms and dual desks designed upon sanitary principles, which have been supplied by the North of England School Furnishing Company.

The centre schoolroom will afford accommodation for sixty children, and the two side ones for fifty each. Attached to this front range are two class-rooms, 16 ft. by 23 ft., and 20 ft. by 16 ft., one of them having in addition a gallery, which will be used for infants' classes. The house-mistress's sitting-room, parlour, and so on, is so situated as to command supervision of the playground. The interior walls have the brick-work painted, the woodwork stained and varnished, and the ceilings plastered. The front range is so planned that it forms one apartment at pleasure, to be used upon the occasion of a general examination, or for any public requirement, the partitioning forming the rooms sliding back. These apartments are fitted with school cupboards and other conveniences.

The second floor is appropriated to the boys' school, and contains precisely the same accommodation as that afforded to the girls, including masters' rooms, water-closets, lavatory, and other accommodation.

A noticeable feature in the building is the construction of the staircases. These have been formed of Lascelles's concrete, which is covered with Hawksley's wood treacle. They are in very short flights, and have been so arranged that in the event of panic or otherwise accident would be unlikely, whilst should the treads or landings wear out in course of time, they can easily be replaced at a trifling cost and without disturbing the general arrangements of the building. The walls here have been faced with dados of glazed bricks; this will ensure cleanliness and will prevent the disagreeable appearance which staircases attached to buildings of this character so generally present. It need scarcely be added that both staircases and corridors are absolutely fireproof.

Great care has been exercised with regard to the plumbing and drainage arrangements; all the pipes, whether plumbing, gas, or otherwise, are exposed, and are easy of access. So likewise are the cisterns, and where used for potable purposes, all water passes through filters which have been supplied by the London and General Water Purifying Co.

The building will accommodate 500 children; the cost, with fittings, &c., will be about 7,000*l.*

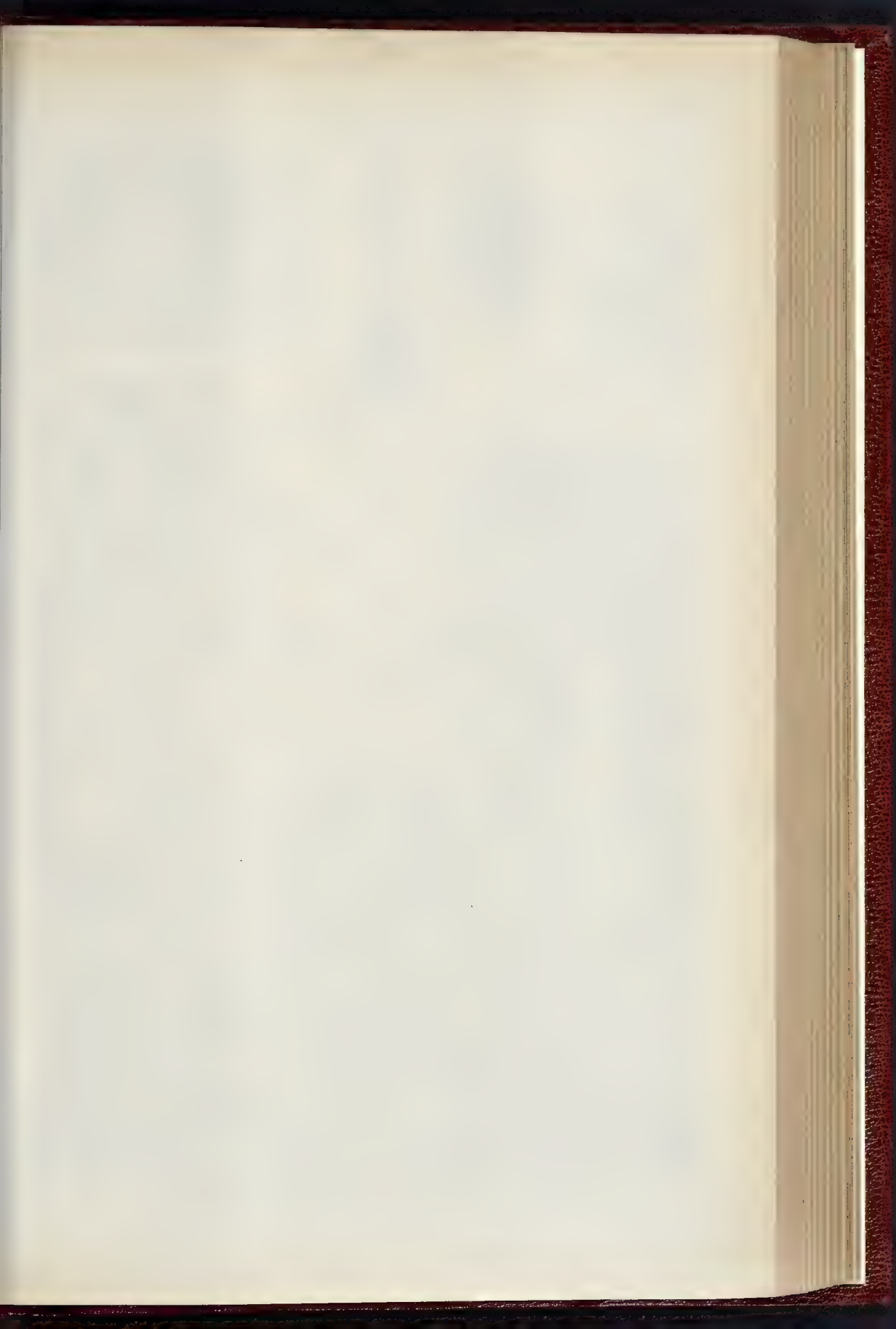
The land was obtained by, and the building was erected from the designs of, Mr. H. H. Collins, architect, of 61, Old Broad-street, and they have been satisfactorily executed by Messrs. Sabey & Sons, of Ironmonger-row, St. Luke's.

MANOR HOUSE, EVERLEIGH,
WILTSHIRE.

Our illustration shows a view of the entrance-hall and principal staircase as restored. It will be remembered this house was destroyed by fire some time ago, and an account of the rebuilding appeared in this journal. The works have been carried out by Mr. Stanley Bird, of Edgeware-road, London, under the direction of Mr. John Birch, of John-street, Adelphi.

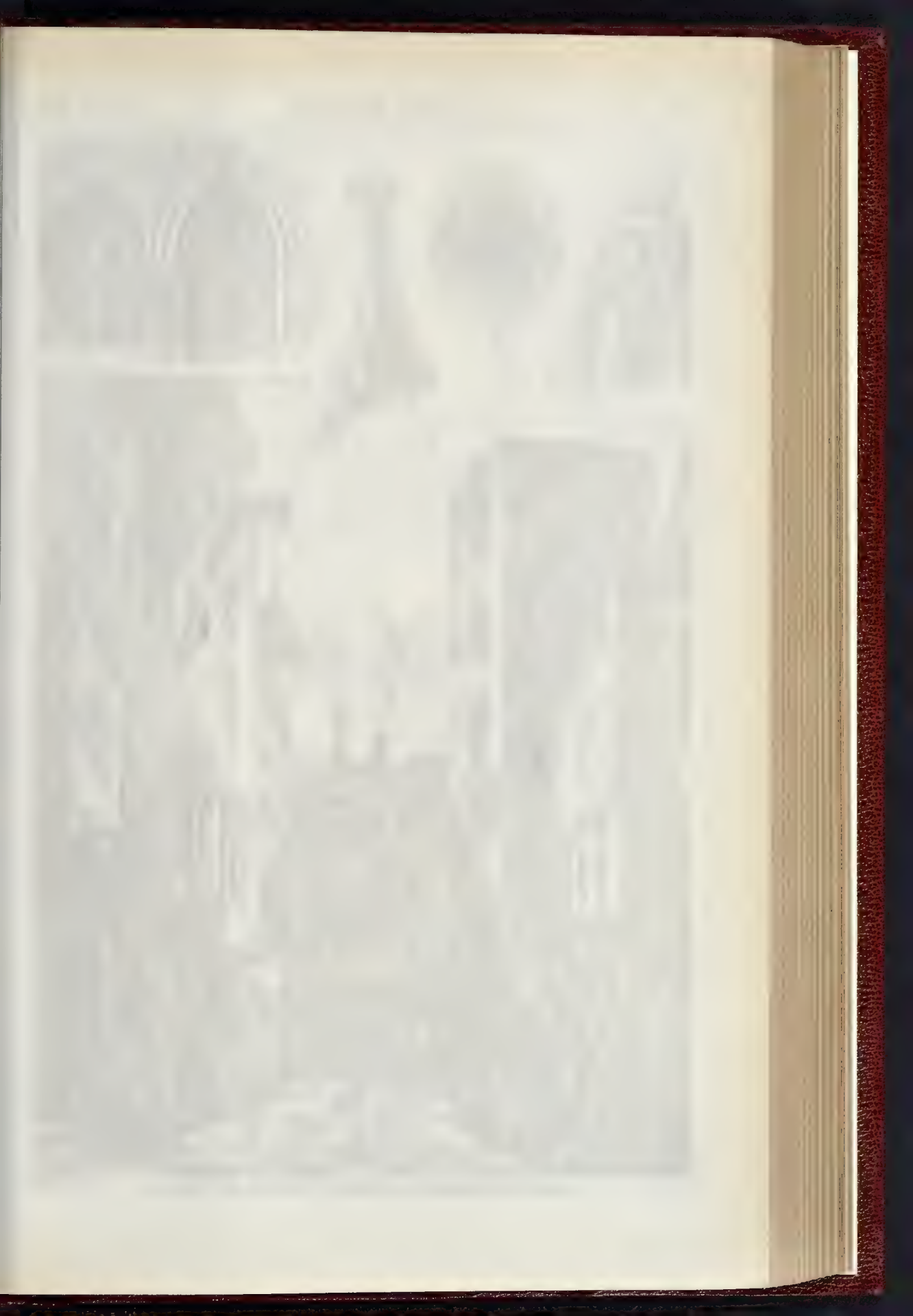
VILLA RESIDENCE, WINKFIELD.

THIS house, now in course of erection for Mr. Reginald B. Brett, M.P., is from the designs of Messrs. Byrne & Wilmot, of 303, Strand, and Windsor. It is built of red brick, weather-tiled above the ground floor, with half-timbered work in the gables. All the internal woodwork will be stained and varnished. The hall-door and hall-window are to be filled in with stained glass. Arrowsmith's parquet flooring will be laid in the hall and Minton Hollins's tiles in porch, verandah, bath, and hearths. The contract was taken by Mr. J. Willis, of Windsor, at 2,350*l.*, exclusive of some of the fittings and drainage.

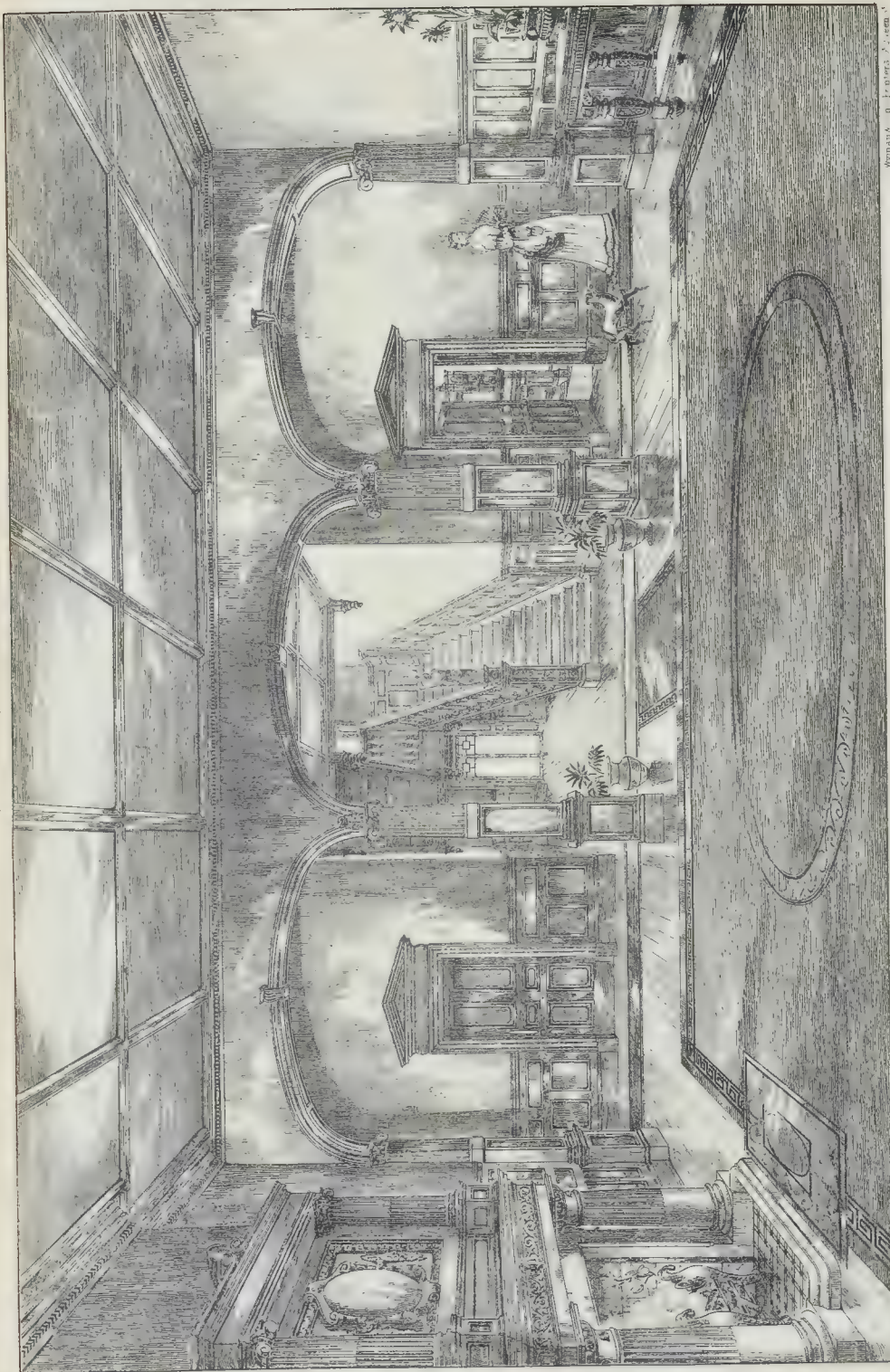




STREET ARCHITECTURE AT RATISBON: Thirteenth and Fourteenth Century.

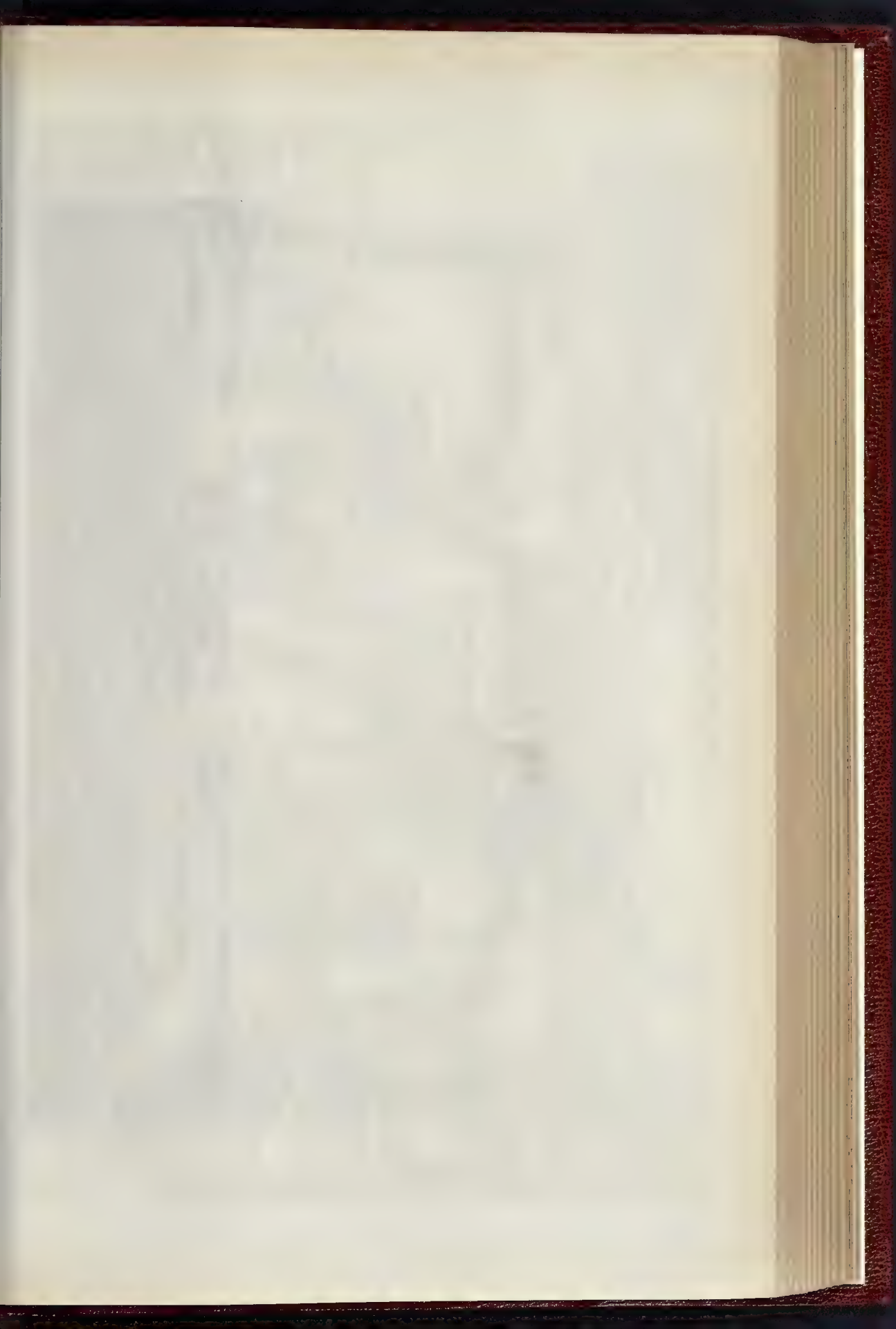


THE BUILDER, OCTOBER 6, 1893.

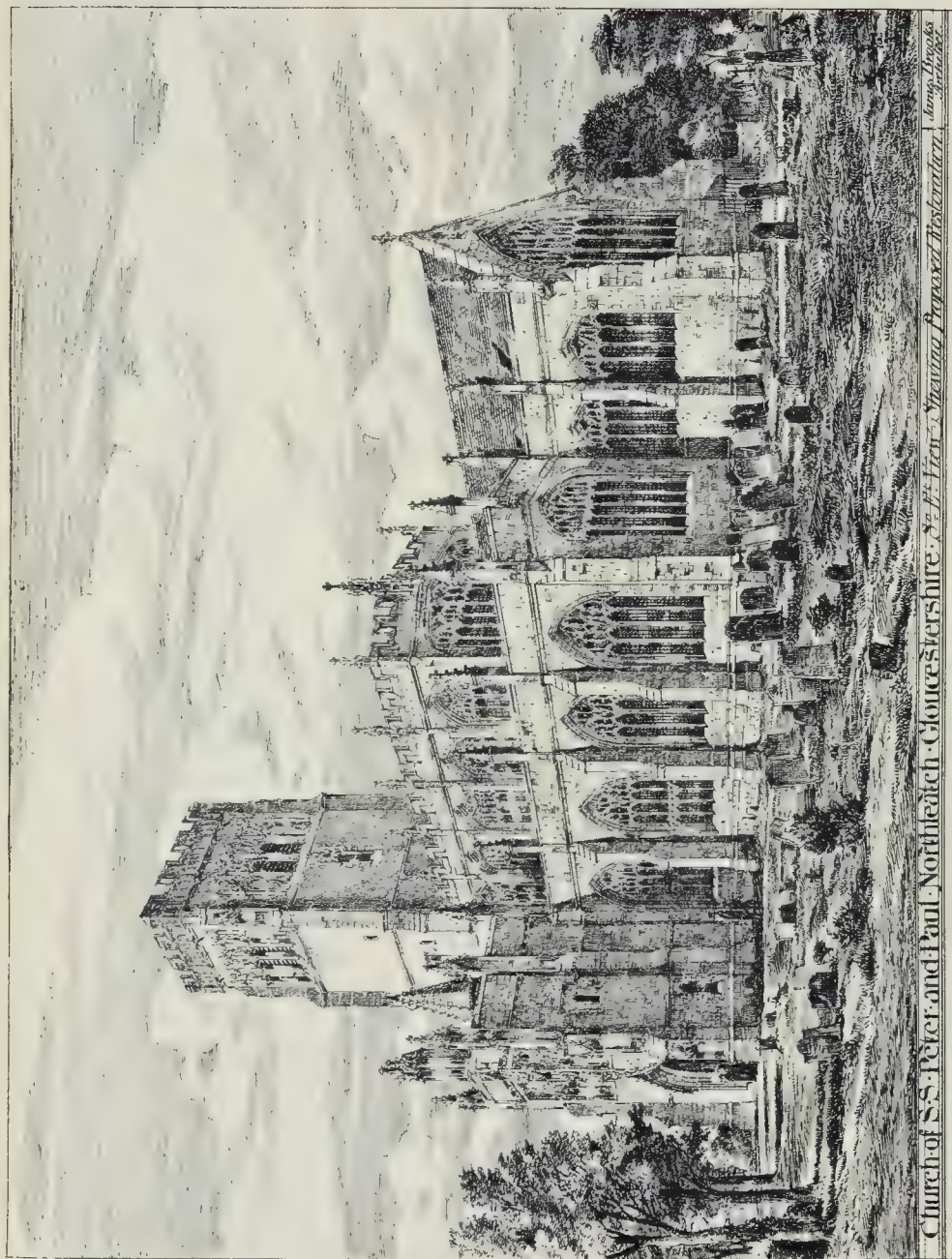


MANOR HOUSE, EVERLEIGH, WILTSHIRE.—MR. JOHN BIRCH, ARCHITECT.

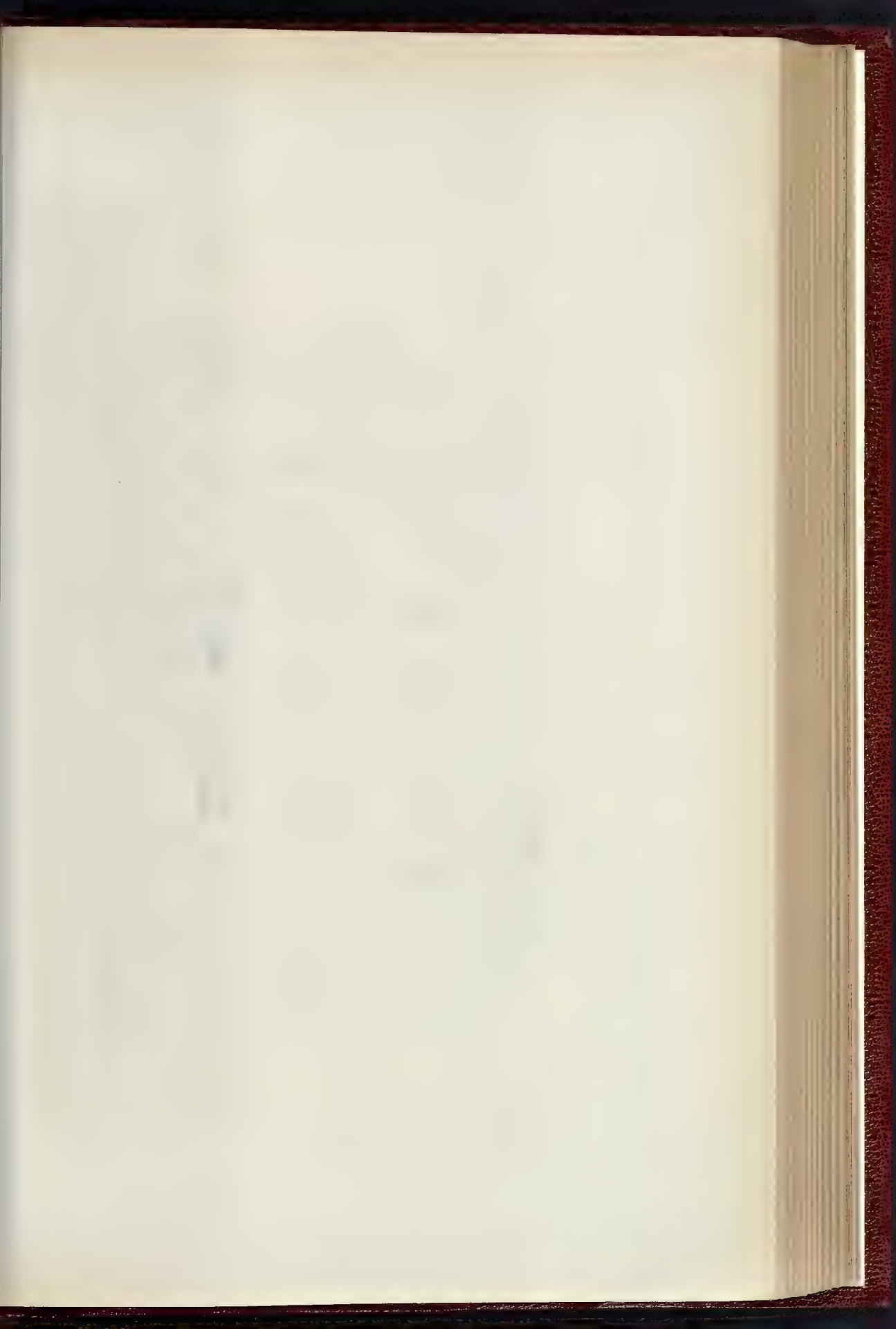
Whitman & Bass, Engrs., 11, St. John's Wood, N.W.



THE BUILDER, OCTOBER 6, 1883



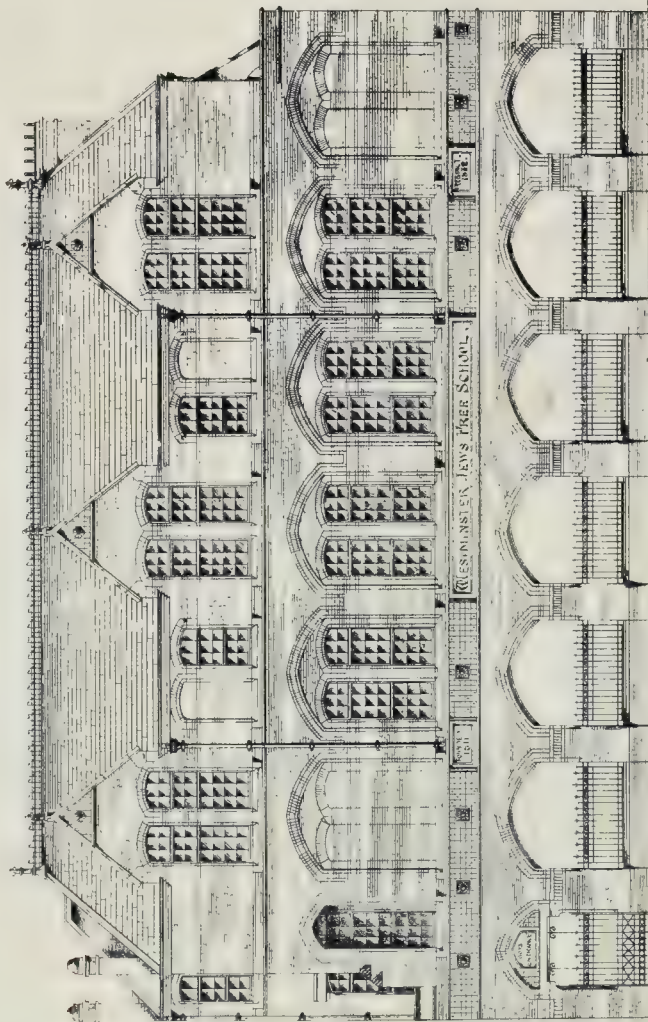
Church of S.S. Peter and Paul Northleach, Gloucestershire. See p. 17. *Viewing Prospect Westward* *Vincent Brooks Del.*



THE BUILDER, OCTOBER 6, 1883

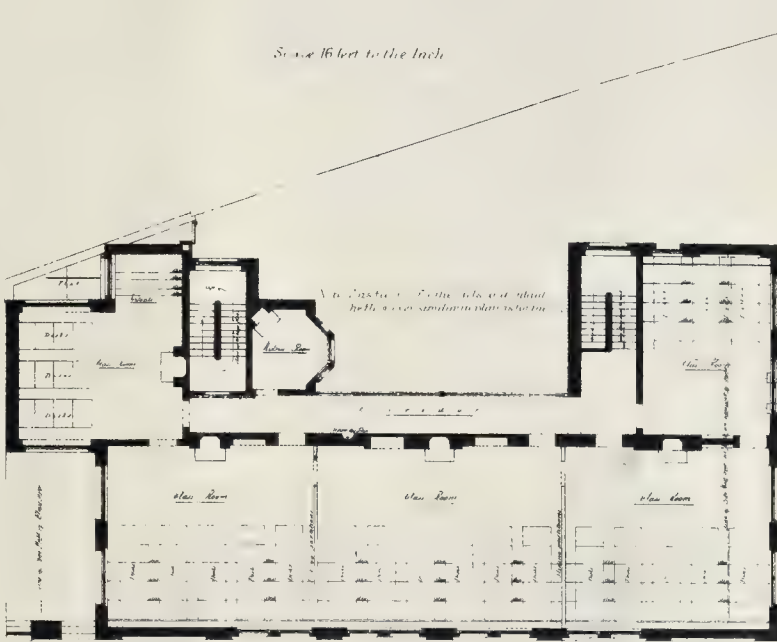
Long, at

100

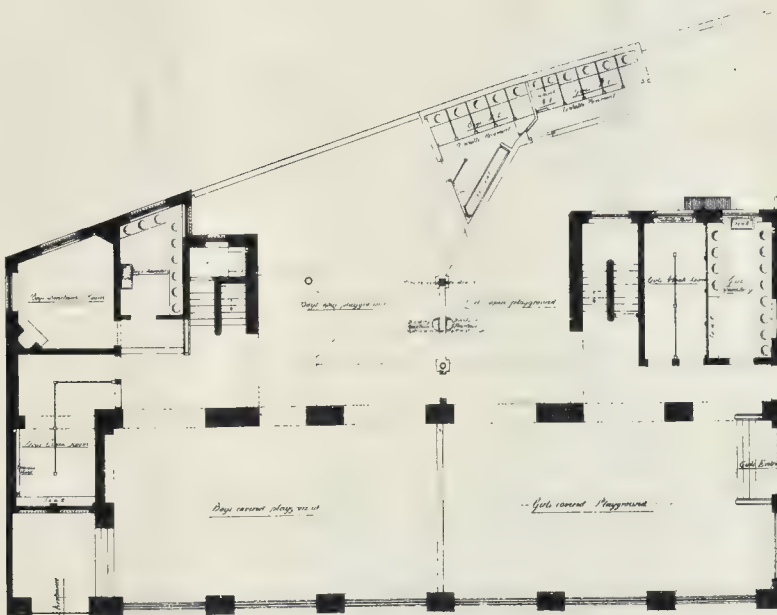


Westminster

Scale 16 feet to the Inch



Westminster Jews' Free School

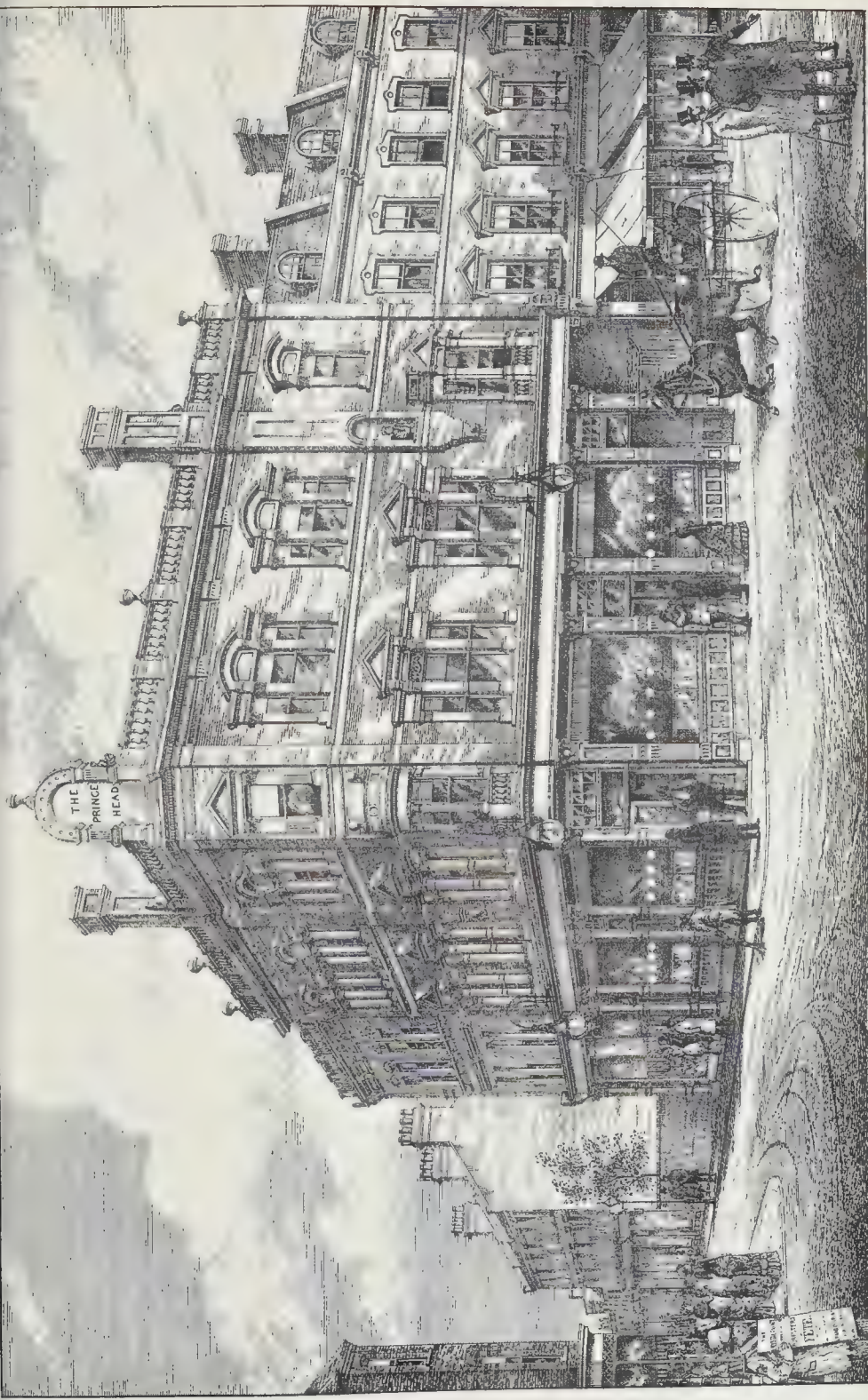


Ground Plan



VILLA RESIDENCE FOR R. B. BRETT, Esq., M.P., AT WINKFIELD.

MESSES. BYRNE & WILKOT, ARCHITECTS.



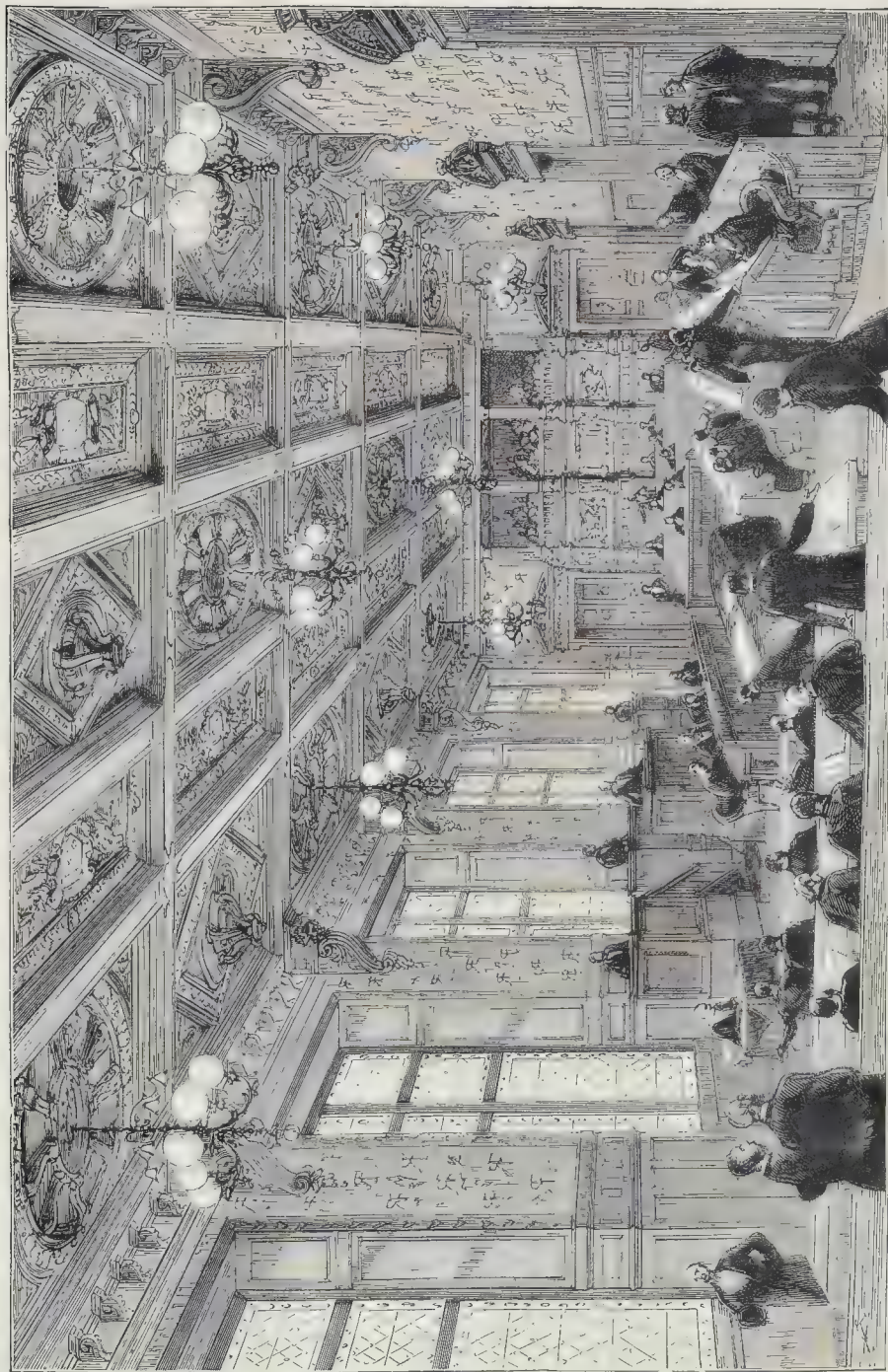
WYLLIAMS & KILGUS, N. YORK.

THE PRINCE'S HEAD TAVERN, AND SHOPS ADJOINING, BATTERSEA.—MR. H. I. NEWTON, ARCHITECT.

WYLLIAMS & KILGUS, N. YORK.



111



HÔTEL DE VILLE, PARIS: COUNCIL CHAMBER.—MESSRS. BALLU & DEFERTHES, ARCHITECTS.

CHURCH OF ST. PETER AND ST. PAUL, NORTHLEACH.

This church, which we illustrate in our present number, is now being restored, of which it stands sadly in need, as the roofs are in a bad state of repair, letting in water in various places. The church is filled up with great pews placed in every possible direction, some with back to the altar, others sideways. These are, as funds permit, to be taken away and replaced by open benches, the floors being re-laid with tiles and wooden blocks. Some of the mullions of the windows are either of cement or wood, or else stone. These, of course, will be carefully restored with the same stone as the rest of the building. Some of the mouldings in stone and wood are interesting. There is a large Founder's Chapel on the north side, leading from the aisle. This was commenced to be restored first, together with the roofs, so as to make them water-tight. The work is being carried out by Mr. Grover, builder, Chipping Norton, under the superintendence of Mr. Jas. Brooks, architect, 35, Wellington-street, Strand.

THE NEW HOTEL DE VILLE, PARIS.

THE "SALLE DES SEANCES."

The greater portion of the various departments of the Préfecture de la Seine have already taken possession of their respective offices in the new Hôtel de Ville at Paris.

We have already given some illustrations of the buildings,* and it will be not without some interest to our readers if we add a few notes on the interior arrangements.

Ground Floor.—The Hôtel de Ville has eleven entrances in its four façades. Mounting the stairs of the principal entrance, we find ourselves in the vestibule of the edifice. To the right and to the left of this entrance, two large doors give access to the two large courtyards within the building. Each of these courts communicates, again, with the Place Loban by a wide passage, upon which gives one of the peristyles of the Salle Saint-Jean. This beautiful hall, which is just below the Salle des Fêtes, and is of the same dimensions, is to serve for assemblies, concerts, &c. A grand entrance, formed by three adjoining doors, provides communication for the glazed hall of the municipal office (Emprunts Publics) with the Rue de Rivoli. The doors of the various bureaux of the municipal treasury (Caisse Municipale) and the debt office (Service de la Dette) open into the hall. The title-deed office (Caisse des Titres) is located on the ground-floor in the angle formed by the Rue de Rivoli and the Place de l'Hôtel de Ville. Smaller special entrances towards that square give access, to the left, to the post and telegraph office; to the right, to the police office. The fire brigade office, located in the side towards the Place Loban, has also a special entrance. The various bureaux of the Préfet's office proper are placed in the angle of the edifice formed by the Place and the Quai de l'Hôtel de Ville.

Mezzanine Story of the Ground Floor.—In the centre of the edifice, at a level leading to the levation of this story, a courtyard called the Cour du Centre, has been formed. Wide galleries run along three sides of the court, into which open the doors of the different bureaux. The part of the building towards the Quai, and in which the two corner pavilions are included, is occupied, in the *entresol*, by the residence of the Préfet. The opposite portion of the building, towards the Rue de Rivoli, is assigned to the administration of the municipal finances (Direction des Finances).

First Floor.—The Salle des Séances (council-chamber) of the Municipal Council of Paris (of which we give a view in the present number of *The Builder*) is placed, in this floor, just over the vestibule of the principal entrance. The windows of this handsome room give towards the Place de l'Hôtel de Ville. The whole of the principal façade and the centre portion of the building in this story supply additional accommodation for the municipal council and the municipal council. The façade towards the Seine is occupied by large reception-rooms. Of these, there are in this story only the general secretariat of the Préfecture and the offices of the special accommodation of the Works (Direction des Travaux), which abnormally share the front towards the Rue de

Rivoli. The office of M. Alphand is in the angle of the Rue de Rivoli and the Place Loban; that of M. Vergniaud, in the opposite angle.

Mezzanine Story of the Second Floor.—This *entresol* exists only in a portion of the new Hôtel de Ville. Towards the Cour du Centre, over the committee-rooms of the municipal council, there is, to the left, the patent office, and, to the right, the municipal printing-office. The remainder of this mezzanine story, situated in the northern portion of the building, on the side of the Rue de Rivoli, is assigned to the administration of the finances.

Second Floor.—The bureaux, situated over the administration of the finances, in the second floor, are those of the second division of the Works office. The first, third, and fourth divisions of the Works office have their bureaux along the whole side of the building overlooking the Seine. The fine-art department, that for historical works, and the election offices are located in the central portion of the principal façade. Finally, the part above the Salle des Fêtes is intended for the archives, and the surrounding rooms to the maps of Paris.

THE PRINCE'S HEAD TAVERN AND SHOPS ADJOINING.

This block of buildings has been recently erected for Messrs. Sanson & Ewington, from the designs of Mr. H. I. Newton, of 27, Great George-street, Westminster. It stands in a good situation, at the corner of York-road and Falcon-lane, Battersea, and is a feature among the extensive street improvements which have within the past twelve months increased the importance of the neighbourhood. The site was formerly occupied by a group of cottages and a small public-house, from which latter the new tavern takes its name.

The ground-floor story of the tavern is 14 ft. in height, and is, for the most part, occupied by the bar. The first-floor story contains, besides several commodious private rooms, a handsome public billiard-room, 46 ft. long by 18 ft. wide. The fronts of the building are faced in yellow malmes, and embellished with Portland cement dressings. The corner building is covered with a flat, constructed of rolled iron joists and concrete, on Messrs. Homan & Rodgers's principle, and coated on the top with Val de Travers asphalt.

The total cost of the building and fittings amounted to about 7,000l. The main contract was carried out by Mr. F. Gill, the bar-fittings by Mr. Simpson, the counter and pewterer's work by Mr. Matthews, and the gasfittings by Mr. Winn, the whole being executed under the superintendence of the architect.

FELICITY AS AN OBJECT OF SANITARY RESEARCH.

At the Glasgow Congress of the Sanitary Institute a lecture under this heading was delivered by Dr. B. W. Richardson, containing, as a matter of course, much that is entitled to serious consideration. We print the concluding portion:—The man who is always miserable is a "hypochondriac," his affection is seated under the lower ribs. No man ever felt misery in the head. Every man who has felt misery knows that it springs from the body; speaks of it as an exhaustion, a sinking there. He is broken-hearted; he is failing at the centre of life; he is bent down because of the central failure, and his own shoulders, too heavy to be borne, feel as if oppressed by an added weight or burthen, under which he bends as though all the cares of the world were upon him to bear him down. The influences to which I am about to refer are, in reality, purely physical in their action, although they are commonly known as habitual, sensational, moral, or mental influences. I notice, in the first place, that felicity is always favoured by sufficiency of rest and sleep. Bad sleepers know no felicity; but those who in childhood and old age sleep ten hours, in adolescence nine, and in full age eight hours out of the twenty-four, and the soundly, are mostly well favoured with felicity. They may be exposed to causes which are opposed to felicity, but even then the causes are feeble in action than they otherwise would be. I put sleep in the first place as an aid to felicity, because it comes first. I have no knowledge of any instance in which a person who slept well was altogether devoid of felicity. The bene-

ficent action of sleep is, however, indirect. It is due to the physical and mental strength which it confers on its favoured child. Any sign of inherited weakness is an equal sign of lessened felicity, though it be marked by no physical defect. It has long been observed by physicians that persons who from early life show very large and prominent veins, and thereby a languid circulation of the blood, are never happy, while those of well-knit body are. The observation is true as steel. Physical work, when it is carried short of exhaustion, keeps up felicity, and sloth destroys it. But the physical work that exhausts kills felicity. The argument extends to mental work. Moderate, wholesome, mental work is the best of all aids to felicity next to sleep; it strengthens the mind, it softens grief, it lessens care. Carried to excess it is pernicious and destroys all felicity. Cowper the poet was wont to say that no labour is so wearing as composition, and few men possibly felt more unhappiness as the result of mental exhaustion than he. But his was the fate of all who force the brain to daily or nightly weariness. The influences derivable from sleep and bodily power are purely physical influences, but there are others called sensational, which, through the physical power, have a potent effect for or against felicity. With felicity as a sanitary research for my theme, I have striven so far to indicate what may be called the physiological bearings of the subject. I have endeavoured to show that felicity is something that is of hereditary quality; that it is something made or not made by external agencies over which we have little control; that it is something made or not made by many agencies, which we have directly under our control. In these respects felicity stands precisely in the same position as health: in the widest sense it means health, is another word for health. Health is born, and is made and unmade by external agencies which as yet are out of human control. Health is made and unmade by numerous influences which are under human control. Felicity, similarly influenced, depends on the good working of the animal or organic systems of life. If the natural air which man makes not and invents not may be to a large extent utilised for felicity, how much more easy is it for him to remove the unnatural which he himself makes, so that instant advantage of what is provided for good may be rendered serviceable? Here our voices should be heard in a tone not to be mistaken. We shut up our young in closest rooms of close towns; we shut up our men and women by the millions in close shops and factories. Some one million of us in these islands who call ourselves, with ignorant irony, the ruling classes, shut up some twenty-five millions of the people with their wives and children in walled-up atmospheres, where atmospheric purity is unknown, where cold and heat oppress, where food is what can be got, where drink is what can supply a false facility for a certain sorrow, where marriages re-establish misery, where good sleep is impossible, where physical strength is so impaired that a perfect body is not to be found, where exhaustion from work is the daily cross, where things and objects of beauty are rare as angels' visits, where in the selfish race to barely live generosity is impossible, where in compressed homes purity of mind is a thing the purest can scarcely maintain, where variety is replaced by the dead monotony of unchanging sounds for the ear to hear and scenes for the eye to see, where fear dominates over courage, where hope has no chance, where prosperity is so little known that the worn-out life has no expectation this side of the grave, and where death is so busy that three die to one of the more favoured communities. We, one million, I repeat, shut up our twenty-five millions under these conditions, and wonder why these millions know nothing of felicity; why they are peevish, reckless, melancholy, sometimes drunken, sometimes rebellious and ready to run after any leader who shall promise to lead them into a happier sphere, however little removed from that in which they are. Wonder! The wonder is how human nature can bear such a famine of felicity, and live as if it only lived to die. We may educate, again, in another direction. It has been shown that some exceptional men are born of a happy disposition; and it might have been shown, on the clearest evidence, that multitudes are born of an unhappy, nay, miserable disposition. We could easily, by our researches, describe what are the lines of heredity for the happy and for the un-

* External view, vol. xxix. (1880), p. 328; interior view, Hall of Fêtes, vol. xliii. (1882), p. 402.

happy dispositions. We could, with this discovery in our hand, with certainty of being listened to and attended to, impress upon the people the truth that marriages ought neither to be matters of chance, nor matters of mere monetary convenience, nor, indeed, matters of mere insane, so-called love; but that the marriage tie, extending its influence into the future, and being no bond and seal of diseased hereditaries, should be the bond and seal of a healthier and happier racial progress in every succeeding generation. Now that our women are, by good fortune as well as good policy, made legally masters of their own property, the sanitary question here referred to was never so likely to be one of scientific value as it is at this moment, and as it will be in coming days. We can teach forcibly and faithfully on a different topic, regarding which we have a large amount of information collected. We can adopt and urge with all our power our veteran Chadwick's advice to those who are wanting to instruct the young, that it is the perfection of prudence first to live, then to learn. We can insist that, inasmuch as felicity is impossible under strain, it is fatal work to press on the young mind the excessive labour which is now, in all departments, making cram, cram, cram, the footing for knowledge. We can also tell the adult man struggling for the bubble reputation, that broken sleep and disturbed brain and wearied muscle and labouring heart can never exist with felicity; that *sanitas* and *vanitas*, separated by one letter only, are as the poles apart from each other; and that *sanitas sanitatis*, *omnia sanitas*, will never be established until *vanitas vanitatis*, *omnia vanitas*, is blotted out. We can instil yet one other lesson,—last, but not the least, into those foolish of the foolish of the world who think that riches and idleness and power are synonymous with felicity. Felicity, as a sanitary research, with all respectful thought I leave it on your memories. You may, perchance, think of the idea as an enthusiasm,—a vision. Never mind, so long as you think of it. It will grow upon you as a study, and flow from you as a project if it once take root. It will strike you, in time, as the *summum bonum* of sanitary labour; a re-echo of the Divine declaration, "On earth peace and goodwill towards men."

THE DWELLINGS OF THE MIDDLE CLASSES.

The evils attaching to the present system of erecting middle-class houses, and the remedies which it is necessary to apply in order to secure their removal, were discussed in a paper by Mr. Henry C. Burdett, F.S.S., read before the Sanitary Congress at Glasgow. The author observed that little has been attempted in the direction of the improvement of middle-class dwellings, although investigation would prove that masses of the middle classes, though higher in the social scale than the working class, are frequently as badly provided with house accommodation as any class in the community. There is much that demands attention in the dwellings of the middle class, and especially in those of the lower middle classes. The wealthier classes are able to take care of themselves by the employment of such able architects as they may like to select, and the poorer classes,—artisans and the like,—have thousands of well-arranged and carefully-constructed dwellings erected for them from the designs and under the superintendence of the same class of architects. But the poorer middle classes have no such power or means of securing healthy dwellings for their own occupation. To prove this, and to realise the crying nature of the evils attaching to the dwellings of the middle classes, it is necessary to pay a visit to a suburban district under the control of a Local Board, and to make an inspection of several houses in various stages of erection. These houses will be let at from 35*l.* to 50*l.* to 75*l.* a year, and possibly at a higher rate still. They will be occupied by that hard-working class, bank clerks, commercial clerks, civil service clerks, and others, who have to present a decent appearance and to keep and bring up a young family on an income little, if at all, in excess of that earned by a skilled artisan or mechanic,—say 3*l.* to 5*l.* per week. The occupier of these houses will often have a lodger or a parent to share the house and lessen the expenses, so that the four or five bedrooms are always fully occupied. Such houses are erected by specu-

lating builders, known as "jerry" builders, are usually mortgaged as the work proceeds, and have no one to look after their construction except the surveyor to the Local Board. He, poor man, often without an apology for assistance, cannot be in every part of his scattered district at the same time, even if he wished to supervise all this class of work efficiently. Besides, it too frequently happens that the jerry builder is a member of the Local Board himself, or has powerful friends there; and in such cases the surveyor finds it inexpedient to interfere with certain houses, which are consequently the worst of their class. In the model building by-laws, published under the authority of the Local Government Board, nearly every essential for a healthy, properly-constructed dwelling is provided for, but in many districts, even where the by-laws are in use, they are practically a dead letter, owing to the unwillingness of the Sanitary Authority to enforce them with uniform energy. Yet the power taken in such by-laws, and which might be brought to bear upon the builders, would render jerry buildings an impossibility, if the Local Boards were determined to enforce such by-laws without fear or favour. Every Local Board, that is, the large majority, does not so enforce the by-laws, and is consequently in league with the jerry builder.

What, then, are the remedies?

First and foremost, that householders shall combine and form themselves into a local association, which shall defend them from the cruel wrongs they now have to endure. A very small subscription (probably 5*s.* a year) to such an organisation would suffice. The first step for such an association to take is to select and secure the election of suitable men on the local board. Then its funds could be utilised to prosecute offending builders, and to secure the detection of any breach of the by-laws. In this way, and by the exercise of a little public spirit on the part of the classes interested in these matters, an effectual stop would soon be put to the existing evils, and the jerry-builders' lot would cease to be a happy one. Under such a system the local sanitary authorities, which now so often neglect their duties (statutory and implied) would commence a course of action which would possibly warrant their possessing greater powers.

Extended legislation on one or two points would then be justifiable. No builder who was engaged in the erection of buildings within a district controlled by a local board should be eligible as a member of such board. By-laws would be enacted as to the height of rooms, as to hearths (the hearth being part of a floor), and as to the material used to plaster the interior of houses, which is at present frequently kept in its place by successive coats of papering. All these latter items, and others of more or less importance, might be dealt with if Sec. 167 of the Public Health Act of 1875 were amended by allowing sanitary authorities to make by-laws "with respect to new buildings," and leave the Local Government Board, as the confirming body, to determine whether any proposed building regulations were reasonable or not. In this way every part of a new building could be dealt with as far as by-laws can secure this end. The Local Government Board should possess full power of control, because they are answerable to the House of Commons and to the country, and if they are not well advised in any technical matters they can get more competent professional officers. Local governing bodies should be liable to some sort of punishment if they are shown to fail seriously in their duties.

As regards the Acts now regulating building matters, there are in London the Metropolitan Buildings Act, 1855, but this Act, apart from certain regulations as to duties, &c., of adjoining owners, &c., deals almost exclusively with securing stability and the prevention of fires, health matters being, as may be implied from the date, almost entirely lost sight of. A recent Amendment Act, 1879, enables the Metropolitan Board of Works to make by-laws as to, amongst others, foundations and materials for walls. But these are not all important matters, and when it is borne in mind that the Metropolitan Board of Works has no medical or sanitary adviser, and that the by-laws it makes have to be confirmed, not by the Local Government Board, but by the Home Secretary, who also has no medical department, it is surprising that sanitary matters do not form an important part of the Building Acts? In London the vestries, acting under the old Metropolis Local Management Act, 1855, have control over drains

of houses, and this might be sufficient if it were effectually and uniformly applied through competent officers. But vestry surveyors are not ordinarily a very well-informed class of men, and as the Act merely says everything is to be either "sufficient" or "to the satisfaction of the vestry," and does not prescribe definitely what is to be required, it is of little real use.

In the provinces, except where there is a local Building Act, i.e., where the authority is above being advised by the Local Government Board, and is rich enough to get special Parliamentary powers, they obtain by-laws under the 157th section of the Public Health Act, 1875. These may be made by any urban authority, and, with the consent of the Local Government Board, by any rural sanitary authority also. In the latter case it is usual for the by-laws to be applied to certain parts of the rural sanitary district,—parts which are not sufficiently populated to be formed into urban self-governed districts, but in which there is more than ordinary building going on or about to go on. It is, I think, matter for consideration whether the time has not arrived for making most of the ordinary building regulations applicable by Act of Parliament to all new buildings wherever situated.

At present urban authorities may, but are not obliged to, make building by-laws; and if they make them, they need not enforce them. Rural authorities can get power to make building by-laws, but often do not trouble to do so. Hence, in lots of places houses are being built under no local supervision whatever. Hastings and St. Leonards may be mentioned as instances of this. The urban district is, I believe, only about half a mile deep from the sea, and three or four miles long. This area has building regulations, but outside the urban district to the north many new houses are, I believe, being built in the rural districts under no control at all other than that of the owners and builders concerned. At any rate, I am informed that the Hastings Board of Guardians, as the Rural Sanitary Authority, have no building by-laws.

THE COMPETITION FOR THE NEW GOVERNMENT OFFICES.

Sir,—Astonishment is so general at some of the conditions issued to architects from her Majesty's Office of Works, that I should like to make a few remarks upon those not already referred to by your correspondents.

The arbitration clause (23) is so unfair, so one-sided,—I had almost said illegal,—that the result will be nothing less than absurd if it be allowed to stand, and any architect should be so foolish as to work under it.

"Any dispute or question between the architect and the Commissioners shall be referred to an arbitrator to be appointed by the Treasury, who shall have full powers and authority as the Treasury shall think fit to give him, in addition to the ordinary powers of an arbitrator."

There are, of course, two parties to every dispute, yet, in this business, to one alone is given power to select (and, of course, to pay) the judge, to fix excessive authority, and to pronounce a verdict,—custom, societies' impartial rules agreed to for the mutual benefit of the public and the profession, in conference, attended by laymen as well as architects from all parts of the country, to the contrary notwithstanding.

With such a beginning as this, it can scarcely be doubted that the selected architect will surely some day find himself at the Treasury, before the self-constituted tribunal,—a powerless victim of the Office of Works. If it were deliberately intended to exhibit a scandalous parody of justice, this arbitration clause could not have been better worded. Can Mr. Shaw-Lefevre really have pursued it? This arbitrary arbitrator, this paid judge, "shall have such powers and authority as the Treasury shall think fit to give him, in addition to the ordinary powers of an arbitrator." After that "let no dog bark."

I observe that for the second competition the Commissioners will take power "to make such additions or alterations as shall be deemed necessary by them" in new conditions. Well, taken by itself there does not appear to be anything very objectionable in this, but the disagreeable, not to say insulting, terms of all the clauses not of every-day occurrence, render it so.

If the Commissioners have not considered what they want in all its details, they ought to have done so. If they introduce after-thoughts into new conditions it will scarcely be possible that they will not be represented in the "sketches" of some of the first competitors who would then have a wrong inflicted upon them. And these after-thoughts would be the cause of immense extra labour in the final competition, most, if not all, of the architects having to go through the work of entire re-adjustment of their plans so as to include them.

In short, the second competitors would have to set to *ad hoc*. All this would be diametrically opposed to the original object of two fights for one architectural work. Here, then, would be another injustice. Clearly the proper time for including any new ideas of the Commissioners will be when the selected architect is preparing his working drawings.

With the desire, apparently, of inspiring absolute confidence in the eager competitor, the Commissioners are at much pains to adopt the aid of secrecy at every turn in their conditions, but in condition 16, the advantage of this to the competitors appears to be forgotten; for, with all the designs in their possession, they empower themselves to open the envelopes containing the addresses of the competitors. This, too, is in contradiction of No. 4, which provides that no one but the judges and their officers shall see the drawings, and therefore it is obvious that the Commissioners and their officers after distributing the conditions ought to have nothing to do with the business from thenceforth to the announcement of the verdict. To give entire confidence, to do away with even the suspicion of favoritism, they delegate power to others, whom, however, I am sorry to see, by themselves alone. This is a sort of secrecy that will rather surprise the public. If Mr. Lefevre is anxious to secure absolute secrecy, the simple way would be to require no "sealed letters" which the Commissioners may open, but only marks or mottoes on the drawings, the competitors being communicated with by advertisement.

It is, perhaps, worth while to notice No. 19. All architects, I presume, will look upon this clause as not only opposed to custom, but as oppressive and rather insulting. I wonder whether the Right Hon. the First Commissioner, after discussing with some architect all the details for a new villa, would venture to tell him that as soon as he had made the drawings he must forward them, and then send his clerks to make tracings for the use of himself and the judges? I scarcely think that he or any gentleman would descend to this. If questionable in private matter so must it be in a public one. At all events, in a practice of twenty years, duration such a request has never been made to me. It is, of course, quite proper that the Commissioners should have copies of all drawings they desire,—probably excepting large-scale details as useless for future practical purposes,—but they should be made at their, *i.e.*, the national, expense. As it is, the Commissioners propose to throw this additional expense upon the selected architect after taking 5,000*l.* from a usual commission of 5 per cent. on *estimated* *only*, and,—very meanly, I think,—merging the 600*l.*, to be paid to the second competitors, into his already reduced commission. Most assuredly after such a trying and protracted contest, during which three more or less complete sets of designs will have been worked out, the country would not only approve but, made aware of the facts,—demand that the actual winner should be rewarded with the most honourable and liberal treatment. It would be utterly in the extreme to make him alone of the competitors pay the cost of preparing the drawings from which the actually-selected design has been chosen.

It is true that a recent First Commissioner, no rather prided himself on knowing nothing about architecture or anything but politics and economy, and who was a lawyer by profession, decided that an architect's drawings belong to the client, but, nevertheless, the decision was posed to universal and long-established custom,—a factor made much of in legal arguments. As architects, we are employed by our clients to erect buildings for them, most certainly not to make drawings, and it is obvious that under certain circumstances a very unfair might be made of them.

To conclude,—if the above comments are reasonable,—I venture to suggest that some action should be taken by the profes-

sion to request amended conditions before even thinking of embarking in this risky, laborious, and costly competition. Should these be refused, the few who compete will then, at least, have had sufficient further proof of the rocks and shoals ahead of them.

Z.

SIR,—It appears to me that the most unsatisfactory part of the scheme is the constitution of the Board of Examiners, there being but one architect. It strikes me that in the elucidation of intricate planning only professional judgment will be equal to the task, and therefore that the Board should consist of architects only. In lighting corridors, for instance,—a matter of supreme importance,—non-professionals would not do the matter justice. The Government could easily form an efficient Board, taking the architects of the Board of Works and Office of Works with Sir H. A. Hunt; but better still, I think, it would be to make the competitors themselves the judges. Those who have had to carefully study out the intricacies of planning and the general difficulties of the design would assuredly be the best to distinguish merit or expose failure. Favouritism would thus be out of court. Let each competitor have a vote for any design other than his own.

COMPETITOR.

THE PROPOSED MANCHESTER SHIP CANAL.

AN AMENDED SCHEME RESOLVED UPON.

AT the invitation of the provisional committee in connexion with the proposed ship canal to Manchester, a number of the leading merchants of the city, together with members of the Royal Exchange, the City Council, the Salford Town Council, and of the representative bodies of the surrounding district, attended a conference with the committee in the Mayor's Parlour of the Town Hall, on the 28th ult., with the object of considering the best means of promoting the scheme, and with the view of securing legislative sanction for it in the forthcoming session of Parliament. The meeting was presided over by the Mayor of Manchester (Alderman Hopkinson). Mr. Daniel Adamson explained the position of the scheme, and in conjunction with the engineer, Mr. Leader Williams, gave an account of such alterations in the plans as have been rendered necessary by the criticisms passed upon the Bill, and the experience in its passage through various stages in the House of Commons and the House of Lords in the past session. We understand that several important modifications have been made, more particularly in reference to the railway crossings over the proposed canal. The tunnel at Warrington is abandoned altogether. After considerable discussion, a general sanction was given to the scheme as amended. A feeling was expressed in favour of an energetic canvass to raise the necessary funds for a second application to Parliament, and it was decided that a town's meeting should be called in order to fully ascertain the desires of the people in regard to the project.

THE ADVANTAGES OF LOW CEILINGS IN SMALL HOUSES.

MR. JOHN HONEYMAN, of Glasgow, read a paper before the Sanitary Congress held in that city last week, dealing with "the advantages of low ceilings in small houses." He said that as the height of ceilings determined the number of dwellings which it was possible,—within reasonable limits,—to place on any area of ground, it also practically determined the amount of house-rent which could be drawn from such area. A variety of circumstances in each particular case would decide the question whether high or low ceilings would be most profitable; but it might be taken that low ceilings would be more profitable than high ones where ground was dear and the demand for dwellings great. Those who advocated the prohibition of high tenements and low ceilings did so on two grounds:—1st, to prevent over-density of population; and 2nd, because they believed rooms with low ceilings to be unhealthy. But neither of these grounds would bear the weight of evidence against them. The over-density fallacy had been exposed over and over again,—nowhere more conclusively than at the Newcastle Congress,—and the special object of his paper was to prove that, on sanitary grounds,

low ceilings were preferable to high ceilings, especially in small houses. That they were preferable on the grounds of convenience and economy was self-evident; and the statistics of the improved dwellings (in which ceilings were low and stories numerous) showed that with low ceilings a very low death-rate was attainable. But, more particularly, the superiority of low ceilings was made evident by the following considerations:—1st, because by the simple means of ventilation which alone were practicable in artisans' dwellings the necessary removal of the air in every part of a room could be more easily effected with a low than with a high ceiling,—the fresh air could be more completely distributed, and stagnation in any part (which was equivalent to loss of cubic capacity, or worse) more effectually prevented; 2nd, because in a low room the air being more completely distributed would be more equally warmed. More of it, therefore, could be thrown into the room without exposing the occupants to intolerable cold draughts; so that the great hindrance to the admission of fresh air being removed more would be admitted. It would thus appear that in dwellings of the same capacity, but different in height, the lowest would not merely be as good as the highest, but would be superior to it in these important respects,—1st, cheapness; 2nd, extent of floor space; 3rd, warmth; 4th, pureness of atmosphere, and consequent healthfulness; and this being so, legislative restrictions preventing the erection of low ceiled-houses were ill-advised and detrimental to the public interest.

We are not bound to assent.

MUNICH FINE-ART EXHIBITION.

THE illustration in last week's *Builder* indirectly calls attention to the very interesting Fine Art Exhibition at Munich, now soon to close. Should you refer further to this subject the following short notes may be useful. The number of pictures is large,—not far short of 3,000,—and the proportion of fine and good works is unusually large.

Pictures of the German school, including Bavaria, number about 1,500, very many of them of great excellence. The "Death of Virginia," by C. Gebhardt; "Under the Arena," by C. von Piloty; the portraits by Kaulbach; the "Berlin Congress," by A. von Werner; and many others, impress themselves on the recollection; but where many are so good it is only misleading to single out a few. Of Austrian and Hungarian pictures there are about 400.

The French artists contribute about 350 pictures, many of them very good, including an excellent full-length portrait of Liszt, by J. L. Layraud; "Bierre Restaurant, Paris," by J. Berreard, &c.

Spain sends about 300 works, some being large pictures of great merit, as, "Preaching in Seville Cathedral" by A. G. Zimenez; works by F. de Pradilla, Palmerati; and the large and striking picture of King Ramiro II., of Arragon, by T. Cesado.

Belgium contributes about seventy-five pictures, Sweden and Norway and Holland about forty-five each, Russia and Denmark a small number, and Italy about 400, but these latter do not come up to the average excellence of the contributions from other countries. America sends about 300 works, very fairly exemplifying the satisfactory progress art is making on that large continent. For some reason unknown to me, English artists do not seem to have taken an interest in this grand Exhibition. There are, however, a few well-known names in the catalogue,—Alma Tadema, G. H. Boughton, Herkomer, J. D. Linton, N. Macbeth, C. Montalba, Miss Mutrie, J. Holl, W. B. Leader, J. Morgan, and a few more; but their pictures are scattered about, and mixed up with those of other nations, and not collected together, so that English art is practically unrepresented as compared with the efforts made by other nations, which is to be regretted.

Nearly every picture of superior merit and moderate size is marked as sold. It is of the greatest interest to mark the progress made in the different schools of Europe. Comparisons of the kind shown at Munich are highly instructive. It is a long time since we have had such an exhibition in London. Why should not one be promoted forthwith? It would instruct and stimulate our own artists, and, like this exhibition at Munich, would be a great pecuniary success.

JAMES EDMESTON.

AWARDS AT THE GLASGOW SANITARY EXHIBITION.

The awards of the judges appointed to examine the appliances and materials shown in the Burnbank Sanitary Exhibition have been published. Of the fifteen medals awarded, seven have been obtained by Glasgow exhibitors. The following are some of the awards:—

Medals.—Class I. Alex. Dick, London, for delta metal; W. B. Morrison, for Wedgworth tiles; Scottish Asbestos Company, for paints and other protectives. Class II.—R. Reap, Manchester, for dry-earth or ash closets; J. Stewart, sen., Glasgow, for disconnecting traps; W. P. Buchan, for sanitary appliances. Class III.—A. Shaw & Son, for "Sine qua non" cooking-range; J. Keith, London, for "Challenge" hot-water boiler; Walker, Turnbull, & Co., Falkirk, for the artisan cooking-range; Whyte & Bradford, Bo'ness, for cooking-range with revolving fire for the prevention of smoke.

Certificates of Merit.—Class I.—Doulton & Co., London, for silicon treads for steps; Walton & Co., London, for Lincolnshire Walton; Gardner & Co., Glasgow, for parquet flooring; Pennycook Patent Glazing and Engineering Company, Glasgow, for glazing; Maurice Gandy, Liverpool, for cotton machine belting, with steel fasteners; Bradford & Co., Salford, for washing-machines. Class II.—Doulton & Co., Lambeth, for flush-out closets and for Lambeth trough-closet, with automatic flush-tank; British Sanitary Company, for improved self-acting earth-closets; W. P. Buchan, Glasgow, for disconnecting drain-trap, and for grease-trap for kitchen sinks; J. & W. Craig, Kilmarnock, for exhibit of stoneware disconnecting traps; Shanks & Co., Glasgow, for Eureka spray plunging bath; Doulton & Co., London, for anti-percussion high-pressure valves; J. T. Angell, London, for air-tight manhole covers; James Binnie, Cartosh, for exhibit of salt-glazed fireclay sewer-pipes; T. H. Harrison, Liverpool, for iron basket sewage-strainer; C. G. Roberts, Haslemere, Surrey, for automatic rain-water separator; J. Stewart, sen., Glasgow, for disconnecting chamber for house-drains with open stoneware channels; John Stewart, sen., Glasgow, for stoneware pipes with Stanford's joints. Class III.—Doulton & Co., London, for ventilating tile stove; Carron Company, for combined close fire and gas cooking-range; Walker, Turnbull, & Co., Falkirk, for the Simplex cooking-range; Brown & Co., Glasgow, for the "Stott" gas governors; O. Henderson, for alba-cobalt light; H. W. Cooper & Co., for glass revolving and sliding ventilators; C. E. Ellison, Leeds, for ventilators; Hill & Hoy, for their double-current ventilators; C. Kite & Co., for chimney-breast and wall-inlet ventilators; W. B. Leggett, Bradford, for openers for fanlights.

The judges were: Professor W. H. Corfield, M.A., M.D., chairman; Professor F. de Chaumont, M.D., F.R.S.; Dr. Bartlett, F.C.S.; Mr. W. Eassie, C.E., F.L.S., F.G.S.; Mr. Rogers Field, B.A., M. Inst. C.E.; Mr. J. Wallace Peggs, M. Inst. C.E.; Mr. Ernest Turner, F.R.I.B.A.; and Mr. H. Saxon Snell, F.R.I.B.A.

THE SUPPLY OF HYDRAULIC POWER.

This was the subject of a paper read by Mr. E. B. Ellingboe before the Mechanical Science Section of the British Association at Southampton. The object of the paper was to show the advantages of hydraulic transmission of power over large areas, and to give an account of the works already established in London and Hull for the supply of power on this system. The author did not think any one form of power would meet all demands, but hydraulic transmission was one of the most important means of distribution. At present the great natural sources of power, such as the tides, were not available, and whatever system of supply was adopted had to be produced from the combustion of coal. The author then discussed the various systems of transmission available. Compressed air was extravagant, and only suitable where ventilation was needed and in a few special cases. Steam had been tried on an extensive scale in the United States, and had failed there. Gas was a much more important means of distribution, but gas was only fuel laid on, and after being burned in a gas engine some further system of transmission was needed to bring the power to the machines. In perhaps the majority of instances the hydraulic transmission was the most economical method of utilising the power of a gas engine, especially for lifting and other intermittent work. Electricity was even less likely than gas to supersede hydraulic power, and electricity must be produced from some other power, and when produced must be ultimately redistributed

by some other means. Hydraulic power could, however, be economically used to produce electricity for lighting and other purposes. Hydraulic pumping engines were the most economical machines for utilising the power obtained from the combustion of coal at present available. Hydraulic power when obtained in this way could be utilised direct for many purposes in a manner analogous to the production of light by the electric current, or by the burning of a gas jet, —e.g., in an hydraulic ram, lift, or press. When rotary engines were required, the best power to use must be determined by local conditions. Hydraulic power was available for the extinction of fire, either direct or by imparting pressure to the ordinary supply, on the injector system, thus acting as a continuous fire-engine. Hydraulic power was pre-eminently suitable for public supply, because of its economy, the simplicity of the machinery employed, its applicability to the extinction of fires, and the small inconvenience to the public thoroughfare which its supply entails. The author then gave a description of the works in Hull and London, and some statistics showing the economy of the system. The cost to consumers for lifting is from 1s. 2d. to 3s. 4d. per ton lifted 50 ft.; and whereas 500 lifts or cranes if worked by isolated engines would consume 25,000 tons of coal per annum, they could all be worked from one centre, on the hydraulic system, with 2,500 tons. There was the further saving of labour in the same proportion, and other advantages. The author advocated the construction of subways in the main thoroughfares of our cities, in order to facilitate the use of the public streets for the many new purposes which the modern system of supplying the public wants by combination requires.

STAINING WOOD.

SIR,—The art of ebionising soft woods, and of curing the toothache are very much alike! Every one to whom one speaks seems to cherish a pet receipt of his own, and all are declared infallible. My own unfortunate experience, however, is that, whereas there are a hundred different ways of successfully staining wood black, very few things indeed exist, save patience, really good for the facesche!

Here are nine ordinary receipts for ebionising; any of which the reader may find more or less useful:—

1. One gallon of vinegar, $\frac{1}{2}$ lb. of green copperas, $\frac{1}{2}$ lb. of China blue, 2 oz. nut-gall, 2 lb. of extract of logwood. Boil over a slow fire, then add a pint of iron rust. Wash the wood with this.
2. First sponge the wood with a solution of chlorhydrate of aniline in water, to which a little copper chloride has been added. When dry, repeat with a solution of potassium bichromate. Do this two or three times.
3. Boil in four quarts of water 1 lb. of logwood, add a couple of handfuls of walnut shells (or pods). Boil again, and take out the refuse, add a pint of vinegar, and apply boiling. Afterwards, dissolve 1 oz. of green copperas in a quart of boiling water, and apply hot.
4. Boil $\frac{1}{2}$ lb. of chip logwood in two quarts of water, add 1 oz. of pearl-ash, and apply hot. Now, boil $\frac{1}{2}$ lb. of logwood in a couple of quarts of water, as before, and add $\frac{1}{2}$ oz. of verdigris, and $\frac{1}{2}$ oz. of copperas, strain, and put in $\frac{1}{2}$ lb. of rusty steel filings. With this go over the work a second time.
5. Into a quart of boiling water put $\frac{1}{2}$ oz. of copperas and 2 oz. of logwood chips. Lay on hot. When dry, wet the surface again, with a solution formed of 2 oz. of steel filings dissolved in half a pint of vinegar.
6. Wash the wood with a concentrated aqueous solution of acetate of iron of 14° Baumé. Repeat this until a deep black is produced.
7. Brush with a strong decoction of logwood chips several times, then give it a coat of vinegar in which rusty nails have been laid.
8. Make a solution of sulphate of iron, by dissolving 2 oz. of sulphate in a pint of hot water. Paint the wood repeatedly with this. When dry apply a hot decoction of logwood and gall-nuts two or three times. When this has dried also, clean with a wet sponge before polishing.
9. Infuse gall-nuts in vinegar in which rusty nails or steel filings have soaked, and paint the wood with this.

Of course, when the work has become dry again sandpaper down the grain, and get a

smooth face, and as work to be ebionised must be quite free from holes, oil and fill in any of these with powdered drop black mixed in a filler. Then give all a coat of quick-drying varnish, and rub down with finely-pulverised pumice-stone and linseed oil until a good surface is acquired.

You may get a good, wholesome varnish for ebionised work by dissolving black wax in spirits of wine. HARRY HEMS.

WATER SUPPLY.

Oxford.—At a meeting of the Oxford Town Council, on the 10th ult., the Waterworks Committee reported that they had made further progress in carrying out the report of their engineer, Mr. Burstall, and the advice of Mr. Hawksley, both as to the prevention of the waste of water and the construction of the new filter-beds. The consumption of water has been reduced 3,000,000 gallons per week by the measures taken for an inspection of the fittings; and the adoption of the use of meter by the larger consumers. It is hoped that by similar measures a further reduction of water will be effected. Tenders were invited by advertisement for constructing the filter-beds, pure water-tank, engine-house, and other works, according to the plans and specifications prepared by Messrs. Hawksley, on the said report of Mr. Burstall, and eight contractors sent in tenders, of which that of Mr. George Moss, for 8,610l. 19s. and 122l., amounting together to 8,732l. 19s., the lowest, was accepted. The works in the contract will not include the machinery, pipes, and ironwork, for which Messrs. Hawksley are preparing drawings and specifications, nor the fencing of the ground. The report was adopted.

Chester.—On the 12th ult. Mr. Wm. Brown, chairman of the Chester Waterworks Company, met a number of members of the Town Council, and also Mr. I. M. Jones (surveyor), and other officials, at the Upper Works, Canal-side, for the purpose of affording them an inspection of the new filtering-beds and other works in progress, with the view of improving the water supply of the city. The most recent improvements in the works consist of increased filtering power, enabling the company to filter the water much more thoroughly, and placing them in a most favourable position to meet the larger demands made on them owing to the increase of population in Chester. The development now in course of progress necessitated the purchase of a considerable portion of additional land, and about nine acres have been secured, five of which will be reserved in connexion with the works, the remaining four being set apart for building purposes.

Loughborough.—An adjourned meeting of the Loughborough Local Board was held on the 13th ult. to consider a report of the special committee on the water question. It was resolved on the motion of Mr. Paget, that the Board consider it undesirable to spend any more money in considering the Blackbrook scheme, as they believe it to be altogether insufficient unless storage is provided, and such storage would render the scheme much more costly than the Woodbrook scheme. This proposition being passed, the chairman suggested that the Clerk be instructed to write to Mr. De Lisle, the owner of the Blackbrook, who had offered to ask the Board the right of obtaining the water therefrom for the sum of 7,000l., thanking him for the offer, and informing him that the Board could not accept it. It was resolved to adopt the chairman's suggestion, and the Clerk was instructed accordingly. Mr. Cartwright drew attention to the relative costs of the two schemes.—Mr. Robinson stated he could construct a reservoir on the Woodbrook for 21,000l., while Mr. Hodson, in his report, gave his estimate for the construction of a reservoir on the Blackbrook at 13,727l., which, in addition to the cost of the necessary pipe line to the present reservoir (15,000l.), would equal a total cost of 28,727l.—Mr. Paget reported that Mr. Robinson had informed him that the total sum of his charges in respect of the preparation of his report is 119l. (this sum included 38l. for the cost of borings). A long discussion here ensued as to the real wants of the town in respect of water supply. During the conversation, many members expressed the opinion that a reservoir of sufficient capacity to hold 100 million gallons was far larger than the present requirements of the town called for. At the close of the discussion, the fol-

following resolution was passed, on the motion of Mr. Greenwood:—"That the committee be instructed to ascertain from Mr. Robinson whether a reservoir of a smaller capacity, at much less cost, could not be so constructed that it might hereafter be enlarged at a reasonable cost, as the requirements of the town may call for."

Paris.—Some interesting statistics are given in a recent article of the *Journal des Débats* on the water supply of Paris, in which the writer complains of the insufficient quantity allowed for private purposes, while so much is lavished upon the streets, the boulevards, and public service generally. The total supply per head per day of water during 1877 was 185 litres (one litre equals $1\frac{1}{2}$ pint), though at the present time it is only 164; but on the completion of certain works in progress it will again return to the amount of 180 litres for a population of 2,230,928. The daily yield is furnished as follows:—From the stream of the Vanne, 100,000 cubic metres; from the stream of the Dhuis, 21,000 cubic metres; from the stream of the Arcueil, 2,000 cubic metres; from the stream of the Ourcq, 125,000 cubic metres; from the stream of the Seine, 60,000 cubic metres; from the stream of the Marne, 54,000 cubic metres; from artesian wells, 7,000 cubic metres; total, 369,080 cubic metres. (One cubic metre equals 35 cubic feet.) Of this quantity, at least 75 per cent. is used for watering the streets, for the fountains, &c., leaving only 25 per cent. for the supply of houses. The expenditure of water daily is thus given:—For the fountains and flushing the drains, 139,000 cubic metres; watering the streets and squares, 65,000; private consumption, 95,000; public works, 23,000; draw-wells, 9,000; loss and waste, 38,000, making the total of 369,000. While, therefore, the public use of water averages 120 litres per head per day, the private supply is only at the rate of 42 litres. While, too, the city is so well watered at the expense of the personal health and comfort of the inhabitants, it is felt to be a grievance that the inhabitants do not get the best of the water supplied to the city. At least 125,000 cubic metres of excellent and fresh water are received daily, which would be at the rate of 35 litres per head; but a large portion of this is used for the public service, while the majority of inhabitants are supplied from the waters of the canal of Ourcq, which is more or less spoiled by the refuse of the gypsum quarries, or else by the waters of the Seine pumped up at Chailot.

NEW HOSPITALS.

Dewsbury. — The Dewsbury and District General Infirmary, lately completed and opened for the reception of patients, was commenced in the early part of 1880, and is in the Gothic style. The plan of the new edifice may be likened to a shaftless cross, the head being formed of large wards with dispensary beneath, and the arms and centre by the rooms for the administrative staff, special wards, operating-room, &c. The principal front is to the west, the most striking feature being a clock tower, which rises to a height of 90 ft. above the ground. A block from the works of Messrs. Gillett & Co., of Croydon, has been placed in the tower. It is constructed to strike the hours upon a bell weighing $4\frac{1}{2}$ cwt. The visitors' entrance is situated at the principal front of the building, a short flight of steps leading to a doorway which is surmounted by an oriel window with massive moulded corbels and castellated battlement, above it being a group of figures representing "Charity," and over this a canopy in ashlar, flanked on each side by a shield, one bearing the arms of Dewsbury and the other those of Ravenshorpe. Two angular towers, both 75 ft. high, flank the end of the wing containing the large wards. The north front has in its centre a large three-light tracery-headed window, lighting the principal staircase, and filled with stained glass representing Christ healing the sick. The large wards to which reference has already been made run north and south, and are lighted by lofty windows at the sides and at the south end, the upper ward having a balcony outside for the use of patients. All the apartments in the building are lofty, spacious, and well arranged. The flooring of all the rooms is of the best Stettin oak, that of the wards and the departments being polished. The floors of the corridors are of Dennett & Ingle's fire-

proof concrete, lined at the sides with encaustic tiles. In the corridors and throughout the building the plinths are of cement. The dispensary, which is in the basement, comprises surgery, doctors' examination and consulting rooms, with a large apartment in which out-patients will wait for advice and medicine. The patients' entrance is at the south end of the building. Food-lifts run from the large kitchen on the basement story to the lower and upper ward kitchens. The apparatus is the patent of Messrs. Thomas & Sons, of Cardiff, and is incapable of being moved except by means provided for the purpose, and which will be under control from any story. Another hoist, known as "the hydraulic telescopic-ram lift," runs from the basement to the top story, and in it a patient brought in on an ambulance or stretcher can be carried directly to the door of the operating-room or to the upper wards. For cooking purposes water is conveyed direct from the street mains; for bathing, cleansing, and heating it comes from two large tanks in the upper story of the principal tower, and which hold about 3,000 gallons, this quantity of water being always kept in stock, the supply coming from the Dewsbury and Heckmondwike Waterworks. The new building, which has accommodation for fifty in-patients, has been erected at a cost of 17,000*l.*, and of this sum more than 15,000*l.* has been collected and subscribed. The architect (Mr. A. H. Kirk) under whose supervision the whole of the work has been carried out declined to accept any remuneration for his services.

Bolton.—The Borough Fever Hospital, Bolton, has been formally opened. It has been erected on a site in Hulton-lane, Rumworth, by Messrs. J. H. and G. Marsden, builders, from the plans and under the superintendence of the architect, Mr. M. Robinson, many of the details being arranged in accordance with the views of Dr. E. Sergeant, the medical officer of health of the borough.

OBITUARY.

The Rev. George Ayliffe Poole, M.A., author of "The History of Ecclesiastical Architecture in England," &c., died on the 25th ult., at Winwick Rectory, Northamptonshire, aged 74. Mr. Poole was author of several other works, including "Churches, their Structure, &c.," "History and Architecture of Lincoln Cathedral"; "Diocesan History of Peterborough"; "Character of Church Architecture"; &c. Mr. Poole was one of the most active of the early promoters of the revival of Gothic architecture for ecclesiastical purposes.

Mr. Virgos Buckland.—We regret to announce the death of this gentleman, which took place at his town residence in Queen's-Gate-terrace on the 28th ult. About a week previously he underwent a surgical operation, from the effects of which he never recovered. Mr. Buckland was one of the most prominent surveyors in London. He held the position of surveyor to the London and South-Western Railway Company, and he was a member of the Council of the Surveyors' Institution. He was about fifty-nine years of age.

CASES UNDER METROPOLITAN BUILDING ACT.

FLUES AND TIMBER.

At the Guildhall, Charles John Woollard, 85, Hoxton-street, was summoned by Mr. Edmd. Woodthorpe, district surveyor for the northern division of the city of London, before Alderman Lusk, M.P., for executing work by fixing a stove and flue on the premises of No. 45, Barbican, without having given the notice required by Act of Parliament.

Mr. Woodthorpe said Woollard was a gasfitter, who undertook to fix the stove in question, but he placed it against a wooden beam, which might have communicated with other houses and set them on fire. His object was not so much to punish Woollard as to get such a fine inflicted as would prevent others doing the same thing.

Mr. Copley Phillips, who appeared for Woollard, admitted the charge, but said that his client was only a journeyman gasfitter, and knew nothing of the requirements of the district surveyors, or the notices which they were to be served with. He, through a friend, got the job and executed it, but he had no knowledge that he was bound to give any notice.

Mr. Douglas, the chief clerk, read the Act by which the builder was bound to give notice to the district surveyor. Mr. Phillips admitted all that, and further said that Woollard, having undertaken the work, placed himself in the position of builder, but he only appealed for a mitigation of penalty to the minimum on account of the defendant being a very poor man with a large family, and not being acquainted with the law.

Alderman Lusk did not wish to impose a heavy penalty, but an example must be made to deter others. Many offences had taken place, and as nobody knew how they

had occurred they were put down to Fustianism. There had been many serious fires lately, and all through the carelessness of men who undertook to do all that which they understood nothing at all about. Taking into consideration Woollard's poverty, he would only fine him 40*s.* and 20*s.* costs.

PROVINCIAL NEWS.

Bideford.—It has been finally decided to pull down the old market and to build a new one from plans prepared by Mr. J. Chadley, of Newton Abbot, who, in an open competition, was awarded the second place by the referees called in to decide, but who received first premium, and whose designs were accepted by the Town Council. The contractor is Mr. J. H. Foaden, of Ashburton, and the amount of the contract is a trifle under 3,000*l.* The site is in the centre of the town, and to it the streets converge from all directions. The steepness of the ground has necessitated different flats for the front shops, the butchery, and the pannier-market respectively. The new buildings will stand as nearly as possible north, south, east, and west, the front elevation being that towards the east, commanding a view down the steep Bridge-street. Here is to be the main entrance, under a semicircular archway. Into the piers supporting the red brick segment arches of the shop-fronts will be introduced terra-cotta foliage friezes set in moulded panels, the arches themselves having Ham Hill springers and key-stones; in fact, in all the elevations the stonework will be relieved by the use of moulded red and white brick. The fish-market and the corn exchange will each have an area of 38 ft. by 20 ft., and a height of 32 ft. Both will be well lighted on two sides. In the north elevation are entrances to the fish-market, the butchery, and the pannier-market, a covered way, 13 ft. wide, extending through the whole length of the butchery, and having similar means of egress on the opposite side. The pannier-market is covered by five roofs, the gable ends of which constitute this elevation of the building. For the sake of light and ventilation the second and fourth roofs are carried 5 ft. higher than the adjacent roofs on either side, thus permitting of the introduction throughout the whole length of the roofs, and on both sides of each, of a kind of clearstory light, and louvre ventilators. Similar provision has been made on the side adjoining the butchery. The two high roofs have an elevation of 29 ft., while the lower ones are 24 ft. in height. The roofs of this portion of the building are supported on hollow iron columns, which serve also to conduct the roof water to the drains underneath the building. Messrs. Tardrow & Sons, Bideford, have the contract for these iron columns. There are three semicircular iron-framed windows in the western elevation, 17 ft. in height by 6 ft. in width, which will be fitted with rolled glass. The butchery has a breadth of 40 ft., including the covered roadway, through, on each side of which are the butchers' shops, in all twenty-four in number, having each 11 ft. of frontage and a depth of 13 ft. The pavement will be of Marlard brick set on edge, and, for the sake of economy, the butchery is to be covered with corrugated iron. The pannier-market has an area of 10,500 superficial feet, and may be made available for volunteer drills during winter months. The pavement is to be of Marlard brick. The total area of the market will be 21,000 square feet. The work is to be wholly completed by April next.

Kingsbridge (Devon).—At a meeting of the Kingsbridge Feoffees, a few days ago, Mr. John Willis, architect, of Victoria-chambers, Derby, attended and submitted his plans for building and laying out the Rack Parks for building purposes. The Feoffees accepted his general design, and it is intended that eight villa residences shall be built on the present garden-ground adjoining Boxhill Lawn; and as the Feoffees have some building land immediately above, this will be the prelude to opening up these sites for building purposes. Mr. Willis hopes to have the contracts signed before Christmas next.

Stockton.—The new Fire-Brigade Station was opened on the 21st ult. The site of the new building was first occupied as a fire station in 1872, but owing to its dilapidated appearance it has been pulled down, and the present commodious building erected in place of it. Outside the main entrance there is a knob communicating with a continuous alarm-bell placed in the duty-man's dormitory for a

fire-alarm. This bell, when rung, stops a clock in the dormitory, so that the exact time of a call may be taken. On the left-hand side of the passage, on entering by the main entrance, will be found a spacious guard-room, 23 ft. by 18 ft., and a door leads out of the guard-room into the duty-man's dormitory. In the guard-room all the bells and knobs used in signalling with the various places in the town are placed. There is also an electric bell which communicates with the firemen inhabiting the upper part of the building; also two electric bells communicating with the captain and the ostler. The guard-room is well fitted up for the accommodation of the men on duty, and is supplied with a good number of daily and weekly papers, and boxes of dominoes, draughts, &c., for the men's amusement. The duty-man's dormitory is supplied with a large bath, a bed, chairs, &c. Next to it, opening into the passage, is a bedroom for the call-boy. On the right-hand side of the passage a small door opens into the fire-station. The dimensions of the fire-station are 40 ft. by 23 ft., and a fitting-shop behind measures 18 ft. by 12 ft. On the right-hand side of the station is placed an office, 12 ft. by 7 ft., and two store-rooms, 9 ft. by 7 ft. each. Behind the station is a large yard, out of which a staircase runs up to a balcony on the second floor. On this floor and the floor above are four dwelling-houses, well fitted up for the accommodation of four of the five firemen, each containing kitchen, sitting-room, and two bedrooms, and the usual conveniences. The tower is 60 ft. high and 8 ft. square, and is fitted with windows opening at any angle. The building was erected from plans by Mr. Jas. Hall, C.E., the borough surveyor. Mr. W. C. Atkinson was the contractor, and Mr. J. Doherty the clerk of works.

Fenton.—At a special meeting of the Fenton (Staffordshire) Local Board, on the 18th ult., the common seal of the Board was ordered to be affixed to an agreement with the Venerable Archdeacon Sir L. T. Stamer, bart., for the sale and purchase of six acres of land as a site for the proposed new gasworks, the price of the land to be determined by valuation; to an agreement with the North Staffordshire Tramways Company for the sale and purchase of land required for the formation of a road to the gasworks site; and to an agreement with Messrs. Shone & Ault, engineers, Wrexham, for their services as engineers in the design and construction of works for raising sewage by means of ejectors worked with compressed air. A letter was read from the Public Works Loan Commissioners, consenting to the grant of a loan of 20,000l. for the construction of sewerage works. There were eight tenders for the erection of the proposed new gasworks, the highest being 6,731l. 4s. 2d., and the lowest 4,558l. 1s. 8d. The latter, which was the tender of Mr. E. Gibson, of Tunstall, was accepted.

Daybrook (Notts).—Messrs. M. Jacoby & Co., lace manufacturers, are erecting at Daybrook very extensive works, comprising lace factory, dressing-rooms, bleach-works, dye-works, offices, stables, &c. On the 13th ult., the ceremony of laying the corner-stone of the new building was performed by Mrs. J. A. Jacoby. Mr. Herbert Walker is the architect. The buildings are in the vicinity of Daybrook Station of the Great Northern Railway, and are being erected by Mr. Enoch Hind, of Nottingham, under the architect's superintendence.

Plymouth.—Considerable progress has recently been made with the New Pier under the Hoe. The column furthestmost in the sea has now been fixed; and the ironwork is being put into position as fast as it arrives and as the state of the tides and of the sea permits. The total length of the pier will be 527 ft. 6 in. The extreme width of the pier-head is to be 180 ft. Soon the steps of the landing stage will begin to show themselves. This landing-stage will be 500 ft. in length, and will run all round the pier-head and be available at all states of the tide. Finding the timber came too slowly from their contractors at Gloucester, the company made arrangements with Messrs. Fox, Eliott, & Co., of Plymouth, who have supplied a very large quantity. The engineers are Messrs. Dawson & Drake. The cost of the pier, which is to be opened before Christmas, will be about 40,000l.

The Memorial Stone of Mr. Charrington's new Great Assembly Hall in the East-end of London will be laid on Saturday, November 10. The building is to hold 5,000 people.

STAINED GLASS.

Liverpool.—Two stained-glass windows have just been placed in the large dining-room of the hotel at the terminus of the London and North-Western Railway at Lime-street, Liverpool. They are circular-headed openings of considerable size, and illustrate, as central subjects, "The Runcorn Viaduct" and "The High and Low Level Road Cutting." In a wide marginal border round these subjects are portraits of the engineers, Robert and George Stephenson, Watt, Locke, Brindley, and Telford; the intermediate spaces being filled with smaller subjects such as the "Widening of Lime-street Tunnel," "Entrance to Lime-street Station," and "Cutting the Manchester and Liverpool Railway"; intersecting these are groups of the scientific instruments and tools employed in railway road-making. At the base of the window illustrating "The Runcorn Viaduct" is a small subject showing the engine "The Rocket"; and at the base of the other light is "Puffing Billy." The windows were executed by Messrs. Gibbs & Howard, of Charlotte-street, Fitzroy-square, under the superintendence of Mr. W. Hull, of Northampton; and the cartoons were drawn by Mr. Leonard Pownall, an ex-pupil of the firm.

Stonehouse, N.B.—Two memorial windows have just been completed for Stonehouse United Presbyterian Church, by Messrs. Ballantine & Son, Edinburgh. Both are in memory of Dr. John L. Paterson, of Bahia, who died in Brazil at the close of last year. One is the gift of his widow, the other is the gift of his only remaining brother, the pastor of the congregation. In the centre of the one window is a palm tree, the emblem of Brazil as much as of India; a cedar occupies the centre of the other.

Pallion (Sunderland).—A two-light stained-glass window, being a memorial of the late Mr. George Short, a local shipbuilder, has just been erected in Pallion Church, Sunderland. The chief subjects of the illustration are the Building of the Ark and the return of the dove thereto. St. John the Baptist is central in the tracery lights above; the window itself being opposite the font. The treatment of the subjects and adjunctive enrichments is in accordance with the Fourteenth-century Decorated style. The window is from the studio of Messrs. Powell Brothers, of Leeds.

SCHOOL-BUILDING NEWS.

Greenfield (Yorks).—The old school in connexion with St. Mary's Church, Greenfield, having become inadequate to the requirements of the parish, new schools are in course of erection for the accommodation of 340 children, at a total cost of 2,200l. Mr. M. Robinson, of 19, Acresfield, Bolton, is the architect; and Mr. James Bourne and Messrs. Hewkin Bros., both of Greenfield, are the contractors for the stone work and the remainder of the trades respectively.

Bootle.—On the 17th ult. the memorial stones of a new Primitive Methodist Sunday-school buildings, in Queen's-road, Bootle, were laid. The foundation-stone of a new chapel adjoining was laid a short time back by Mr. W. P. Hartley. The designs for the chapel and schools are thirteenth-century Gothic, and the buildings are of brick, with stone frontings. The chapel will seat 400, and the school 300, and the amount of the contract is 2,600l. The builder is Mr. Thomas Bridge, of Burscough, and Messrs. Maxwell, Tuke, & Hurst, of Southport, are the architects.

Miscellanea.

City Land.—It is gratifying to find, after all that has been said about the vacant land on the Thames Embankment, that the Corporation will have made a good thing out of their purchase of some few years ago. The terms of the sale will give the Corporation a profit of something nearer 200,000l. than 100,000l. And besides they have been enabled to provide a site on the Embankment for the City of London School, the cost of which, however, will be more than recouped to them by the sale of the Milk-street site.—*City Press.*

Gas Companies and Smoke Abatement. The Gas Light and Coke Company and the South Metropolitan Gas Company have each sent a contribution of 100l. to the funds of the National Smoke Abatement Institution.

Statue of Sir Francis Drake at Tavistock.—On the 27th ult. the bronze statue of Sir Francis Drake, executed by Mr. Boehm, R.A., for presentation by the Duke of Bedford to the town of Tavistock, was unveiled by the Portreeve, Mr. J. J. Daw. The total height of the memorial is about 23 ft., of which 13 ft. are occupied by the granite work. The erection of the base and pedestal was entrusted by Mr. Boehm to Mr. J. Pethick, of Plymouth, who has also supplied the stone from his quarries near Princetown. Leading up to the statue on each side is a flight of four granite steps, each with a rise of 9 in., giving a total height to the steps all round of 3 ft. The foundations have been sunk to a depth of 6 ft. 6 in., and are well embedded on Portland cement concrete. The granite work is not quite solid, a small cavity having been left right through the erection to the statue itself, and in this hollow concrete has been poured so as to give the granite work firmness. The statue itself is 10 ft. high and weighs nearly two tons. The figure with the accompanying sphere rests on a plinth of the same metal, 4 ft. square and 7 in. deep. The great circumnavigator is represented standing bareheaded in an easy attitude, dressed in the costume worn by persons of rank of the Elizabethan period. An ample sash passes round the Admiral's right shoulder, where it is tied in a large bow. Drake also wears round his neck the chain and badge which it was the custom for persons holding similarly high positions in his time to wear, and the details have been minutely brought out. Drake has on his left side his tremendous sword slung according to the fashion of the time, whilst his left hand rests on his hip. In his right he holds a compass partially open. In the background, slightly to the rear of the right hand, as it hangs, is a globe. The pedestal has three of its sides devoted to sculptural reliefs, depicting scenes in the life of the hero. Mr. P. Rowe, of Tavistock, erected the pedestal and base. The statue was cast at the Thames Ditton Foundry.

Wear and Tear of Highways by the Conveyance of Materials.—At Exeter, last week, Mr. August Krauss, contractor, Colston-road, Bristol, was summoned by the Wotton Highway Board for damaging by extraordinary traffic a road at Christow to the amount of 150l. The facts of the case were that Mr. Krauss was the contractor for the construction of a reservoir in the parish of Christow, for the town of Torquay. In the course of the construction of the reservoir it was found necessary to haul large quantities of clay from a place called Court Farm, a distance of three miles, and as a consequence the roads had been damaged, and the Highway Board had incurred an expenditure of 150l., which they sought to recover. The proceedings were taken under the Highways Act, 1878, section 23, which provided that if any person in consequence of his use of the highways by extraordinary traffic damaged the road, the expense should not be thrown on the ratepayers, but that the person who caused the traffic should repay the same. A Highway Board could recover in a summary manner. Evidence having been given, and the defendant's solicitor (Mr. Inskeep) heard, the Chairman said the majority of the Bench were of opinion that the case was one of extraordinary traffic. As regarded the damage, they might hint that it should be arranged between the parties. The traffic was extraordinary, but not excessive. Mr. Ward (Clerk to the Wotton Highway Board) said he would be quite content if their Worship would suggest a sum to be paid by Mr. Krauss.—The Chairman suggested 50l., and this was agreed to on the understanding that a threatened appeal be abandoned, and that the defendant paid 4l. as costs.

Mr. Stanley G. Bird, President of the National Association of Master Builders, and Major of the St. George's Rifles, has been awarded the medal of the Royal Humane Society for saving life under trying circumstances. On the 7th of August last, two ladies and two gentlemen were in a boat on the Avon, near Stratford, when the barque struck against a submerged stake with such force as to knock a hole in her. She sank in about 15 ft. of rapid water almost immediately, but the occupants managed to clutch hold of some overhanging trees, and cried loudly for help. Major Bird, who was fishing some little distance away, ran to the rescue, and jumping in, succeeded in bringing all four safely to the bank.

The Proposed New Workhouse for the Wandsworth and Clapham Union.

At the meeting of the Wandsworth and Clapham Board of Guardians, on the 27th ult., a letter was read from Mr. Aldwinckle, the architect, stating that in consequence of the requirements of the Local Government Board, he now estimated the cost of the new workhouse at 59,000*l.*, instead of 43,000*l.*, his original estimate. Mr. Plumridge complained that all the guardians had not been supplied with specifications, so that they did not know how the workhouse was proposed to be built. He moved that the acceptance of the tenders be postponed for a month. Mr. Hancock seconded. Mr. Phillips observed that the specification showed that bricks were to be used which would cost 12s. 6d. per 1,000 more than those mentioned in the original estimate. The specification also stipulated that the contractors were to purchase certain materials of certain makers, and they all knew what that meant. Mr. Lambert said they had appointed an architect who had a reputation to maintain, and they made him responsible for everything. The motion for postponement was lost, and the letter ordered to be entered on the minutes. On the following day the Guardians held a special meeting to receive tenders for the building of the new workhouse. Mr. Aldwinckle, the architect, attended, and, at the request of Mr. Lambert, he answered the remarks and questions of the previous day. The increase in the price, from 43,000*l.* to 59,000*l.*, was owing to the requirements of the Local Government Board; the whole building had to be raised. He further stated that it was intended to build the main building of stock bricks, with the exception of red brick bands in the chapel. It was necessary to stipulate that certain materials should be procured from certain firms, as there was a vast difference in the qualities; but he only claimed that the materials should be such as the architect would prove of, and in no way did he wish to revert the builders being as far as possible real. After a discussion, it was agreed that copies of the specification should be sent to each member of the Building Committee. The tenders for the new building were then opened. They were thirty in number, ranging in amount from 72,290*l.*, the highest, to 53,977*l.*, the lowest. It was agreed that the Building Committee should fix a day to decide which tender should be accepted. The list of tenders is given on p. 472 of this number of the *Builder*.

Liabilities of Carriers for Damage to Works of Art.—In the City of London Court, before Mr. E. T. E. Besley, deputy-judge, on the 27th inst., the case of Davies, Turner, & Co. v. The Great Western Railway Company was disposed of. The question at issue was whether consignees of goods were entitled to have an inspection of them before paying the charges necessarily incurred in course of transit. There was a further point, whether carriers, having paid the consignee, as had now become customary in the trade, for the value of the goods, could recover the amount in a court of law. In the present case, a valuable work of art was consigned from Rome to a Mr. Savage, residing in Somersetshire. One of the railway company's clerks was instructed to see the work safely delivered; but it appeared that on arriving at Mr. Savage's residence he allowed at gentleman to at once undo the parcel and examine the contents, when it was found that the fragile material, painted glass, had been broken into fragments in course of transit. Mr. Savage refused to accept delivery, and the attention of the plaintiffs was that the defendant company had been guilty of a breach of duty in allowing an inspection prior to payment of the "paid on" charges, and were bound to pay the loss incurred. Mr. Besley held that the railway company erred only out of politeness, and had slightly stepped beyond its legal duty in allowing an inspection of goods. He would therefore give judgment for the plaintiffs for 3*l.* 10s. 9d., being the actual cost expended by them for charges, &c.

High Awards for Ventilators.—Messrs. Herbert Boyle & Son, of Holborn Viaduct and Regentway, have been adjudged, for their patent acting air-pump ventilator, the first prize, silver medal, by the Mining Institute of Cornwall, at their conference recently held at Truro. The same firm has also been awarded first prize medal at the Cork Exhibition, where their system is used for the ventilation of the Exhibition Buildings.

A New Font of Derbyshire fossil marble, and of large dimensions, has just been erected in the Priory Church, Christchurch, Hants, as a memorial to the late Right Hon. Sir George Rose, M.P. It replaces a modern font of poor character. The new one is founded on the fragments of the ancient Transitional Norman font (preserved in the north choir aisle). As several parts of this were missing the restoration is, to some extent, conjectural. The square bowl is enriched with twelve circular moulded panels, containing sculptured representations of the Nativity, Our Lord disputing with the Doctors, the Institution of the Eucharist, St. Mary Magdalene worshipping, Christ walking on the Sea, the Resurrection, the Ascension, the Crucifixion, the Baptism of our Lord, the Temptation in the Wilderness, the Transfiguration, the Descent of the Holy Ghost. The font is set on a platform approached by three moulded steps, the lower ones octagonal in plan, the upper one in the shape of a cross, well executed in Portland stone. There is a special pedestal for the clergyman, the west side of which has the lily sculptured on a projecting shield. The work was carried out by Messrs. White & Sons, of Vauxhall Bridge-road, under the superintendence of Mr. B. Edmund Ferrey, F.S.A.

University College, Bristol.—This institution aims at the provision of a liberal and scientific education. In the curriculum of work for the coming session there is an increased extension of laboratory instruction. We learn that during the past session the chemical laboratory was very largely attended. The physical and electrical laboratory is now in full operation, and very valuable apparatus has already been procured. Special arrangements are also made for the systematic work of the engineering workshops. The success of the engineering department hitherto has been most encouraging, but the Council, not satisfied with past progress, now afford facilities for the study of architectural drawing, and special arrangements for the supervision of the practical work of students in this department have been made. The medical school, possessing excellent opportunities for clinical practice in the Royal Infirmary and General Hospital, is rapidly growing, and already the necessity for further accommodation has become apparent.

Whitehaven (Cumberland).—The foundation-stone of the new baths, &c., projected by the Whitehaven Baths and Wash-houses Company (Limited), was laid on September 5th, 1883, by the Countess of Lonsdale, and the building is being pushed on by the contractor, Mr. McAdam, of that town. The architect is Mr. T. L. Banks (now Messrs. T. L. Banks & Townsend), of London and Whitehaven. The scheme includes a swimming-bath, 54 ft. 6 in. by 30 ft. 6 in., private baths, a Turkish bath, and large and complete public wash-houses. The upper portion of the premises towards Duke-street will be set off as offices. The contract was let for the sum of 5,665*l.* The engineering contract for heating apparatus, pumping engine, iron roofs, &c., has been entrusted to Messrs. Cockburn, of Glasgow.

A Map of Bournemouth has just been issued by Mr. Garrett, the assistant surveyor to the Bournemouth Commissioners, the execution of the work having been entrusted to Messrs. Waterlow Bros. & Layton, of London. There is thus, on the one hand, a guarantee of accuracy, and, on the other, a certainly excellent practical work. It presents many special features for commendation, and is a worthy enterprise of the assistant surveyor. Mr. E. Offer is the publisher.

Builders' Hardware.—Under the title "The Architects' Illustrated Catalogue of Builders' Hardware" F. W. Reynolds & Co. (Southwark) have issued a trade-book containing engravings of brassfoundry, ironwork, stoves, and so forth, useful for specifying. Prices are attached.

The Vestry Hall of St. James's, Westminster, in Piccadilly, has just undergone complete redecoration, by Messrs. M. & M. Fleming, of 4, Pall Mall-place, from the designs and under the superintendence of Mr. Bernard Dicksee and Mr. Arthur Dicksee, the partners in the firm.

Carlisle.—The new Grammar Schools were opened by the Lord Bishop of the Diocese on the 20th ult. The buildings have been erected from the designs (selected in competition) of Mr. Geo. Dale Oliver, of Carlisle, at a cost of about 12,000*l.*

Report on Non-Poisonous Paints.—The question of poisoning by the use of lead paints is one of such great importance to all classes of the community that the Council of the Sanitary Institute have published a report which was made to them a short time ago by a committee specially appointed to consider the matter, in consequence of circumstances which arose at the Exhibition at Newcastle in 1882. The Committee, which consisted of Prof. W. H. Corfield, M.A., M.D., Mr. H. C. Bartlett, Ph.D., F.C.S., and Mr. Ernest Turner, F.R.I.B.A., report as follows:—

"We have examined three different non-poisonous white paints, and the driers supplied with them, and we have found that, although all the paints are practically free from lead, two out of the three driers supplied with them contain lead in large quantities. The committee would call special attention to this fact; for, although, according to the directions of the makers, the driers should be used in the proportion of only about 7 or 8 per cent., they are in practice mixed with the paint to a very much greater extent, and consequently the paint, when prepared for use with driers containing lead, becomes a poisonous paint. It is, therefore, essential, when using a so-called non-poisonous paint, to carefully ascertain that the driers used, as well as the paint itself, are free from lead. There appears, moreover, no substantial reason for the use of lead driers; for in the only instance in which the paint and driers were both free from lead, the result obtained in the trials made to ascertain the comparative merits of the different paints for decorative purposes was superior to either of the others."

Pulpit, St. John's Whittle-le-Woods.

A new pulpit, executed in Yorkshire stone, by Mr. Miles, of Ulverston, from designs by Mr. T. Harrison Myres (Messrs. Myres, Veevers, & Myres), architect, Preston, has just been presented to St. John's Church, Whittle-le-Woods, near Chorley. The pulpit is octagonal in plan, the upper portion having the panels richly carved; the subjects chosen being, for the centre, the cross and the crown of thorns; the remaining panels are treated alternately with the passion-flower, [vine, &c.], the angle of each panel having a column of Devonshire marble, with moulded cap and base. Ornamental bands of foliage divide the upper and lower stages. The whole is placed on a moulded base.

St. Mark's, Bolton.—A new vicarage is shortly to be built for the parish of St. Mark, Bolton, from designs by Mr. Marshall Robinson, architect, 19, Acersfield, Bolton. The character of the building is to be Early English, and the cost about 2,000*l.*

TENDERS.

For the erection of superstructure to warehouse, Artillery-lane, for Mr. W. J. Bush, Messrs. Hammett & Lambert, architects:—

F. & F. J. Wood	27,783 0 0
Asby Bros.	7,435 0 0
Merritt & Asby	7,337 0 0
Bangs & Co.	7,344 0 0
J. H. Johnson	7,239 0 0
Nightingale	6,963 0 0

For extension of concrete groyne and storm-water outfalls, opposite the Old Steine and East-street, Brighton. Mr. P. C. Lockwood, Borough Surveyor:—

Hudson, Kearsley, & Co., Brighton	216,900 0 0
C. Dickinson, Bermondsey	16,800 0 0
Hill & Co., Westminster	15,950 0 0
J. Marshall, College-road	13,477 0 0
W. J. Botterell, London	13,228 0 0
Cheesman & Co., Brighton	12,980 0 0
J. Harrison, Springfield-road	12,064 0 0

For two villa-residences, Galley Hill, Fleet, Hants. Mr. W. G. Lee, architect:—

Lee & Bon (accepted).

For alterations in sanitary arrangements at the Royal Surrey County Hospital, Guildford. Mr. W. G. Lower, architect:—

J. Knight, Westminster (accepted).

For alterations and addition to coach-house, No. 6, Gloucester-road, Regent's Park:—

J. A. Taylor (accepted).

For repairs and additions to The Bull's Head Tavern, Soho, for Mr. McBride:—

J. A. Taylor (accepted).

For erecting and finishing a pair of villas upon the Abbey-road Estate, Newtown-road, Newbury, for the Rev. W. H. Booth. Mr. James H. Money, architect, the Broadway, Newbury. Quantities supplied by Messrs. Curtis & Sons:—

James	21,481 0 0
Elliott	1,489 0 0
Harrison	1,400 0 0
Elms	1,375 0 0

For twenty-four warehouses and six shops in Aldersgate-street. Mr. T. Lawrie, architect:—

First block of six warehouses:—

Stone (accepted) 25,663 0 0

For new workhouse at Gerratt-lane, for the Guardians of the Poor of the Wandsworth and Clapham Union, Messrs. Wilson, Son, & Aldwinckle, architects, 2, East India Avenue, Leadenhall-street. Quantities by Mr. Clement Dowling:—

Jenkins	272,280	0	0
Stiff (Dover)	67,100	0	0
Lathey Bros.	65,300	0	0
E. Arves & Co.	64,400	0	0
Turtill & Appleton	63,720	0	0
Gibbs & Fiew	63,726	0	0
Lucas & Son	62,500	0	0
Mowlem & Co.	62,436	0	0
Perry & Co.	62,288	0	0
Johnson	62,168	0	0
Martin, Wells & Co.	61,720	0	0
Gabbutt (Liverpool)	60,990	0	0
Chappell	60,880	0	0
Shurmer	60,840	0	0
Booth Bros.	60,710	0	0
Stephens & Bastow	60,450	0	0
Shepherd	59,920	0	0
Parsons	59,745	0	0
Peto Bros.	59,595	0	0
Croaker	59,435	0	0
Greenwood	59,847	0	0
Nightingale	57,872	0	0
Kirk & Randall	57,615	0	0
Wall	57,287	0	0
E. Lawrence & Son	57,184	0	0
Gibbons	57,000	0	0
Jerrard	56,344	0	0
Foster & Dicksee (Rugby)	55,888	0	0
Brown	55,506	0	0
B. N. Smith & Son (Paddington)	53,677	0	0

For erecting new warehouse for Messrs. R. H. & J. Pearson, Uxbridge-street, Notting Hill. Mr. H. Hart, architect. Quantities not supplied:—
D. D. & A. Brown (accepted).

For storage tank, for the Stockton and Middlesbrough Corporations Water Board:—

G. H. Goodhall, Middlesbrough	£18,189	9	10
J. C. Smith, Rotherham	17,506	16	2
McCrea & McFarland, Westminster	17,183	3	6
R. Simpson, Barnsford, near Preston	17,169	15	0
Whitaker Bros., Stockton-on-Tees	16,430	5	9
H. Fotherby & Son, Barnley	16,131	17	5
G. Marshall, Darlington	16,008	12	8
J. Dickson, St. Albans	15,298	4	5
J. T. Dixon, Darlington	15,214	1	4
T. D. Ridley, Middlesbrough	14,945	10	0
Foster & Barry, Radcliffe-on-Trent	14,723	8	0
G. Smith, Newcastle-on-Tyne	14,708	9	10
Kellett & Bentley, Queen Victoria street	13,732	18	10
J. Johnson & Son, Middlesbrough	13,121	19	0
S. & W. Pattinson, Runcington	11,781	4	5

Accepted for residence, Victor-road, Manningham Bradford. Mr. Jas. Ladingham, architect:—
Kerliaw & Co. (masons and bricklayers).
Holmes & Haigh (carpenters and joiners).
R. Hill (plumber).
Hill & Nelson (slaters).
J. Throp (plasterer).
H. Bailey (painter).

For sewerage Myland-road, for the Corporation of Colchester. Mr. M. C. Clegg, Borough Surveyor:—

S. Garwood	£225	0	0
C. Nason	185	0	0
H. Everett & Son	127	10	0
A. Gladwell	120	0	0
G. Bowls	119	7	0
G. Lee	115	0	0
C. H. Oldridge (accepted)	108	0	0

For two cottages for Mr. Botteyville, Colchester:—

A. Gladwell	£42	0	0
A. Chambers	309	15	0
J. Ward	384	0	0
F. Dupont	373	0	0
J. Ambrose	330	5	6
C. Clarke	325	15	0
G. Bowls	325	0	0
C. H. Oldridge (accepted)	319	0	0

For the erection of four shops and premises at West-ham, Kent, for Messrs. Bushell & Wedley. Mr. G. Friend, architect. Quantities by Messrs. Curtis & Sons:—

Constable, Penhurst	£3,100	0	0
Wiltshire, Sevenoaks	3,090	0	0
Ward, Warrington	2,995	0	0
Lucas, Ramsgate	2,965	0	0
Dartnell, Brasted	2,855	0	0
Bourne, Dover	2,775	0	0
Bingham, Headcorn	2,679	0	0

For pulling down and erecting two warehouses on the site of Nos. 4, 5, 6, and 7, Banner-street, St. Luke's, for Mr. Richard Scully. Mr. John Groom, architect. Quantities by Mr. Mark W. King:—

Dove Bros.	£2,130	0	0
Kirk	2,061	0	0
Crabb	1,921	0	0
Footeck	1,875	0	0
Harris	1,860	0	0
J. O. Richardson	1,833	0	0
Stimpson & Co.	1,830	0	0
McCart Bros.	1,837	0	0
Archer	1,820	0	0

For street fire-hydrants, with cast-iron covers, for the Herring Local Board. Mr. Thomas de Courcy Meade, engineer:—

J. Gillespie, 35, Queen Victoria-street	£2	5	0
Per Hydrant.			
Accepted.			

For the erection of auction-room in Cliff-street, Ramsgate, for Messrs. R. G. Dunn & Son, auctioneers. Mr. E. L. Elgar, architect:—

Smith & Son	£1,300	0	0
Newby Bros.	739	0	0
Miller	650	0	0
Martin	645	10	0
White Bros.	595	0	0

For alterations to the premises of Messrs. D. H. Evans & Co., 316, Oxford-street and 1, Chapel-place. Mr. Owen Lewis, architect, 79, Mornington-road, Regent's Park:—
E. Bowden, Kilburn £1,188 0 0
G. Colls, Queen Victoria-street 955 0 0
W. Salter, Lambeth (accepted) 893 0 0
F. Cutlan, Tollington Road 585 5 0

For the erection of a dwelling-house and shop in Cliff-street, Ramsgate, for Mrs. Ann Marriot. Mr. E. L. Elgar, architect:—

Brickwork and Slating only.			
Smith & Sons	£750	0	0
Miller	400	0	0
Martin	333	0	0
Newby Bros.	287	0	0
White Bros.	217	0	0

TO CORRESPONDENTS.

I. A. T. (we decline to give address).—G. S. (ditto).—M. (ditto).—W. H. (too late for drawing to be of any service).—H. W. (if subscription right can be proved by filing may be stopped). J. P. (number our marks).—W. G. L. & J. B. J. & T. T. & R. H. L. B. & T. L. B. & C. & R. J. P. J. B. McC. O. D. O. —H. T. C. R. P. —W. Son & A. —H. M. G. —G. & H. —W. St. C. B. —B. & T. —Templar. —A. K. —P. E. —M. —K. L. E. J. & N. F. —R. H. O. —C. W. —H. R. —L. & L. —H. V. & Son. —T. W. —A. —H. & L. —J. B. & Co. —W. F. J. —J. B. —A. —H. A. G.

Correspondents should address the Editor, and not the Publisher, except in cases of business.

All statements of facts, lists of tenders, &c. must be accompanied by the name and address of the sender, not necessarily for publication.

We are compelled to decline pointing out books and giving addresses.

Note.—The responsibility of signed articles, and papers read at public meetings, rests, of course, with the authors.

CHARGES FOR ADVERTISEMENTS.

SITUATIONS VACANT, PARTNERSHIPS, APPRENTICESHIPS, TRADE AND GENERAL ADVERTISEMENTS.
Six lines (about fifty words) or under 5s. 6d.
Each additional line (about ten words) 6s. 6d.

Terms for Series of Trade Advertisements, also for Special Advertisements on front page, Competitions, Contracts, Sales by Auction, &c. may be obtained on application to the Publisher.

SITUATIONS WANTED.
FOUR lines (about thirty words) or under 2s. 6d.
Each additional line (about ten words) 2s. 6d.

PREPAYMENT IS ABSOLUTELY NECESSARY.
* * * * * Stamps must not be sent, but all small sums should be remitted by Cash in Registered Letter or by Money Order, payable at the Post-office, Covent Garden, W.C. to

DOUGLAS FOULDRINGER, Publisher.

Advertisements for the current week's issue must reach the Office before THREE o'clock p.m. on THURSDAY.
The Publisher cannot be responsible for DRAWINGS, TESTIMONIALS, &c. left at the Office in reply to Advertisements, and strongly recommends that of the latter COPIES ONLY should be sent.

TERMS OF SUBSCRIPTION.

"THE BUILDER" is supplied gratis from the Office to residents in any part of the United Kingdom at the rate of 19s. per annum, PREPAID. Remittances payable to DOUGLAS FOULDRINGER, Publisher, & Catherine-street, W.C.

NOTICE TO ADVERTISERS.

Persons advertising in the *Builder* may have REPLIES ADDRESSED TO THE OFFICE, 46, Catherine-street, Covent-garden, W.C., FREE OF CHARGE.
Letters will be forwarded if addressed envelopes are sent, together with sufficient stamps to cover the postage.

Best Bath Stone.

WESTWOOD GROUND,
Box Ground, Combe Down,
Corsham Down, And Farleigh Down.
RANDELL, SAUNDERS, & CO., Limited,
Corsham, Wilts. [Advt.]

Bath Stone.

Facilities for selection and quality unequalled, having upwards of
350,000 Feet Cube
In Stock of all known descriptions.
PICTOR & SONS, Box, Wilts. [Advt.]

Doubling Freestone and Ham Hill Stone of best quality, in blocks, or prepared ready for fixing. An inspection of the Doubling Quarries is respectfully solicited; and Architects and others are CAUTIONED against inferior stones. Prices, delivered to any part of the United Kingdom, given on application to CHARLES TRASK, Norton-sub-Hamdon, Ilminster, Somerset.—Agent, Mr. E. WILLIAMS, 78, Charlotte-street, Portland-place, W. [Advt.]

Doubling Freestone, Of best quality, supplied from their own Quarries and Kilns by STAPES & HAYES, Stoke, Ilminster, Agent, Mr. H. MITCHELL, 5, Augusta-road, Hammersmith, London, W. [Advt.]
HAM HILL STONE,
BLUE LIAS LIME
(Ground or Lump),

Asphalte.

Soyssal, Patent Metallic Lava, and White Asphaltes.
M. STODART & CO.
Office:
No. 90, Cannon-street, E.C. [Advt.]

Asphalte.—The Seyssal and Metallic Lava Asphalte Company (Mr. H. Glenn), Office, 38, Foultry, E.C.—The best and cheapest materials for damp courses, railway arches, warehouse floors, flat roofs, stables, cow-sheds and milk-rooms, granaries, tun-rooms, and terraces. [Advt.]

Immense quantities of
DRY WAINSCOT,
DRY MAHOGANY,
DRY WALNUT,
in all thicknesses.

B. J. HUDSON & SONS,
Whitfield-st., W., and Great Peter-st., S.W. [Advt.]
London.

MICHELMORE & REAP
Manufacturers of

CHARLES COLLINGE'S PATENT.
COLLINGE'S PATENT HINGES
LEVER, SCREW, & BARREL BOLTS
Self Acting "FALL DOWN" GATE STOPS
and IMPROVED GATE FITTINGS of every Description
36A, BOROUG ROAD
LONDON, S.E.

IRON CISTERNS.

F. BRABY & CO.

LONDON, LIVERPOOL, GLASGOW.
VERY PROMPT SUPPLY.
LARGE STOCK READY.
CYLINDERS FOR HOT-WATER CIRCULATION

Particulars on application.

Chief Office: 360, EUSTON ROAD, LONDON.

The Builder.

Vol. XLV. No. 2123.

SATURDAY, OCTOBER 13, 1893.

ILLUSTRATIONS.

Timber Houses at Hildesheim.....	484
Selected Design for Roofing over the Courtyard of the Royal Exchange (Double-page Engraving).—Mr. Charles Barry, F.S.A., Architect ..	488
House at Stoke, near Coventry (South-West and South-East Views).—Mr. Wm. Hale, Architect ..	488, 493
Dining-Hall, Lays School, Cambridge (Double-page Engraving).—Mr. Robt. Curwen, Architect ..	490, 491
Rebecca: A Statue in Marble, by Girolamo Masini ..	497

CONTENTS.

Babylonian Architecture and Art	473	York Architectural Association	481	The Improvements in Ave Marie-Jane and Warwick-lane	501
Successful Mediocrity	474	The Cornelius Saloon at the Berlin National Gallery	481	Evolution in Art	501
Pitthy Hong Kong	474	The Proposed Completion of Milan Cathedral	481	The New Municipal Buildings for Glasgow: A Procession of Building Trades	501
Education of Body and Mind	476	The Art for Schools Association	481	Building Patent Record	502
The Rights of Insurance Companies against Insured Vendom of Houses	477	Timber Houses at Hildesheim	482	Value of Public House Property in Farringdon-street	502
The Work of the Sanitary Inspector: Association of Public Sanitary Inspectors	477	Covering to the Central Area of the Royal Exchange	482	Sales of Building Estates	502
Sanitation at House and in the East	478	Rebecca: Statue in Marble, by Girolamo Masini	482	Provincial News	503
Art Education and its Application to Trade	478	Rebecca: Statue in Marble, by Girolamo Masini	482	Dark Extensions	503
Rules of Procedure in Public Competitions in Architecture and Engineering Abroad	480	The Evolution of London	489	The Glasgow City Improvement Act and its Effect on the Health of the Inhabitants	503
Bristol and Clifton Junior Architects' Society	481	The Penance Natural History and Antiquarian Society	489	The New Manchester Royal Eye Hospital	503
		The Land Laws	490	Miscellaneous	503
		Art as applied to Textile and Other Manufactures	500		

Babylonian Architecture and Art.

THE city whose ruins M. de Sarzec has uncovered from beneath the mound of Tel-Lo was evidently a great and important centre of Chaldean religious life. Gudea, the ruler whose monuments and inscriptions are so numerous, and who so lavishly endowed and decorated the temples

there, does not claim in any of his inscriptions the title of independent king, but that of Patesi, or Viceroy of the City of Sergulla. This Akkadian title of Patesi is a compound word, meaning "holder of the rod of office," and was conferred upon all local rulers who were responsible to the court of the king. We find this title assumed by the early rulers of Assur, whose brick legends are found in the ruins of the city, at Kileh-Shergat. It was rendered by the Semitic Assyrians by *Issaku*, for *issaku*, literally he "who has kissed," or submitted, referring in all probability to a system of induction into office, such as the kissing of hands now in use. From the inscriptions in the Louvre, and his royal signet seal in the Museum of the Hague, it is evident that Gudea was a near connexion of the royal house of Chaldea, whose court was at Erech, now marked by the neighbouring mounds of Warka. He also combined in his person the offices of viceroy, priest, and architect. In the first of these, his duties were, in all probability, similar to those of the Grecian *protenos*, while his education and descent from the royal line conferred upon him the priestly office. The inscription upon the dress of the statue which represents Gudea in his character of chief architect, also shows his pious devotion to the gods. It reads, "To Nin-Sakh, his king, the statue of Gudea, Viceroy of the City of Sergul, who the holy temple has made. One measure of beer, one measure of food, one half-measure of fruit, and one half-measure of bread, each day the viceroy he has ordered. His petition may Nin-Sakh fulfil; [when] in the temple of Nin-Sakh his prayer he pours out, his prayer may he grant." This statue, which we have already described, is made of green stone, apparently diorite, while a second statue also inscribed with the names and titles of the king, but representing him in civil costume, is of red porphyry. In the long inscription on the statue the king states that he sent ships to the land of Magan to obtain "the hard stone which is in the land of Magan, to make his statues of." The land of Magan is frequently mentioned in the Assyrian and Babylonian inscriptions as being situated to

the south-west of Assyria, and was called the land of the copper and blue stone,—that is the turquoise,—and on this ground most Assyriologists agree in identifying it with the Sinaitic peninsula, the Mafka "turquoise land" of the hieroglyphic inscriptions. The alluvial nature of Babylonia rendered stone a rare material, and so, with the exception of gypsum from the quarries near Mosul, or black basalt, which was brought chiefly from the land of the Hittites, the volcanic regions of North Syria and the Hauran, stone had to be obtained from a distance, and both diorite and porphyry are found in the Jebel Dokhan, the "Mons Phosphorites" of Ptolemy, in lat. 27° 20', a short distance from the Red Sea coast. We find some traces of this early trade route round the Arabian peninsula in the discovery of early Chaldean remains and antiquities on the island of Bahrien, in the Bahrien Sea, off the Arabian coast of the Persian Gulf. In 1879 Captain Durand, R.N., made a short visit to the island, and found it thickly covered with tumuli, which, on being opened, were apparently tombs. Built into the wall of a mosque he found a wedge-shaped black stone, bearing an inscription in very archaic characters, reading,—*"The Palace of Rimngas, servant of the god Inzak, the viceroy."* This indicated that in very early ages the Akkadians had planted a colony on the island over which a viceroy presided, and this colony, probably, was one of the stations on the coasting route to the Red Sea. The early naval enterprise of the Akkadians dwelling on the shores of the Persian Gulf have left their record in legend and inscription. The city from which the Chaldean Noah, Tamzi or Khasisadra, the Zisuthius of the Greeks, came, was called "Suripak," or "the Ship City," while at the mouth of the Euphrates, near Ur, was the city of Ganganati, a ship city also, which was, according to a legend, invaded by ships from the Persian Gulf, in the reign of Gishdubar, or Nimrod. It is possible that we may see in these early navigators the origin of the tradition of the ancient home of the Phoenicians being on the Persian Gulf. This early connexion with the great African power, which must have resulted from the trade with the Red Sea, cannot have been without its effect on Akkadian art, and may account in some measure for the great resemblance which some of the objects from Tel-Lo bear to the works of the first Egyptian dynasties. We know from the earliest Egyptian inscriptions how high an estimate was formed of the profession of architect. The Merket was often a prince of the royal blood, or if not of such exalted origin he was deemed worthy, as in the case of Ti, to marry into the royal family. The discoveries, however, at Tel-Lo reveal another important fact in the prominence, both in Chaldean and Egypt, given to the art of death. We know how the tombs, walls and coffins of the departed Egyptians were decorated with scenes illustrative of that

strange journey of the soul in the under world. So the Chaldeans seem at an early period to have given artistic representation to the story of death. The chief monuments of this class are the statue of the Demon of Death, from Tel-Lo, a curious bronze figure, now in the Louvre, some fragments of a stele, discovered by M. de Sarzec, and a curious bronze funeral tablet, formerly in the possession of M. Pentie, of Beyrout. Coming, as most of these works of art do, from the necropolis of the south, the tombland, for one of the ancient names of the south or south-east point was the "region of the house of death," explorations show that round most of the ancient cities of Chaldean, as at the present time round the wall of modern Oriental cities, were the cemeteries in which the dead were buried. It has long been a moot question among Assyriologists as to the mode in which the ancient inhabitants disposed of their dead, but a sculptured stele discovered by M. de Sarzec at Tel-Lo seems to at last answer this question. Among the monuments recovered are some portions of an ancient stele, or obelisk, on which are represented certain incidents in the life of one of the kings of Sergulla. Three of the portions, however, are of great value, mutilated as they are. In one fragment we have represented the field of battle after the combat, dead bodies are lying about on the ground, and above fly the eagles or vultures ready to devour the slain. This scene we find afterwards frequently repeated in the art of the middle and late Assyrian Empire, as in the sculptures of Assurnazirpal, from Nimroud, and those of Sennacherib, representing the Babylonian wars. The race whose bodies are thus lying about are a short thick-set people, with curly hair, bound with a fillet. In the lower tier we have a most interesting group, representing a funeral scene, in which the dead of the victorious side are being buried. On the field of battle the bodies are heaped up, while men are engaged in carrying baskets of earth to raise a great tumulus over them. This scene reminds us of the Homeric burial on the field of battle, and may account for the numerous small mounds scattered round the walls of the ancient Babylonian cities. This mode of disposal of the dead is referred to in the great Babylonian epic of the Deeds of Gishdubar, or Nimrod, for in the ninth tablet-book of that epic the hero is told to go to the forest land of the pine trees to clear a space, dig, bury, and make a tumulus over his companion, the Satyr Heabami. It is possible, as pointed out by the late George Smith, that cremation was practised among some of the numerous races, who occupied the Tigro-Euphrates valley. A third portion of this stele reveals a curious fact, which explains, in all probability, the emblem of the double-headed eagle, which we find both in Oriental and Occidental art. On one fragment we see the king with his royal tiara, or crown, a high round cap, such as we see on the mound-



ments of Nebuchadnezzar I., and Merodach-Nadin-Akhi, holding in his hand a royal standard of an eagle, with outspread wings. This explains the eagle upon a staff, which appears upon so many of the memorial stones and gems in the British Museum collections. It is clearly the emblem of the victorious tribe, whose warfare we see depicted on the stele. In early records of the kings of Chaldea we find the kings assuming simply the titles of ruler of this or that city, but soon they assume the wider title of rulers of Sumer and Akkad, that is, of the north and south division of the empire. It was probably the dual nature of the empire which gave rise to the double eagle as symbolic of the double empire. This symbol was borrowed from Babylonia by the Hittites, upon whose monuments at Boghas Kouli it occurs. An examination of the treasures from Tel-Lo clearly shows the source of much of the Babylonian influence in the Hittite or pre-Hellenic art of Asia Minor. We have already pointed out that this art showed many traces of Babylonian influence, but few of the conventional art of Assyria. And here we have the characteristic feature of the art remains from Sergul. The sculptured heads and animal forms, especially the former, are free from the stiff canonical conventionalism of the art of the later periods, when under Semitic influence, in which we have a parallel with the early art of Egypt. The wooden statues of the Shuk-el-Bekand, or the Seated Scribe, exhibit a freedom which is entirely obliterated in the works of a later period, and the very freedom which so astonishes us here in these wonderful statues is lost beneath the pressure of stern priestly conventionalism of a later age.

SUCCESSFUL MEDIOCRITY.

"Way do incompetent architects thrive in Paris?" asks a writer in *M. César Daly's* excellent *Revue*, and the question sounds like the echo of a problem which three thousand years ago perplexed the Royal Psalmist. He, too, saw the unworthy "in great power and prosperity, their eyes swelling with fatness; that the people no small advantage," and he was amazed at the sight; he recurs again and again to the puzzling anomaly, and confesses it is too hard for his understanding; and descants on its perplexing strangeness. "Paris," says the French writer, in his brisk, entertaining way, "is the home of mediocrities," and mediocrity in Paris appears to have, on the whole, a very good time of it. A provincial architect must be an architect in something more than name. He must personally direct the builder and his workmen in the details of the operations they perform for him, and he has no one at his elbow on whose assistance he can rely, or whose knowledge can at any moment be made available to supply such an architect's deficiencies. In Paris he is at no such disadvantage. The contractors there are themselves fully educated in all building processes and alive to architectural requirements. There are skilled clerks (draughtsmen) to serve every turn, and always at ready command; and there are measurers (quantity surveyors) always at hand to advise on practical questions and help a lame architect over a stile. And so it happens that in Paris much architectural work falls into the hands of men whose only qualification lies in the possession of that business tact which enables them to secure the commission and organise the forces by which it is carried through.

The necessary attainments for the architect proper are said to be (a), a training in art in order that he may give to the buildings for which he is responsible a suitable and agreeable form; (b) a knowledge of mathematics sufficient for the calculation of the strains to which his structures will be subjected and for providing for them scientifically; and (c) a practical acquaintance with building materials and building operations. To these the writer alludes to add a fourth requisite, more necessary in Paris than all the others, viz., the science of obtaining and managing a client. This is of chief importance: without it the rest are useless, and with it all the others can be "borrowed"—that is, purchased or hired.

But not of Paris only is this true, and not alone in Paris are those to be met who "go about to cozen Fortune, and be honourable without the stamp of merit." If for Paris we

read London the writer's query will be equally pertinent. It is nothing less than astonishing to one who is able to discriminate between good architecture and bad that the success of so much bad work contrive to secure a succession of employment, and that, too, on works of the first importance. We have been using this "breathing time" of the year in making a tour of the metropolis in order to see what is doing, and how it is being done. And our rambles have been, on the whole, attended with the highest gratification. At no time within our memory has there been more original or refined work going on than at present. It would really seem as if we were at last on our way to the evolution of a new style or series of styles adapted to our age and wants: at any rate, it is becoming increasingly difficult to answer the layman's question,—"What is the style of that building?" Our works are beginning to show "style" in its proper sense. We can point to façades in business thoroughfares marked by Greek feeling and refinement without a single ancient feature or a single borrowed detail; and to others which have all the play and fancy of the best Renaissance work, with yet a distinctively home flavour; and again to others which preserve all the picturesqueness and variety of Flemish originals without any of the original irrational puerility. And in all we see a stern regard to the demands of business. It is also quite apparent that the works alluded to are really the productions of the architects whose names are publicly associated therewith. We can trace their hands in each example, and see in each the idiosyncrasies of its author. Just as a painter can assign an author to every picture in an exhibition, so can any one who is conversant with contemporary architecture assign with perfect certainty an author for each of the more noteworthy of the buildings he encounters. And this still can be done notwithstanding the barefaced imitation and purloining of characteristics to which all such work is subjected by followers more flattering than honest.

But, side by side with so much excellent work, there are structures marked by every fault to which architecture is amenable; ill-proportioned, ill-designed, ill-constructed, they meet us at every turn, "blasting their wholesome brothers." These are the works of mediocrity, and they abound. Their authors are the possessors of that fourth requisite in the list of attainments, and to these we would ask permission to address a few words. There are "ghosts" in all professions. It was a maxim of the late Sir H. Cole, and one to which he believed he owed much of his success,—"never to do himself what could be as well done by a deputy." Vicarious architecture is known to exist. An accident disclosed the fact some few years ago in a memorable competition, and its disclosure was attended with circumstances which gave it a pretty wide publicity. The mistake was in the attempt to deny it or explain it away. There is nothing iniquitous in getting that done by another which can be as well done as by yourself, and none in getting another to do that which he can do better than you. The sin is in the concealment or disavowal. An architect has a right to manage the business which his tact obtains in his own way so long as his client is not a sufferer, and it would enhance our respect for his tact if he would delegate the duties in which he is incompetent to those who are really efficient. There are firms framed on this principle, and it is known that the work which goes in their joint names is obtained by the one and designed by the other. But this is where we quarrel with our imperfect architects whose works are a blemish on the art of the age. They cannot design them, and they go to others who are scarcely more efficient than themselves, while they are all the while surrounded by numberless young men who have all the ability the successful man lacks, although unfortunately none of that quality which has brought him success.

The various architectural societies, schools of design, and similar institutions, are calculated to produce clever designers and draughtsmen, but they have no machinery for producing good work of business; and they are generally resorted to by young men who have not that social position which will ensure a remunerative clientele. In looking over the lists of the more popular of these societies, you cannot but be struck by the number of members, or help seeing

the danger of the market being flooded by a crowd of young men whose only qualification is a facile use of the pencil. Their work of this sort is of high average merit; in many instances it is of rare excellence. Indeed, it is notorious that London abounds with clever youths with marked skill in both design and draughtsmanship, who are about as likely to obtain a succession to the throne as an independent architectural practice. *Pouillat le Pouvrier*. There is no excuse for the employment by the merely nominal architect of equally incompetent representatives; it is a misuse of what would be otherwise an allowable exercise of his discretion in the conduct of his affairs, and from being a perfectly innocent arrangement becomes a fraud upon his client.

Either the mere man of business tact is without the faculty of distinguishing between good architecture and bad,—in which case he is an impostor and the public is a sufferer without remedy,—or he allows pecuniary considerations to operate to his clients' disadvantage. Competent aid must be and should be adequately rewarded,—with the proper reward it is always forthcoming,—and when an architect of the class to which the French writer refers builds an inartistic structure it is probably either because he is too ignorant to know good from bad or too parsimonious to pay properly for the ability in which he is deficient. We grudge him his success both ways. But for his *confère* who calls in the best aid obtainable in support of his acknowledged defects,—what can he do more? He is helping along younger men who would do nothing if not encouraged by his patronage. We wish him all the success he deserves. May such mediocrity continue to thrive both in London and in Paris.

FILTHY HONG KONG.

ACTIVE measures are in contemplation, and have, indeed, been actually commenced, with a view to remedy the notoriously insanitary condition of the town of Victoria, in the island of Hong Kong. Last year the Government commissioned Mr. Osbert Chadwick, C.E., the son of the veteran sanitarian, to proceed thither and to report upon the whole subject. The result of his labours has been laid before Parliament in the form of a Blue Book, and supplemented by further details and recommendations. The full report, extending with its appendices to sixty pages, and illustrated by numerous plans, will be read with interest by all who concern themselves with this important subject, and with special interest, and, we may also say with profit, by those who are personally engaged in sanitary work. Our pages have been, from the first, open to the discussion of all questions affecting the health and well-being of the people at large; we have consistently advocated every enlightened measure of sanitary and social progress and reform, and we shall therefore make no apology in proceeding to lay before our readers, with the permission of the author, the substance of his report.

The island of Hong Kong lies at the mouth of the Canton river; its longer axis, running east and west, roughly measures eleven or twelve miles, and its width is about four miles. It is separated from the mainland by a channel which varies from about one-third of a mile at its narrowest part to about three miles at its widest. The island is a granite rock which, rising abruptly, reaches an extreme altitude of 1,825 ft. above the sea-level. The coast line is picturesquely broken into a multitude of small bays and harbours, and the surface of the rock is covered with a thin soil and a scanty herbage. The city of Victoria lies on the north side of the island, along the sweeping line of Victoria Bay, and extends to between three and four miles in length. In width it ranges from a hundred yards to about half a mile. It is founded upon a deep mass of decomposed rock, and its site can only be extended by reclaiming the foreshore in front, or scarping the hard rock in the rear. The result is such a system of close packing of human beings as can, perhaps, nowhere else be found, and of life under conditions which are, happily, rare, if not altogether unique. The population number 130,000 souls.

The Chinaman's house,—like everything that is his,—conforms to a traditional and almost unvarying type. Not wholly so, however, for want of space in Victoria has obliged him to build with upper stories, which he never

does elsewhere. It consists of a rectangular enclosure, 60 ft. by 16 ft. or thereabouts, with a narrow slice cut off at the back about 6 ft. or 7 ft. wide. The lower or ground floor is used as a shop or work-room, and from it a stairway leads to an upper room, which is divided by partitions into cabins or cubicles. Sometimes there is another floor over this, similarly divided, and there is nearly always a cock-loft under the roof. The main apartment is of considerable length, and is lighted only at one end. The slice cut off at the back of the plot is called the "cook-house." In many cases the houses are built back to back, and the cook-house gets what light it can down the opening which is made for the exit of the smoke. The slope of the ground is such that many of the houses have an extra story in front. Except in this sense, basements are unknown. The common bricks used are made at Canton, and are of poor quality. Granite is used for floors and window-dressings, and sometimes for ashlar fronts. The roofs are covered with tiles somewhat resembling the ordinary Italian tiles, and their ends are decorated with porcelain antefixa. The lower floors are sometimes laid with unglazed tiles, and sometimes they consist only of rammed earth. The upper floors are of fir planks laid upon poles for joists, a little flattened top and bottom to receive the floor and ceiling.

The "economy" of a Chinese household is brought before us by the report with startling clearness. The lower floor is used as a shop or work-room, and is occupied during the night as a sleeping-apartment by the master and his assistants; the front next the street being completely closed by tightly-fitting shutters. In each of the "cubicles" on the upper floors a whole family may generally be found; these cubicles are about 10 ft. square. Each floor is leased to a separate tenant, who sub-lets portions of it. We remember in an East-end lodging-house finding that each corner in one of the rooms was let to a separate family, and that there was a single man in the middle,—and really in Hong Kong this seems to be repeated. In one house, not exceptionally crowded, there were five families with a cubical space per inmate of 437 ft. 6 in. In another house, "above the average in point of accommodation," the ground-floor was divided into four cabins, each occupied by a family; the first floor was similarly divided, and occupied by thirteen persons, and the second floor by eleven persons. This system reached its furthest point in some lodging-houses, where 428 persons were found inhabiting eight cottages,—leaving for each inmate only 230 cubic feet of space. Notwithstanding this mass of human beings thus huddled together, "anything in the shape of a privy or ashpit does not exist." There is sometimes a pot, enclosed by a few rough boards, in the cook-house,—that is all. The cook-house itself is used as a kitchen, latrine, urinal, and general refuse-hole; it has frequently no windows and is so dark that you have to feel your way about; its only ventilation is by the "smoke-hole"; and its floor is sodden with accumulations of every kind of filth. In this cheerful apartment, some member of the family not unfrequently sleeps!

In Hong Kong the men are to the women as three to one, and it is fortunately the custom for the men to resort to public latrines. These institutions are farmed by contractors, who find in them a valuable property, and whose interest it is to keep them clean. It has been thought that the Chinese were the inventors of the dry-earth conservancy; but it is not so. They do not use earth to mix with the excreta, but sand; and not for the purpose of deodorising it, but in order to facilitate its collection and removal. It is shipped and sold on the mainland for manure. An excessive admixture of foreign matter is avoided. There are no means of ascertaining the money value of the commodity; but that value must be considerable from the eagerness with which the contracts for its removal are sought.

The women of each household use an earthen pot, which is kept in the living-room awaiting periodical removal by paid coolies. The times of removal vary from once a day amongst the well-to-do, to once a week amongst the poor. The dangers attending such a system are obvious, seeing that decomposition sets in within twenty-four hours of evacuation.

The "drips" and waste, and the numberless and nameless impurities of the cook-house, find their exit by a sink-hole into badly-built and leaky drains, which finally discharge a portion

of their contents into the bay. When the drains are choked, which is no uncommon occurrence, the refuse lies about the cook-house floor, and soaks into the already filth-charged subsoil. The sewers discharge above low-water mark, and the whole foreshore is one fetid swamp.

When the blocks of houses are so built as almost to touch each other, the narrow interval serves as a receptacle for filth of all sorts; and when there is some pretence of draining the houses, such drains cannot be traced beyond a few yards from their source, but are lost in obscurity.

Here, then, are all the elements of disease. The houses of the wealthy are destitute of all the safeguards of modern sanitation. The Chinese poor are overworked, overcrowded, and underfed. Almost all the conditions essential to physical and moral well-being are absent, and they are surrounded by every conceivable incentive to moral and physical disease.

It is not surprising that filth fevers in all their numerous varieties are found; but there are many difficulties in the way of ascertaining the extent of their ravages. The proportion of the sexes before adverted to reduces to an insignificant figure the number of births, and the infant mortality, which swells the ordinary tables, renders them inapplicable as a test. Moreover, the population is, for the most part, migratory and shifting, recruited from the healthiest and most enterprising amongst the dwellers on the main land. Victoria is, in fact, a vast lodging-house. The residents have only one object, and that is to accumulate by labour and thrift sufficient,—and very little is sufficient,—to enable them to return and pass the end of their days in the village of their birth. Hence the deaths due to old age are eliminated, and, speaking broadly, those which do occur are the deaths of men and women in vigorous middle life. The Chinese spend their days in the open air, whatever their lodging may be at night. They work, buy and sell, and conduct all the operations of their vocations which can be so conducted outside their houses. This habit, which is universal, goes far to correct the effects of the poisonous air of their sleeping-rooms. Still, in the face of the imperfections of the registers, occasioned by the unconquerable reticence of the Chinese poor, and their repugnance to having their privacy invaded, and notwithstanding the select nature of the "lives" recorded, the death-rate, which varies in London from 16 to 21 per thousand, is in Victoria from 26 to 30; and the mean age of those who die over 20 in London being 56, that in Hong Kong is only 43.

Mr. Chadwick points out that the settlement is not yet forty years old, that the foundation of the city is an absorbent sponge-like mass which may not yet have become saturated to the pestilence point; but that some terrible scourge is imminent and certain if matters are allowed to remain in their present position. The authorities are showing themselves alive to the meaning of the facts disclosed, and are bestirring themselves accordingly.

The works recommended are divided into (a.) The provision of more air, by the regulation of new buildings, and, where possible, the improvement of the old; (b.) The provision of an abundant supply of pure water; (c.) The effectual and innocuous removal of excreta and other waste.

Under the first head little can, it is feared, be done, owing to the restricted space which the city occupies, and the difficulty of dealing with this part of the subject is as yet unsurmounted even in theory.

An efficient water supply is even now being provided by the new Tytam-took Waterworks, which, with the existing works at Pokfullum, will furnish a daily supply of 2,500,000 gallons, or about 20 gallons per head per diem. In addition to this the waters from the streams and nullas near the town can be utilised for street cleansing and other than domestic uses. In order to check waste, and as the most equitable arrangement, it is proposed to make the payment for water be regulated by meter, and it is thought that this may be effected without reducing imprudently that free use of water which is desirable in all tropical climates. In England the supply of water by meter has not found favour, but it is in use in Vienna, Brussels, Berlin, and the larger German towns, and the system is gaining ground on the Continent.

Mr. Chadwick has drafted a "water ordinance" for the regulation and administration of the water supply, and to this he has

appended, with critical and explanatory notes, the elaborate code of regulations in force in Berlin.

The question of the removal of the excreta is increased in difficulty by the peculiar local conditions of the problem. The dry-earth system is inapplicable because, roughly speaking, there is no earth (*humus*) available. And if there were, that system, as has been so often pointed out, does not satisfactorily provide for the removal of the far greater volume of domestic filth, both solid and liquid. Hence the old objection faces us. In providing for the former the latter is undisturbed, and in dealing with the latter the former may as well be included.

The report is in favour of water-carriage in the abstract. But it would never do to employ the present defective system of sewers, and the matter cannot wait until a complete and comprehensive system of drainage and sewerage is determined upon and carried out. Moreover, with the Chinese, custom is everything, and existing customs must not be rudely interfered with. On the whole, the recommendations run as follow:—

1. The retention, acquisition by the Government, extension, and improvement of the system of public latrines for men's use. These to be thrown open to the public gratis. At present a "cash" is charged each person, or two "cash" if a cigarette, &c., be provided. The provision of public urinals: at present not one exists in the whole city. The provision of better means of emptying and cleansing house-pots. This is now performed in the streets, and if that were forbidden, the already overtaxed "cook-house" would have an addition to its long list of uses.

2. The provision of dust-boxes, to be periodically emptied by public scavengers; and, in suitable positions, a kiln or kilns for the destruction of the refuse.

3. The provision of public markets, which should not, as now, serve as "casual wards."

4. The provision of public baths,—for the Chinese labourer, we are surprised to learn, daily sponges himself all over with warm water when he has the means of doing so.

5. The establishment of public laundries,—a great want.

And, finally, a well-considered and thorough system of main sewers, with an outfall at or near the Sulphur Channel; and a subsidiary scheme of house and street drainage on the most approved modern plan.

The lithographs, which Mr. Chadwick gives with a liberal hand, show methods of drainage adapted to varying local conditions, and suggest improvements in the public latrines adapted to the usages of Asiatics, "who do not and will not use seats."

There is no doubt but that all the elements of plague and pestilence have been gathering about the dwellers in Victoria, and it is a matter of sincere congratulation to the whole civilised world that the warnings which this report conveys have been taken to heart by those whom it concerns.

The impression left upon our mind by a careful perusal of this interesting report is eminently favourable to the Chinese, who appear to have,—with their numerous vices,—some hitherto unsuspected virtues. They are not so obstinately and immovably wedded to usage as one has been led to believe, but are amenable to changes which can be shown to be improvements, and they are intelligent enough to appreciate real reforms. They are industrious, ingenious, frugal, thrifty, and, so far as their opportunities go, cleanly. They have had hard measure meted out to them; but under improved treatment, and in improved circumstances, they would themselves probably show a marked and rapid improvement. They are firmly attached to the strong, yet gentle rule of this country, and it behoves us to retain the loyalty which we have secured; to promote the general good of the infant colony; and to guard it against preventable evil.

The New Theatre at Valparaiso.—In the competition for this theatre, to which reference has been made in these columns, ten architects took part, three from Chili, three from Germany, two from France, and two from Italy. Premiums were obtained by the architects Fehrmann (Chili) and Maillart Norbert. The design of the architect Alfred Schulz, of Berlin, was purchased for 731.

EDUCATION OF BODY AND MIND.

THE progress of science during the past and present years, in so far as it is indicated by the proceedings of the British Association, has rather resembled the quiet and gentle, but widespread, rise of a flood over a broad river valley, than the impetuous course of the torrent that supplied the water as it rushed from its mountain cradle. The change, we apprehend, is partly real, and partly only apparent. In different parts of the scientific field such gigantic steps have been taken within the past few years, that it is far more necessary to secure and make the most of the ground that has been thus gained, than to attempt as yet to use it as a base for further advance. In electricity, in metallurgy, in various branches of applied mechanics, this is certainly the case. The extraordinary activity of the inventive faculty, as applied to the perfection of detail, was well illustrated in the Exhibition of Engineering Appliances at Islington. The proceedings of the assembly at Southport tell the same story. At the same time, it must be remembered that the British Association no longer affords the same exclusive field for the first display of nascent invention that it did in years past. With the increasing specialisation which is the great feature of the day, each branch of science,—almost each department of thought,—has developed its special organ or organs. Men feel that they cannot wait for the chance of a good audience on some day in September to usher their newborn ideas into the world. They have their local theatres of display,—institutions of various sorts; special journals. And where the subject, indeed, is one likely to command public attention (and that quite irrespective of its practicability) the daily press will find room for long,—though sometimes very one-sided,—articles of description. Thus, for very many reasons, the relation between the list of agenda for such meetings as those of the British Association and the real progress of contemporary science is undergoing a steady, and possibly a permanent, change.

Nor do we think that a different opinion will be formed, by those who ponder what was actually brought before the Institution, from that which results from the comparison of the present year's work with that of years now past. More than one paper would,—it seems to us,—have been far more in place if brought before a local or a special audience, than as submitted to the Parliament of Science. It may, indeed, be said that freedom of initiation is a necessary part of freedom of speech, and that to restrict either would be to diminish the source for good of an important engine. And, in fact, we can point to instances in the records of institutions of more limited and special range than the British Association, in which papers have been brought forward only to meet with a tolerably unanimous condemnation. Let us add that such a condemnation, when just, is about the greatest benefit that can result from free and competent discussion. At the same time it may, perhaps, be thought that such a subject as the mode of working slate quarries would be more suitable to a more directly industrial audience, or to form the subject of a book,—(and we have called attention before now to a very good book by Mr. Davis on the subject),—than to bring before a section of the Association. As to this, indeed, it is pretty clear that the meeting thought so too.

The subject which probably was brought forward most successfully of any treated by the Association was that of telephones, by Sir F. Bramwell. This is, indeed, a fact fully in harmony with the views that we have expressed. Rapid as has been the development of this most ready mode of signalling, it is in those minute details on which success so much depends, and not on any new discovery of a theoretic nature, that the day-by-day advance of this youngest-born of science depends. Thus it is rather as a popular lecture, than in any other way, that Sir F. Bramwell's paper was so successful. The writer, in fact, gauged the tone and temper of his audience; and when a man is at once master of his subject, and appreciative of the feelings of those to whom he is to introduce it, he has the first elements of a successful speech.

On one undertone, which was audible not only in one or two, but in many of the most important papers, we think that the country is to be congratulated,—to say nothing of any sense of satisfaction that we may ourselves experience in having been among the first to lay the matter

before the public (see "Education or Stupor," *Builder*, June 16th, 1883). We refer to the views expressed by the most competent men that we are altogether astray in our regulation of compulsory education. This is one of the points in which the unexpected consensus between the more serious organs of the Press and the more eminent contributors to the proceedings of the Association during the present year, is very significant. The high authority of the *Lancet* is here altogether with us. "The brain," says this medical councillor, "of a child of ten or twelve, even under the best conditions, is not usually equal to much in the way of elementary mathematics, of languages other than the every-day tongue, or even of that favourite school study, physiology. In regard to all such subjects there should be no pressure. We do not know that ill-effects in this direction are to be measured by the statistics of brain disease. A child's health may suffer from want of timely play or fresh air without any signs of mental alienation. There is many a stammering child in Board schools. Can any one say whether tuberculosis or meningitis has increased under educational pressure?" We may add to what we have before stated on this subject the testimony of a very able physician to the effect that he has known partial paralysis to be remarkably developed among those more successful scholars who are "run" by the schoolmaster.

As to this vital question, the discussion before the Economic Section on the 26th of September illustrates both sides of the problem. "That each teacher shall adopt a scheme of elementary science in the form, prescribed by the Code, of a progressive course of simple lessons adapted to cultivate habits of exact observation, statement, and reasoning," seems to us a subject for a circular rather than the Board School teachers of Jupiter and Saturn,—if such there be, and if intelligences ascend with outward movement in the planetary scale,—than for those of the England of the nineteenth century. The words of the *Lancet* seem to us wiser than those of the circular. Not that these things are not to be taught; but that they are not to be taught, even to the most competent, by books and lessons. Habits of observation are to be obtained by the country child outside the schoolroom. We doubt whether they will be attained by the urban child within it. And what progress does not the word "statement" anticipate? We are advised to teach the ordinary English child the "distribution of plants and animals and the races of mankind; or light, heat, electricity, and their applications"! What sort of sympathy with the real wants of the nation does such a "standard" betoken? We sympathise with Miss Becker when she speaks warmly in deprecation of "especially the teaching of grammar and the nice distinction between a preposition and an adverb, while the principles which underlie the things of their daily life are altogether ignored." Not that the "distribution of plants and animals" is one of these. In the abandonment of text-books for oral teaching, at Birmingham, we see something of a move in the right direction. But as to the special fitting of the education, as far as it goes, to the probable future of the child, we see less and less; and the more vigorous is the attempt to give a general, and, as far as possible, an encyclopædic education, the less will be the benefit obtained from the teaching and discipline actually employed.

Here, again, the discussion of the Anthropological Section comes in. "From the top of the social scale downwards," said Sir R. W. Rawson, "there is a gradual descent in weight, stature, chest-girth, and all the elements of strength. Therefore, what they had to aim at was to improve the nurture and surroundings of the less favoured classes, so as to bring the lowest up to the condition which all might reach, if they have the means." Truly so, but this is not to be done at the risk of cerebral disturbance, meningitis, and facial paralysis. "The height of artisans in towns," writes Mr. J. P. Harrison, "is 66.51 in. between the ages of twenty-five and thirty-five, while that of country labourers of the same age is 67.53, the difference being only a little over an inch." Only! and that in presumably the worse fed and more neglected class! But what does this inch mean? Not one sixty-sixth, or three-quarters per cent. difference, but the difference between the cubes of these numbers; that is to say, one-fourteenth, or seven per cent. Is this nothing? But let any one who would study this subject

take the simple rules of the Greek Anthropometry (see *Edinburgh Review*, No. 285, The Canon of Beauty in Greek Art). Let him take one test, the proportion between the height and the chest girth. In the truly proportioned form the chest girth is equal to four-sevenths of the height; how often is that attained among us?

Again, in Sir R. Rawson's paper it is stated that "boys at the age of fourteen are nearly 7 in. shorter of stature and 2½ lb. lighter in weight," on the average of the children of the poorest, as compared with those of the richest classes. The height of the ordinary well-grown German boy at fourteen, according to carefully-compiled German statistics, is about 92 per cent. of his full height at maturity. Taking Sir R. Rawson's average height for the Saxony counties,—Sussex, Berks, and Oxfordshire,—which is 67.22 in., the height at fourteen years of age ought to be 61.84 in. Reduce this by seven, or to 54.84 in., and then compare the cubes of these numbers. Leaving out decimals, they are as 23 to 16. What does this tell us of the stunting effect of the want of the proper conditions of healthy growth during the first fourteen years, in which the physical structure of the future man is so far sketched out, and the measure of his strength and capacity is lined out? And it is on the class thus heavily weighted in the competition of the battle of life that the additional pressure of an intellectual training, for which there is no hereditary aptitude, and for which there is no intelligent demand, is now imposed. Does it not seem as if,—with the best intentions, no doubt,—our school-boards and their counsellors were sometimes working in exactly the wrong direction? To perfect the *mens sana in corpore sano* is one definition of the true aim of education. What we do for the body we can measure and we can weigh, year by year; and the study of anthropometry has thus a high political value, in the true sense of the word. What we are doing for the mind we can only guess. We attempt to probe it by examinations, but that is something like drawing physiological conclusions from vivisections. Not only are examinations deficient utterly in one of the most important of all points,—that of testing either the permanence of educational effects or the use which the child can make of what he can remember till he is examined, if no longer; but supposing that they do measure the amount of definite cram mastered by the child, the question of what use it will be to his future career remains entirely untouched. Thus we see, on the one hand, the conditions which plainly and unmistakably improve the body; on the other, those which questionably may improve the mind at the expense, as experts tell us, of the body. Can there be any doubt which set of conditions must be regarded by a statesman as the most useful to improve? Or should there be any hesitation in admitting the assertion that, before imposing on the peasant child an educational pressure which has been found to need careful supervision to prevent its aggravating the imperfections of his already stunted physique, the *cui bono* should be fully made clear? Ill would it become us to undervalue education as the great pioneer of civilisation and of scientific progress. But the question of what is the proper mode of educating special classes or special individuals for that position in life of which they can most naturally, and therefore most efficiently, discharge the duties, is one that appears to us to have been almost wholly left out of sight in the organisation of the compulsory education of the last decade. So much so, indeed, that in the opinion of competent judges,—we withhold our own,—more harm than good is in many instances very often effected, at enormous cost.

London International Exhibition, 1884.

We understand that Mr. G. C. Levey, C.M.G., the Executive Commissioner representing the directors of the Crystal Palace Company, visited the Cork Exhibition last week for the purpose of arranging an Irish Court at the forthcoming exhibition. Mr. Levey was introduced to the Cork Executive Committee by Mr. O'Sullivan, M.P., and his mission is warmly approved of by Sir George Colthurst, Dr. O'Sullivan, and Mr. L. A. Bealish, who promised to render Mr. Levey every assistance in their power in forming an Irish Court at the Crystal Palace Exhibition, thoroughly representative of Irish manufactures.

THE RIGHTS OF INSURANCE COMPANIES AGAINST INSURED VENDORS OF HOUSES.

In the course of last year, Mr. Justice Chitty delivered a judgment in the case of *Castellani v. Preston*, which laid down a most important rule in regard to the insurance of houses. The facts were so short and simple that, though we mentioned them in a previous article, it may be well to state them again. The vendors of a house and land insured it with the Liverpool, London, and Globe Insurance Company. Between the time of making the contract of sale and the completion of the sale the house was burned down, and the vendors were paid a sum in respect of the insurance by the company, and subsequently the purchasers paid the full price for what may be called the damaged property. Naturally, when the company discovered that the vendors had been, in fact, not in any way injured by the fire, they sought to recover back from the vendors the sum which the latter had received, and it was this sum which Mr. Justice Chitty held that they could not recover. As we pointed out at the time, this judgment, though most elaborate and most lengthy, was, in our opinion, wrong; for it was obviously contrary to all accepted principles of the contract of insurance that a person should actually benefit by a calamity, when the intention of the insurance was simply to indemnify persons interested against the results of the mishap. As we anticipated, the Court of Appeal has now reversed the judgment of Mr. Justice Chitty, and in doing so has laid down a rule which is as plain as it is important. "I hold," said the Master of the Rolls (Sir Bailiol Brett), "that if a right of action in the assured has been satisfied, and the loss has been thereby diminished, then it would be contrary to the doctrine of subrogation to say that the loss is not to be diminished, as between the assured and the insurer, by reason of the satisfaction of that right"; and again in the last part of his judgment the same Judge says, "According to the true principles of insurance law, and in order to carry out the fundamental doctrine, namely, that the assured can recover a full indemnity, but shall never recover more, it is necessary that the plaintiff in this case should succeed." As Lord Justice Bowen says, the principle to be looked to as a guide, "the inflexible rule," he calls it, is "that a man can only be indemnified to the extent of his loss," and *a fortiori* if a man has lost nothing, and is paid by insurers, under the impression that he has lost something, then they may recover it back from him; for if he retains it it would be a violation of the fundamental principle of insurance law. "Suppose," says Lord Justice Bowen, "that only 50*l.* remained to be paid of the purchase-money, and that a house had been burned down to the value of 10,000*l.*, would it be in accordance with any principle of indemnity that persons who were only interested and could only be interested to the extent of 50*l.* could recover 10,000*l.*? They would be getting a windfall by the fire; their contract of insurance would not be a contract against loss; it would be a speculation for gain. Then what is the principle which must be applied? It is a corollary of the great law of indemnity, and is to the following effect: that a person who wishes to recover for, and is paid by, the insurers as for a total loss cannot take with both hands. If he has a means of diminishing the loss, the result of the use of these means belongs to the assured. If he does diminish the loss he must account for the diminution to the assurers." These extracts will make the principle upon which the judgment of the Court of Appeal is based clear to every layman, and will show the broad and simple grounds on which the judgment of Mr. Justice Chitty was reversed. This judgment of the Court of Appeal brings out conspicuously the fundamental rule which must be looked to in all these questions of insurance, and it likewise lays down a particular rule when the general principle comes to be applied to the particular facts of the case. It shows that vendors of house property cannot make a gain of the loss of their property by fire after a contract of sale has been signed, but, on the other hand, it shows that the purchaser has no right to the insurance money. He is, in fact, the only person who suffers, for he is bound to pay the full value of the property, and is consequently in the position of the insurer. It

becomes still more obvious, therefore, as we pointed out in our previous remarks, that the purchaser of house property should do one of two things. He should either stipulate that after the contract of sale is signed, and before the conveyance is completed, he shall have the benefit of the vendor's policy, or else he should at once insure the property himself and so guard against loss. If he does not do this he is certain to be a sufferer in case of loss by fire, whilst the vendor and his insurer are untouched by the particular accident.

THE WORK OF THE SANITARY INSPECTOR.

ASSOCIATION OF PUBLIC SANITARY INSPECTORS.*

THE inaugural address of the Chairman of this Association, Mr. G. B. Jerram, of Walthamstow, was delivered on Saturday evening last at the Holborn Town-hall, when there was a good attendance of members.

Mr. Jerram, in commencing his address, referred to the fact that when the members of the Association last met there was much excitement as to the apprehended visitation of cholera to this country. The scare had in some degree roused local authorities from their usual lethargic state, and medical and sanitary officers and surveyors had been enabled to get improvements made and necessary sanitary works executed. So far the scare had done good, but it was to be feared that now the alarm was subsiding the local authorities would once more sink into the slough of red tape and inactivity, and nothing further would be done in the way of sanitary improvement until the next alarm of an approaching epidemic. It was, however, satisfactory to note the increased interest which the public were now taking in sanitary matters,—a circumstance due in great measure to the efforts of such sanitary reformers as Mr. Edwin Chadwick and Dr. Richardson, to the holding of health conferences, and to the information that had been spread by members of the Sanitary Institute, Parkes Museum of Hygiene, and other kindred societies. No amount of sanitary inspection would be effectual until the public generally were conversant with the general laws of health, and until they were alive to the fact that it was the duty of each individual to take those measures which would conduce not only to the health of himself and his family, but to the protection and safety of the community in which he lived. During the past few months, many local authorities had taken more than usually vigorous steps to ascertain the sanitary condition of their districts, and in a great number of places it had been found necessary to engage additional inspectors to assist the permanent staff in their duties. This fact alone served to show that at the present time effectual sanitary inspection is rather the exception than the rule. The public would be interested in knowing something as to the qualifications and duties of the men engaged in this important work. It was to be feared that in many cases men had been appointed who were quite ignorant of their duties, for it was too often assumed by the local authorities that any man who was reasonably steady and bore an ordinarily good character, without possessing any special qualifications, would do to "inspect nuisances." He therefore proposed to lay before the meeting what he deemed to be the work of the sanitary inspector, and to inquire whether that work was done. The growth of public opinion and knowledge on sanitary subjects was well illustrated by the progress of legislation. As early as the tenth year of the reign of our present Queen, a Public Health Act was passed, which was renewed in the year 1848. The Nuisances Removal and Diseases Prevention Act of 1855 was, however, the basis of the present laws under which sanitary inspectors worked. In the same year the Metropolitan Local Management Act became law. In this Act the water-closet is mentioned for the first time, it being provided that such shall be furnished with a suitable water supply and water-supply apparatus, &c. In 1866 the Acts were further amended, and the word "nuisance" is defined as comprising any house or parts of a house so overcrowded as to be dangerous or prejudicial to the health of the inmates; any factory, workshop, or workplace not included in any general

* We have already given particulars of the formation of this society. See *Builder*, vol. xlv., p. 829, and current volume, p. 163.

Act for the purpose that is unclean or not ventilated in such a manner as to render harmless, as far as practicable, any gases, vapours, dust, or other impurities generated in the course of the work carried on therein, or so overcrowded as to prejudice the health of the inmates; also any fireplace or chimney that does not as far as practicable consume its own smoke. In this Act power was also given to disinfect houses, clothing, &c., showing another advance in sanitary legislation, recognising as it did the importance of isolation and disinfection for preventing the spread of contagious diseases. In the year 1875, sanction was given to an Act of Parliament by which the law relating to public health and local government was put into a simple and comprehensive form, although the metropolis is not affected by the provisions of the Act. The Local Government Board had since very clearly defined the duties of an inspector of nuisances, in a circular sent to the local boards in 1880; and an important provision was made in the Public Health Act of 1875 that the Government would pay half the salaries of the Medical Officer of Health and the Inspector of Nuisances, provided that the appointment and qualifications of the officers were approved of by them. It was satisfactory to note in this connexion that in the regulation as to tenure of office it was provided that should the sanitary authority suspend any officer, the cause of such suspension shall be reported to the Local Government Board, and that if the Local Government Board remove the suspension of such officer by the sanitary authority, he shall forthwith resume the performance of his duties. In the present day, sanitary inspectors had much more to do, and much more was required of them, than in times past. For instance, the abolition of cesspools and privies had rendered the construction of sewers a necessity, but serious danger arose from the presence in the sewers and drains of foul gas. Not that there was any necessity, in the nature of things, for the presence of sewer gas in sewers, for its formation could easily be prevented; indeed, its presence was indicative of something wrong in the construction or care of the sewers. The presence of sewer gas in the sewers and house-drains was sure to make itself felt in a greater or less degree in the houses of the vicinity, as it would find entrance thereto through imperfectly constructed water-closets, sinks, baths, lavatories, &c. When sickness was rife the sanitary inspector should be able to say whether it arose from the admission of sewer air through any such appliances. With regard to water, its storage in cisterns was to be condemned, especially where the overflow-pipe was taken direct into the drain or sewer. It did not reflect much credit on the government of this great metropolis that, owing to the vested interests of large companies, a supply of pure water was not available for every one at all times. We heard much of benevolence, and certainly Hugh Myddelton of old time shamed our modern philanthropists by his grand enterprise of bringing water to London by means of the New River. He (Mr. Jerram) had often wondered why some of our millionaires had not thought of the fame they would gain in this and future generations by undertaking to procure for our cities and towns a free supply of pure water. He read only the other day of a gentleman offering a million of money, at a small rate of interest, in order to promote tramways in Ireland so as to develop the resources of that unfortunate country. Was it, then, too much to ask that our rich philanthropists should come forward at this juncture and procure and supply to the inhabitants of the Metropolis that which the Almighty had provided in such abundance, but which, through the greed and avarice of man, was so difficult to obtain, viz., a constant and free supply of pure water? One of the most important parts of a sanitary inspector's work was the periodical inspection of every dwelling-house. It had been enacted in all the sanitary laws that there should be from time to time a periodical inspection of each district, and it was the duty of each inspector to make that inspection,—not to wait for complaints, but to search out and check any evils that might be injurious to health, because if they waited for complaints, little would be done, the mass of the inhabitants of the country not knowing the effects of those sanitary defects. But was this part of the sanitary inspector's duty always done? Were they not continually seeing in the papers

accounts of over-crowding and of fever dens? It was stated at the meeting of the Sanitary Institute at Glasgow last week that one gentleman had inspected 1,000 houses, in only three of which were the drainage arrangements perfect. The various sanitary insurance companies starting up in different parts of the country,—what were they but an evidence that the work of sanitary inspection was not being done as it ought to be done? No doubt it would be said that it was impossible to inspect every house in each district yearly, owing to the limited number of inspectors employed. There was, no doubt, some truth in that, as he found that in some districts one man had to inspect about 6,000 houses. He believed it would conduce much to the efficiency of the work of the inspectors in the London district if they were to make their reports direct to the sanitary authority, and not to the medical officer of health. That was done in places under the Public Health Act, and worked very satisfactorily. The sanitary inspector, according to the law, was an independent officer, and although he had to act in conjunction with the medical officer of health, he should be able to make his own report as to the sanitary condition of his district. Another reason why the work of the sanitary inspector was not done as it should be was owing to the restrictions put on the inspector by the sanitary authorities, who did not like to see the inspectors making themselves too active. The very constitution of a sanitary authority was often a bar to the work being efficiently done, as not infrequently there were members who owned property, and who did not want to spend money on it. Very often the sanitary inspector got into trouble by wanting to do his duty conscientiously, and unless he was in a position to be independent he was not always able to point out defects as freely as could be desired. It might be thought by some that the law was not strong enough in all cases, but he was inclined to believe that the statutory definitions of the word "nuisance" were sufficiently elastic to meet all cases. It had been stated that another reason why sanitary inspection was not perfect was the incapability of the men employed, who were alleged to be deficient in the special knowledge required for the work. It could not be denied that in some cases that was so; but what special knowledge could be expected for 25s. per week,—less than the wages of an ordinary mechanic? No inducement, in the way of making his office permanent, was held out to the inspector to make himself efficient by attending lectures and reading books, and posting himself up in new discoveries in sanitary science. If such inducement were held out, better educated men would come forward to fill the office. It would, no doubt, tend to promote efficiency if no one could be appointed a sanitary inspector unless he held a certificate of competency, provided the examination were made a real test; but he for one could not believe that the answering of some half a dozen questions asked by members of a voluntary association was any test of a man's qualifications. He was, however, glad to see that the Lords of the Committee of Council on Education had consented to add the Science of Hygiene to the subjects in which aid will be afforded by the Science and Art Department. The list of subjects comprises much that should be known by a sanitary inspector. The office of sanitary inspector was a very delicate one, as he had to trespass on property and to break through the old adage that every Englishman's house is his castle. Courtesy and tact must be displayed by him if he would get his requirements carried out. It was not always a test of an officer's efficiency to look at the number of persons whom he has had to proceed against by summons. In conclusion, Mr. Jerram pointed out that the calling of the sanitary inspector was a noble one, though it was unobtrusive. Though they might not be known, and might not get medals for their work, yet the work itself was and would be its own reward.

In the discussion which followed, Mr. Boulter (Bexley) expressed regret that Mr. Jerram, after making mention of Mr. Edwin Chadwick as one of the pioneers of modern sanitary science, had put in the second place the name of a gentleman who took up the promotion of sanitary reform a long time after a gentleman whom they all knew and respected,—the able editor of the *Builder*, Mr. George Godwin. Mr. Godwin years ago did most valuable service in exposing the condition of the London slums, one of the worst of which was

hard by where they were then meeting. He (the speaker) knew those courts and alleys well, and was able to confirm everything that Mr. Godwin said of them in his paper. Happily, the matter was taken up, and an association, of which Lord Shaftesbury was chairman, was established for the purpose of remodelling and rendering decently habitable some of the wretched abodes which abounded in the locality.

The discussion was continued by Mr. Rees (Guildford), Mr. Byrne (Windsor), Mr. Buckworth (St. Saviour's, Southwark), Mr. Poulson (Tottenham), Mr. Sherborne (Chelsea), Mr. Fisher (Camberwell), Mr. Lewis (Port of London), and Mr. Stace (Limehouse). Nearly all the speakers laid great stress on the importance of their being placed in such a position as regarded tenure of office that they might be able to do their duty efficiently and fearlessly without running the risk of losing their appointments merely because they were efficient. Most of them pronounced in favour of the compulsory notification of infectious diseases, Mr. Lewis remarking that in Holland not only was it compulsory for cases of such diseases to be notified to the local officials, but the passers-by and neighbours were warned by there being affixed over the doors of the houses where such cases existed, boards inscribed "*In this house there is Small-pox*," or measles, or whatever the disease might be.

A vote of thanks having been tendered to the chairman for his address, it was announced that the next meeting of the Association would be held on November 3rd, at the Parkes Museum, when a paper on "The Position of the Sanitary Inspector" will be read by Mr. S. P. Skipworth, of Caistor.

SANITATION AT HOME AND IN THE EAST.

SIR RICHARD TEMPLE, G.C.S.I., in his address as President of the Huddersfield Congress of the Social Science Association, said,—The area of this empire, at home and abroad, nearly eight millions of square miles, may fail to convey a definite idea; but the total of the population is instantly suggestive, as it amounts to 315,000,000 souls. This population, too, is increasing at the rate of 2,500,000 annually; in other words, by 25,000,000 every decade, or 50,000,000 in every twenty years. The total revenue amounts to 165,000,000l. sterling yearly, and the external commerce of the United Kingdom, with all its colonies or dependencies together, to nearly 1,000,000,000l. sterling in annual value. These facts show the empire to be the greatest and richest that the world has ever seen. It may also prove to be nearly the most numerously peopled empire as well; at all events, the number of its people is enormous. Out of that population, about 35,000,000, equal to one-tenth, are in the United Kingdom, and therefore fall directly under the influence of social science, as we, subject to correction, understand the term. The remainder are either colonies who, though giant offspring, may yet look to the mother country for some guiding example; or else alien though loyal races, whom the British Sovereign has taken under parental protection in three out of the four quarters of the globe. From our point of view, then, each one at home who succeeds in improving, or neglects to improve, himself, will influence, for progress or for stagnation, nine other persons his fellow-subjects abroad; every result which we realise in the United Kingdom may be ultimately multiplied nine times in the foreign empire; and if we were to be nationally listless or inefficient here, then a similar listlessness and inefficiency would settle there among vast nationalities in scattered regions. Surely this consideration will help us to gauge the weight of our responsibilities under Providence, the grandeur of our opportunities on behalf of ourselves, as forming a mighty nation, and for the sake of other nations also that are politically connected with us. Besides those colonies that are of our own flesh and blood, and for whom we feel as for ourselves, there are the almost countless tribes among whom the poorest, the most abject, has a bodily frame to be sustained, a mind to be enlightened, and a spirit to be moved. Thus regarded, the sphere of our study is indefinitely widened, and the magnitude of its scope becomes enlarged to an extent almost indescribable. The aim of our study (by whatsoever name it should be called) is to render mankind not only prosperous materially, but also happy and wise, as individuals and as

members of an organised community. Though we may have faith that there is a light that can irradiate even the darkest prison-house, still for the most part we know that happiness and wisdom cannot be attained without a reasonable degree of physical comfort. It is practically vain to inculcate morality upon those who are huddled together in squalid tenements. It is impossible to obtain proficiency from half-famished scholars whose brain-power is enfeebled by hunger. The standard of physical comfort, then, has always been kept before the student's mind, and may constitute the primary division of my address. Herein the foremost topic has been the improvement of dwellings. For this object something is being attempted at home, though we are saddened by the thought of how much remains to be done. Now, in India or in Egypt the self-same need presents itself to philanthropists. Amidst the villages the peasants pen up the cattle inside the dwelling-houses. Amidst the largest cities the artisans are crowded together in the compartments of houses many stories high, wherein, to all the miseries which exist in these cool latitudes, there are added the heat and malaria of the tropics. The dwellings of the poorest close to the centres of civilisation, both in the East and the West, often exemplify terribly the Eastern proverb, that the darkness is deepest right underneath the candle. In the colonies, again, we hear that while the settler dwells in the comparative discomfort of draughty huts, with chimneys that admit the outer air, he remains healthy. But when the squatter population begins to congregate into villages and cottages of another sort are built, then typhus and zymotic disease appear. Again, the quality of food-supply is a matter with which our studies are rightly concerned at home, and this object is almost, though not equally, important abroad. Respecting adulteration of food, there is not the same temptation in the thinly-peopled and abundantly productive colonies as in a densely peopled island like Great Britain. In the East the natives have not yet acquired much proficiency in that dark science, though they might prove but too teachable if once this black art were to gain ground at home. For instance, on one occasion when a malignant disease broke out in the port of Calcutta, the native contractor for the supply of water to the shipping was found to have adulterated the pure liquid from the waterworks with some impure fluid from the river! Still, irrespective of what may be termed artificial evils, imagine the natural evil to which articles of food or drink are liable in the tropics,—such as the exposure of meat in the burning heat of an Oriental city, or the fish in coast districts where fish is extensively cured, and where the curing is but too often imperfect. If the pure and wholesome quality of food for the masses of humanity congregated in the British metropolis is a theme for study, equally must this be the case for a city like Bombay, where 700,000 people are compressed into a little island situated at some distance from the main sources of sustenance. Again, the subtle conveyance of poison through the medium of milk causes solicitude here. But the danger is even more active and urgent in the East, where, from the habits of the milkmen, the milk is but too frequently affected by poisonous ingredients. If time permitted I could give signal instances of valuable lives being lost from milk-poisoning, not by any evil design, but simply through reckless ignorance. The purification of water for drinking and for bathing has always been among the objects of our studies, and some benefit has accrued from persistent advocacy. There is dread lest impurity in this element should produce untold evils in the United Kingdom; but we know that in India it has produced more physical mischief than any cause whatsoever, and perhaps as much mischief as all other causes put together could produce. In the capital cities, the Indian Government and people in combination have constructed waterworks very much after the scientific models established in the United Kingdom, in every instance with a marked benefit to the public health. In the lesser towns of the interior waterworks have been or are being built; in every case some local diseases, ignorantly believed to be unavoidably endemic to the locality, disappear as if by magic. Still, among the blagues of vast territories, some have water from running streams and others have not. Those which are thus destitute add to the natural difficulty by recklessly defiling what little water they have. Time does not admit of my adducing instances

of the epidemics traceable to the state of the water when the scanty tanks and wells have been reduced to their dregs. We see at home illustrations of wells being poisoned from sewage. I remember a case where a large garrison of European troops was decimated and disorganised by cholera, which, after inquiry, was attributed to percolations from cesspools through the solid ground into the drinking-wells. In times of famine, mortality has occurred not only from the withering of crops, but also from the drying-up of the drinking-water. The State might convey food for famishing multitudes, but could not bring water for thirty millions. Much of this evil is preventable by water-supply provided during years of plenty, and here is a field abroad for that engineering science which has wrought wonders at home. It were almost superfluous to call to remembrance the successful efforts put forth at home respecting sanitation, drainage, and sewage. We have but lately beheld the terrible example afforded by the cholera in Egypt. If this fell foe be generated somewhere else than in the localities actually attacked, and be, as it were, floating in the air, still its attack is generally, though not invariably, attracted by insanitation or averted by sanitation. The Angel of Death is, so to speak, hovering over a doomed land, and he descends on those spots which are the foulest. We can imagine what the physical surroundings of the Egyptians in the cholera-stricken places must have been, from our knowledge of the like conditions in other countries of the East. In India the capital cities have drainage works constructed in the manner which has approved itself to engineers at home, whereas some millions sterling have from first to last been expended, to the marked diminution (among other things),—indeed, almost to the prevention, of epidemic cholera,—though sporadic cholera still appears sometimes. Drainage works are also undertaken in all the lesser towns of the interior. But the faults of sanitation, still remaining in the great cities and the lesser towns, are legion; while the conduct of the rural people in most of the villages in the matter of sewage is so culpably fatuous as to be incredible to any save those who have witnessed it. Some attempt is made to diffuse a smattering of sanitary science among the rustics, but it is uphill work to reclaim a population from the habits of centuries. If anything could aggravate the regret with which this disposition of the people must be regarded, it would be the thought that the utilisation of sewage, even in the smallest quantities, is peculiarly needed for Indian agriculture, which ordinarily is very deficient in manure. Though much is attempted in this matter at some central places, yet in the country generally quantities of sewage, which might have fertilised the fields, are left to breed poison for man. As the proportion of the urban population to the whole people increases, and as the congregation of inhabitants into dense masses proceeds apace, there is no profession more vitally important than that of sanitary engineering. This profession at home has attained a considerable growth, and will thus afford the means of forming similar professions abroad. But even yet the faults in domestic as well as in public sanitation here are sometimes appalling, and cause new evils even worse than that which the arrangement was intended to obviate. How much more must this be the case abroad,—in the rising colonies, where towns spring up with startling rapidity before proper arrangements can be made; in the East, where the work has to be done through native agency under novel conditions that breed mischief with perplexing effect. Already in the East the fear that sanitation, while averting some familiar diseases, is actually producing typhoid sickness, gives rise to a prejudice among the natives against Western sanitation. Nothing but a more rigid attention to sanitary engineering can set this right. So frequent are the sanitary faults in new-built houses in urban localities at home that some authorities recommend the professional inspection of every new house before it is occupied, and private companies are formed for this purpose. This must be equally wanted in the colonies, and assuredly it is needed in the capital cities of the East. The preparation of those vital statistics which are essential to good administration is, doubtless, accomplished well in the United Kingdom, perhaps in the colonies also; and the difference in the death-rate between town and country tells a terrible tale of the physical ills which humanity brings on

itself by the conditions of social existence. In the East, however, this work has hardly advanced beyond its infancy. It is, indeed, hard to ascertain the facts of births, of disease and death, for so vast a population; and as yet they are but partially ascertained, though progress towards ascertainment is being gradually made. For the principal centres, and for some selected districts in the interior, the facts are known, and they reveal death-rates that are always higher than those of Europe, and are sometimes miserably high. Hospital management at home is a subject to which the attention of this association has been constantly directed, and at its instance a conference of hospital authorities has assembled, whose deliberations will, doubtless, prove fruitful in results. This subject is of at least equal importance in the East, where the founding of hospitals and the opening of provident and charitable dispensaries are regarded by Asiatics as among the fairest features of British rule. If at home errors in management arise, and peculiar diseases are generated within the very walls of these institutions, how much more must this be the case in the East, where to inherent difficulties are superadded the tropical conditions and the habits of an Oriental people? In all matters relating to the public health, the Eastern nationalities must be brought under sanitary education. Unless they learn how to save themselves and become imbued with a desire to practise what they learn, the utmost effort of the State for saving them will fail. Therefore, sanitation must form a prominent branch in the national instruction, sanitary primers must be used in the schools, sanitary regulations elaborated by the native municipalities, and sanitary treatises circulated, so practical that he who runs may understand them.

ART EDUCATION AND ITS APPLICATION TO TRADE.

THIS was the subject of the address given by Sir Rupert Kettle as President of the Art Department of the Social Science Congress at Huddersfield. He observed that though the subject of art-education had been under discussion for the last fifty years, we had not arrived at a consensus of opinion as to the best mode of establishing a national system of education in pure and applied art. While he did not think the system practised was the best that might be pursued, the nation had had, was having, and would continue to have, full value in return for its outlay. Fifty years ago we spent more money in purchasing works of art and art works than any other nation, and at that time the popular taste was only just beginning to rise from its very lowest level. The enormous increase of national wealth which followed the introduction of the steam-engine produced great changes in the state of the arts, for as men grew rich they surrounded themselves, as their predecessors in estate had done, with works of art and art work. Though some of the achievements of our native artists ranked among the finest productions of any age or country, the works of foreigners were preferred. As the supply of genuine objects was exhausted, the trade of imposition set in. This, even, would not have aroused public opinion in favour of art-education had not we been dependent, in those manufacturing trades in which the element of taste entered, upon foreign designers for patterns. In the course of time foreigners sent us the manufactured articles instead of the patterns, and it was not a year too soon when, in 1835, Parliament tried to extend the knowledge of the arts and principles of design among the people, and especially the manufacturing population of the country. It was, however, to the great Exhibition of 1851 that we must look for the beginning of our present comprehensive and, in the main, successful system of art-training. In giving a view of our national art-education as now carried out, Sir Rupert said that as part of our ordinary system of elementary education in voluntary and Board schools we had each year 600,000 young persons of both sexes under instruction in drawing. Last year we had in operation 169 schools of art, with 13 branch schools and 545 art classes,—some affiliated with the schools, but the greater number working independently. To this number must be added at least 200,000 pupils each year under more or less advanced art-education. The direct payment out of public funds was 53,441l. and 39l. 19s., or less than half-a-crown per

annum per pupil. Of course, these payments were supplemented by private contributions and school fees. The end of the elementary part of art-education was imitation, without invention and without imagination,—the foundation upon which all true art-training must be based. In considering the advantages gained by our national art-teaching, apart from their value as a preparation for special study, Sir Rupert said that free-hand drawing is itself an art, although not of that class called a fine art. It is an art in the sense of skill. Besides, it is the rudiment of pictorial art, and to a certain extent, of plastic art also,—the two important branches of the fine arts. Free-hand drawing has the advantage that it is useful in itself. It is a language by which art is expressed. It can tell you form, for useful as well as for ornamental purposes. Practically, it is a new faculty of language. When we consider that we are every year giving this faculty in a greater or less extent to upwards of half a million of our working classes, we may realise the magnitude of the benefit we are,—apart from fine-art culture,—conferring upon the whole community by our drawing-schools. This benefit is of itself, I venture to assert, worth all the money which is being expended upon it. The statistical return showing more failures than we might expect in the higher departments of study does not affect the result of our substantial success in teaching free-hand drawing. Referring to the educational use of our museums and galleries, he said it was obvious that general art culture is a direct mode of creating a pure public taste; for by its operation the trained weaver would know artistic metal when he saw it, and the potter who had learned to love his beautiful vases and plaques would see when a chair was graceful or a wall appropriate. But outside those directly interested in production there was a great public to be taught to appreciate art so as to be able to select the beautiful and reject the ugly. Beauty is not a mere subjective but an objective fact, though it is indefinable by verbal description, and a critical knowledge of art can only be taught by example. The South Kensington Museum had grown beyond the reach of satire. The value of its treasures was such that if sold at Christie's it would realise more than double their cost. The various bequests to it also showed approval of it by not only competent but eminent judges of art. Without a vigorous effort, and the force of genuine examples constantly presented for examination and study, it would have been impossible successfully to have combated that vicious taste which for so many years had grown up under the circumstances already referred to. If the Museum has done nothing else, it has certainly created a sounder knowledge and fostered a better taste amongst our wealthy middle class. It is, however, in connexion with South Kensington that its educational influence is most directly felt. There is not a designer in any branch of trade who has mastered the principles of free-hand drawing but could find in the Museum an exemplar to guide him in his work. The system of circulating objects of art had now become one of the most important features of the scheme for disseminating art taste, as well as the establishment of art galleries in the large provincial centres. Having shown that enough was being done to educate the public taste, he reverted to the question of art instruction. The pupil having finished the practice of imitation he should be fit to commence study in imaginative or inventive art. The highest object of such study was pure art,—the production of works intrinsically beautiful or beautiful by association, apart from any special purpose they are to serve or use to which they might be applied. Without raising the vexed question of whether State aid is the best means of developing a pure art feeling, he was of opinion that our Government college could not give the best training to the few naturally endowed artists. The system of the South Kensington institution was more adapted to applied than to pure art,—to the decorative or the industrial arts. If pure art be the aim, the young artist should either become pupil to some master of a particular style, or enter the Royal Academy, to which access was not difficult, or avail himself of one of the institutions founded by the liberality of Felix Slade. An idea might be gained of the educational work at Burlington House from the fact that there were now 413 students on the books,—22 sculptors, 176 architects, and 215

painters,—while the Academy spent of its own money nearly 7,000*l.* a year upon its schools. South Kensington should draw a more distinct line between pure and applied art as far as was convenient in practice, and always in thought. Proceeding, he said: It is a common complaint amongst masters of schools of art, as I believe it is at the central establishment, that almost all artisan pupils desire to become painters, though they might, and many ought to be, employed in applying the learning they have already gained to the trade to which they have been perhaps apprenticed, and in which they work daily. A few of the artisan scholars persevere in imitative art until they can paint pictures of what is called still life,—of fruit, flowers, or even familiar, unsuggestive, and therefore inartistic landscapes. Some of these can be sold, and after a short time they gain a larger income than their late workfellows receive as wages. This tempts others to try to follow their example, and many a good art-workman is lost, without being replaced by an artist. Our local schools of art receive annually large contributions from the wealthy inhabitants and those engaged in the trade of the districts where they are established. A part of this fund might, without injuring the general work of the school, be usefully devoted to forming special classes in which artisans who had mastered the elements of art knowledge, and acquired the necessary skill in execution, could be taught the practical application of their knowledge to the trade in which they are engaged. The principles of applied art can be taught by direct instruction, and can be best accomplished by dividing the subjects into classes, such as—(1) Pictorial, (2) Plastic, and (3) Textile. These can be sub-divided according to their uses, and each taught with regard to its special requirements for practical application. Art objects are either decorative or decorated. Decorative objects should be intrinsically ornamental, self-contained, and complete, not dependent upon extraneous aid for their effect, but beautiful in their own form, colour, and sentiment; and beauty must be considered apart from utility. Decoration is something applied; the object to be decorated is the first consideration, and to it the decoration must be subordinate. Use is of primary importance, and decoration should be incorporated with, and become part of, the thing decorated, without altering its structure. The main difficulty is to teach pupils to devise or invent appropriate ornament. The range is limited within which natural forms and colours can be decoratively used. Ornament is too apt to preside over that which it is intended only to improve. Pictorial decorations are apt to break up flat surfaces; they clash with the colour of material, or they interrupt the flow of structural outlines. Natural objects, beautiful in themselves, are what is called conventionalised for decoration. The best examples handed down to us from the greatest masters of decorative art in all ages show that they all used works. Students may copy work and examine it until they catch its spirit and purpose; but if they want to profit by it as an example, they must go back to nature, and not attempt to conventionalise that which is already conventional, as our designers are too apt to do. It is in teaching the designer to conventionalise natural forms that the trained eye of the master will teach the student to seize the principal quality of form (if he is designing form) which excites admiration of the natural object, then to subdue that form to his purpose by modifying it into conformity with that which it is to be associated. Let the schoolmaster instruct and advise, but let the pupil work out his own thoughts upon design on the material he is most accustomed to, and complete his art-education in the workshop. The institution founded by the great chartered companies of the City of London seem admirably suited to carry on this work. They have shown a good example of what appears to me to be required in connexion with our national teaching. My conviction, founded upon long experience, is that in the thirty years since 1851 we have made most satisfactory progress in all those staple industries which require taste and art knowledge for their success. We are producing not only the best decorative ceramic ornaments, but the most beautifully decorated and useful pottery in the world. Our metal-work, from cathedral screens to domestic brasses, is a manufacture of which we may be proud.

No country has at any time produced such pure brilliant flint glass as the English makers now give to the world. As to design, whether in cut, engraved, or carved glass,—whether in rock crystal or cameo work,—no such art glass was ever before seen as that which is now being produced in the Potteries. Of textile fabrics I hope to learn while in Huddersfield that your fancy woollen goods are showing as high a taste as the lace curtains which Nottingham is now making. Speaking of pure art, the work of English artists has wonderfully improved in drawing and careful attention to accuracy of detail, and this has been effected without impairing the boldness and perfect freedom of touch characteristic of the best masters of the English school. I attribute this improvement in the academic training of our artists to the fact that so many of our best painters have been pupils at Burlington House. The progress in refinement and purity of taste amongst the general public during the last forty years has not been so satisfactory as the improvement amongst the professors of the different branches of art. The impediments to progress in the former case have been greater, more obstinate, and more difficult to assail. When the attack upon vicious taste began, King Sham and his kinsman Rococo had long been in possession of the field, and vested interests die hard. Even down to our own day the forces opposed to good taste have considerable vitality, and, by accidental accretion, occasionally form themselves into something like organisation. They erect a barricade of fashion, and defend themselves behind it. At one time it is the reconventionalised hyper-conventionalism of the Japanese that is brought into fashion. At another time, work in genuine old Dutch taste, corrupted, is called "Queen Anne." The revived taste for church ornaments is pushed into ecclesiasticism. By the hold which historical association always has upon English sympathies, the taste of the middle ages is inflated into Medievalism. And now a weedy variety of conceit run to seed is called æstheticism. True taste will not always yield to the breeze,—literally the puff,—of fashion. By vigorously pursuing the course upon which we have entered, and closely attending to directness of aim and object, we shall in time found upon a true standard of beauty and fitness a distinctly national and pure style of decorative art.

RULES OF PROCEDURE IN PUBLIC COMPETITIONS IN ARCHITECTURE AND ENGINEERING ABROAD.

THE Congress of German Architects and Engineers, which recently met at Frankfurt, deliberated, amongst other things, upon a scheme of rules, submitted by a special committee, for the management of public competitions in the departments of architecture and engineering. The result of the discussion was the approval of the following system of regulations which are recommended for the adoption of the professions throughout the German Empire.

1. The majority of the judges who have to adjudicate on the competitive drawings or designs must in every case consist of experts,—that is, professional architects or engineers.
2. The names of the judges must be stated in the programme of the competition. They must have approved of the programme before its publication, and declared their acceptance of the office of judges.
3. The acceptance of the office of judge presupposes that the acceptor has renounced the right to enter directly or indirectly into the competition, and gives up the right to take any part in carrying out the building or structure concerned.
4. The drawings and calculations demanded in the programme are, as a rule, not to exceed the measurement requisite as a rule for sketches that are carried out, and for a summary calculation of the cost on the basis of the metre, the square metre, and the cubic metre as the units of measure as regards length, superficies, and cubic contents respectively.
5. The scale of measurement must always be prescribed with exactitude.
6. The representation of details is only to be demanded when they are of particular importance in regard to the general idea of the design.
7. It must be clearly stated in the programme whether essential importance is

attached to the condition that a certain defined sum is not to be exceeded in carrying out the work, and whether all plans exceeding such sum are to be excluded from the competition, or whether the said sum is only intended to serve as an approximation, in which case greater liberty is to be understood as expressly conceded to the competitors.

6. A design is excluded from the award of prizes under the following circumstances:—

(a) When it is not sent in within the prescribed time.

(b) When it violates an essential condition of the programme.

Clumsily executed drawings and designs which have blundered in the fundamental idea may be excluded from the competition. The reasons for the exclusion of any design must be stated.

Of the drawings received the judges are to exclude from adjudication and exhibition those portions of any project which exceed the scale of measurement prescribed.

7. So far as there are designs admissible to the competition, the prizes offered must be awarded to those which are relatively the best. Only in case the judges are unanimously of opinion that no performance is deserving of the first prize is it permissible to apply the sum offered as prizes in a different manner, as, for instance, in rewarding the more meritorious designs.

8. All performances admitted to the adjudication are to be publicly exhibited for at least two weeks. The award of the judges, with the reasons for it, must be publicly announced.

9. The designs to which the prizes have been awarded are only the property of the giver of the prizes to this extent, that he has the use of them for the purpose of carrying out the building. The right of publishing designs or employing them for other purposes is reserved to the author.

10. The prize, or, if several prizes are offered, the total sum they amount to, must be equal at least to double the honorarium laid down under the head of "Designs" by the Hamburg rules.

In case there are several prizes the first must be at least equal to the amount of the before-mentioned honorarium.

The following is another translation of the foregoing rules for the mode of procedure in public architectural competitions in Germany. The proposals of the Hamburg Society were accompanied by explanatory remarks indicating the motives which led to the drawing up of each section of the proposed normal regulations. These are quoted in each case, and will no doubt be read with much interest by British architects:—

1. Amongst the judges of the competition, professional men (technical authorities in building matters) must be represented in a preponderating manner.

[Non-professional persons seldom possess the faculty of looking at architectural plans in their entirety, of accurately recognising faults, defects, and preferable features, of considering their relative value, and of judging what the effect of a design will be when carried out. The capacity of judging such questions is only given by professional knowledge of a high degree of merit, and by many years of experience. Therefore, the majority of the judges should be professional men of acknowledged reputation. The presence of non-professional men (members of administrative bodies or of the building committee, &c.) is desirable in order that local interests may be adequately represented.]

2. The judges are to be named in the programme, which they must have approved before its publication, having also declared their willingness to undertake the judicial functions in question.

[The principles and general ideas of the judges as to style, monumental and technical execution, allow of the nature of the decision being foreseen in many cases. The agreement of the judges with the programme is fully made generally evident by their signatures.]

3. The acceptance of the judicial office involves abstention from all direct and indirect competition, and from participation in the erection of the building in question.

4. The drawings and calculations asked for in the programme are not, as a rule, to exceed such steps as are necessary to arrive at the cost according to the sketches executed, and a summary estimate, based on units of measure, such as metre of length, square metre of surface, cubic metre of capacity, &c.

[There is usually too much required from the competitors in the programme, which often prescribes quite unnecessary work. Complete building drawings are frequently asked for, with specified

instead of general estimate. Detailed drawings are often asked for, of a description which are quite superfluous before the general design of a building has been fixed. Representations of details should only be demanded where they are of special importance in the conception of the design. Moreover, within the prescribed measurements there should be complete freedom in the representation.]

5. The programme is to state distinctly whether leading importance will be given to the observance of a certain limit of cost, so that all plans exceeding that limit would be rejected; or whether the limit of cost referred to is to serve as an approximate basis, in which case a more extended scope is expressly reserved to the competitors.

[Many competitions have been void of result, because this point has not been previously raised in a sufficiently exact manner, and also because the programme required more than could be furnished for the specified amount; the latter circumstance allowing the competitors either to incur cost estimates, or to an impoverished execution of their designs. The judges are thereby placed in the regrettable dilemma of choosing between a meagre but honourable project, and a rich design carried out on an imposing scale, with estimates knowingly falsified. It is, therefore, necessary for it to be exactly stated in the programme where the chief point of the competition lies, whether in not exceeding the sum named for the building, or in the complete and artistic carrying out of the programme.]

6. The exclusion of a design from the competition takes place:—

- (a.) When it is not delivered in time.
- (b.) When it is essentially in opposition to the programme.

Designs which are seen to be faulty in their fundamental ideas can also be excluded. The exclusion is to be founded. Such projects as exceed the measurements required are to be excluded from consideration and from exhibition.

7. Provided that there are works capable of competing, the prizes offered are to be awarded to the relatively best designs. Only, in case the judges are unanimously of opinion that none of the designs are worthy of the first prize, it is allowable for the total amounts offered in prizes to be employed in a different form of division for the purpose of distinguishing those designs most worthy of notice.

8. All the works accepted for competition are to be publicly exposed during two weeks, at least, as a rule, after the decision of the judges has been made. The duly founded opinion of the judges is to be published.

[By exhibition of the designs, the public acquires a greater interest in the work in contemplation, while the competitor has an opportunity of making his work accessible to the public, and of seeing the productions of his rivals. On account of the diligence which each competitor has employed on his work, he has a right to claim a thorough examination of his design, and acquires the right, in case he receives no prize, of asking the reasons why the judges have preferred other designs to his.]

9. The designs which receive prizes are the property of the person organizing the competition, or of the proprietor of the work, only so far as they are used in the execution of the work in question. The right of publication, as well as of employing the designs in other ways, remains with their authors.

10. The prizes (or where several prizes are concerned, the total of them) must at least represent the double of the *honorarium* fixed by the Hamburg rules of September, 1868, as to designs. When several prizes are given, the first prize must at least represent that amount.

[The preceding regulation is founded upon the fact, that in a competition, a number of architects or engineers are engaged in working out the same problem. The owner of the work has, therefore, a number of designs for comparison and selection, and has thus derived from the competition greater advantages than he would have had if only one person had made a design.]

BRISTOL AND CLIFTON JUNIOR ARCHITECTS' SOCIETY.

A MEETING of the Bristol and Clifton Junior Architects' Society was held the other evening at the School of Art, Clifton, under the presidency of Mr. G. E. Ford (the hon. treasurer). There was a large attendance. Mr. W. E. Hill, the hon. secretary of the Society, in opening the meeting, said it was necessary to explain why such a length of time had elapsed since their last meeting was held. This delay had been unavoidable. They would remember that in July of last year the question was raised of again starting the old Society of Architects. The Council of the Junior Society, recognising the importance of such a proposal, and the advantages which would accrue to the members from such resuscitation, allowed the programme of the Junior Society to subsidize in order that no apparent opposition should be made, and so that they might, without prejudice to their own society, give every support to the new scheme. Having allowed sixteen months to elapse without

any appearance of the new society in black and white, the Council now considered themselves entitled to take up their own scheme again, and endeavour to make the Junior Society a permanent and valuable addition to the profession, looking forward to the time when the question of a senior society of architects should be again and successfully started, when they would be prepared to render every support to the scheme. During the year their meetings had been few in number, although the ranks of the society were steadily increasing. After referring in detail to the past and future of the society, Mr. Hill said that as the questions then to be considered were of such lasting importance, he would seize the present opportunity of asking them to elect a successor to him in the post of hon. secretary. He might say that the post of hon. secretary had always placed him in the most pleasant relations with his fellow students, but during the past year the work of the society had so increased that he felt it impossible to continue it successfully. As the originator of the society, he wished it a long and prosperous career.

Mr. Hill's resignation was received with general sorrow; and on his declining to reconsider the matter, a vote of regret was passed.

Mr. White proposed, and Mr. Howell seconded, a vote of thanks to Mr. Hill for his valuable services.

Mr. G. E. Ford was then elected hon. secretary, and Mr. W. E. Hill was elected to a seat on the Council.

After a prize competition scheme and other business had been settled, votes of thanks to Mr. J. Nicol Smith and to the Chairman terminated the meeting.

YORK ARCHITECTURAL ASSOCIATION.

At the closing meeting of the present session, in the absence of the president (Mr. W. G. Pentty), Mr. Wm. Hepper presided. The principal business transacted was the election of officers to serve on the executive for the coming session. Mr. N. R. Yeomans, in proposing the re-election of Mr. Pentty as president, commented on the very creditable and generous manner in which Mr. Pentty had discharged the functions of president, and the keen interest he took in the Association's success and welfare. Mr. Braithwaite seconded the resolution, which was carried unanimously. The following gentlemen were re-elected:—Mr. Wm. Brown and Mr. A. Pollard, vice-presidents; Mr. B. Priestley Shires, honorary secretary; Mr. Wm. Hepper, treasurer; and Messrs. Braithwaite, Yeomans, Crummack, Smith, and Smith were balloted for and elected ordinary members of the committee. Cordial votes of thanks were passed to all the above gentlemen for the services they had rendered to the society during the past session. Mr. Shires announced that the following gentlemen had been successful in the competition for prizes offered by and through the Association:—

Elementary Class of Design.—1st prize, Mr. J. E. Jefferson; 2nd, Mr. G. H. Nelson.

Advanced Class of Design.—1st, Mr. Frank Raney, Darlington; 2nd, not awarded.

For the best Set of five Sketches of Ancient Buildings.—Mr. J. E. Jefferson.

Mr. Shires expressed regret at the lack of interest on the part of the younger members of the society in coming forward and competing for the prizes offered, but trusted that they would lay hold of the advantages which were so kindly offered to them, and which would no doubt better fit them for their professional career.

THE CORNELIUS SALOON AT THE BERLIN NATIONAL GALLERY.

THE recent centenary of the birth of the painter Cornelius was marked by the re-opening in a completely altered form of decoration, of the first Cornelius Saloon at the Berlin National Gallery. The cartoons have (according to the opinion of experts) long suffered from the cold, dull, grey tone of the walls, and to this circumstance has been attributed the absence of the effect which the artistic and general public had looked forward to when the collection was first organised. The grey colour of the walls has now disappeared, having been replaced by a warm reddish-brown tone, on which is an elegant and quiet arabesque pattern in black. This design is the same which Cornelius designed for the saloon in the Casa Bartholdy at Rome, in which he, Overbeck, Veit, and Schadow executed the cycle of frescos representing the history of Joseph, considered to have been the first monumental work of the modern German school of art. The basement panels have been painted a wood-brown shade, and bronze barriers have been erected in front of the cartoons, to prevent the too-near approach of the public. The frames of the pictures are now of a more cheerful colour than before, and various other ornamental details of the saloon in question have been modified in such a manner

as to heighten the general effect. Comfortable round seats have been added, and growing plants have also been placed in convenient positions. It is intended to treat the second Cornelius Saloon in a like manner, in time for the centenary festival, which is to take place late in October.

THE PROPOSED COMPLETION OF MILAN CATHEDRAL.

THE plan of giving the cathedral of Milan a suitable west façade, and thus fully completing the work, has again been attracting attention in that city. The *Munich Allgemeine Zeitung* states that the competing plans of two Milan architects have been on exhibition at the Brera Palace,—those of Professor Cav. Beltrami and Professor Carlo Ferrario. The designs of the former are described as being simple and unpretentious, their execution not being attended with much expense. Those of the latter are richer and more striking, his object being to heighten the effect of the somewhat monotonous front, and to make the needful structural alterations in connexion with the bell-tower which is in contemplation.

The journal referred to considers that the design of Professor Ferrario hardly meets the artistic requirements of the proposed work, and suggests that there should be a competition (either limited or open) in which the architects of Germany, France, England, Austria, and Italy would have an opportunity of solving the problem of completing the work in such a way as to carry out the ideas which might justly be supposed to have been those of the original architect. The decision would rest in the hands of an international committee, and the present appropriateness of the scheme is commented upon in connexion with the quinqucentenary in 1886 of the foundations being laid of the cathedral itself.

THE ART FOR SCHOOLS ASSOCIATION.

THE Rev. Brooke Lambert gave a *resumé* of the work of this society to the Art Department of the Social Science Congress at Huddersfield. He said it proposed:—Firstly, to provide art subjects; to purchase some; reproduce in cheap form others; and generally to aid in procuring and distributing objects of art suited for schools. Secondly, to make an exhibition in which these should be collected, priced so that managers might see what they had the opportunity of getting. Thirdly, to give lessons on the objects in schools, lectures on pictures in galleries, and otherwise to convey oral teaching on art subjects. After mentioning what had been done, and referring to a similar project under consideration by the French Government, the writer discussed:—First, the question as to whether the collections should be, as a rule, purchased by school managers, or sent to them on loan. His opinion was, for many reasons, in favour of the latter course. He next referred to the nature of the objects,—pleading, first, for objects large enough to be easily seen; secondly, for coloured pictures; thirdly, for pictures suggesting action; fourthly, for pictures of natural objects. He concluded by recommending the scheme as an outlet for voluntary effort, and mentioned a similar project in process of realisation, by Mr. T. O. Horsfall, at Manchester.

Mr. Wallis (Nottingham) said he thought that in schools simple objects should be placed so that children's minds might be trained thereby.

Mr. Rathbone considered that art was not merely a luxury, and that children should be helped to acquire definite ideas by means of pictures and models.

The Rev. John E. Richards (Master of the Collegiate School, Huddersfield) said it would be well if there were some kind of depot where schoolmasters and teachers could obtain pictures and models by which they would be enabled to illustrate the subjects they taught.

The Chairman deemed it highly necessary that pictures should be coloured so as to represent nature as near as possible.

Mr. David Johnstone (Huddersfield) explained that students who entered the classes of the Huddersfield Technical School were required to have some previous knowledge of drawing.

Improvements at Ventnor.—It has been decided by the Local Board to build a pier, at a cost of 20,000l.

TIMBER HOUSES AT HILDESHEIM.

The most beautiful domestic buildings of the Middle Ages are undoubtedly the timber-constructed houses. We mean those erected entirely of wood, and do not include half-timber or post-and-pan structures (where the "pan" or panel is filled in with lath and plaster, brick-work, or rubble). Of these purely timber buildings the remains are, of course, far more limited than those of post and pan or half-timber ones. Fortunately, however, the highly interesting old city of Hildesheim, in Hanover, still abounds with splendid examples of houses erected entirely of timber, and carved from floor to gable. Several of these we have previously illustrated, and we now add to our former examples two more. To show how highly advisable it is that these timber houses should be drawn and illustrated, we may mention the fact that out of three examples which we have formerly published, one alone now remains, both of the others having been burned down to the ground very shortly after we published our illustrations. The same fate also befell the beautiful examples of "post and pan" houses at Boppard which we published at the same time. Of course, houses constructed entirely of timber are especially liable to destruction by fire. A defective flue, the upsetting of a spirit-lamp, and a hundred other accidents, may set fire to one of these old buildings, and it is simply impossible to extinguish the flames until the whole street or district is burned down. These buildings are well worthy of study because they are most complete and magnificent examples of ornamentation, and if, as is far from impossible, means might be discovered of rendering this kind of construction free from the danger of destruction by fire, nothing could be conceived more appropriate as well as beautiful for domestic buildings.

COVERING TO CENTRAL AREA OF THE ROYAL EXCHANGE.

This has been contemplated for many years as being almost a necessity for the comfort of the merchants and others who have daily business here, and are exposed to wind, rain, and snow. Several plans have been from time to time proposed, but hitherto none have been thought sufficiently satisfactory to attain the double object of protecting the area from the weather by a roof, and having that roof so designed with glass and light iron ribs, as not materially to interfere with the window-lights which surround the open court and light offices, of great importance and large annual value.

The Royal Exchange is under the management of a body called the Gresham Committee, which is composed half of members of the Grocers' Company, to which Sir Thomas Gresham, the founder of the Royal Exchange, belonged, and half of members of the Corporation.

This committee, moved by the repeated and earnest request of the London merchants to cause the Exchange area to be covered in without further delay, agreed last year to have a limited competition of architects for designs for doing so, and invited the following gentlemen accordingly to send in designs under a series of instructions, a copy of which was sent to each:—Mr. George Aitchison, Mr. E. A. Grünig, Mr. Edward I'Anson, Mr. C. E. Powell, Mr. Fredk. Sang, Mr. Henry Stock, Mr. John Whichcord, and Mr. Barry.

Since these instructions were not without objection in several particulars, a meeting was at once arranged between the architects applied to, and at their request Mr. Barry was deputed to ask a meeting with the Gresham Committee, and beg their reconsideration of the instructions, and especially as regarded the following points:—

1. That professional advice should be taken by the committee in making a selection from designs sent in.
2. That the committee should pledge themselves to employ as architect for the work the gentleman whose design should be adjudged the best.
3. That the sum named of 8,000*l.* as cost of the work be increased to 10,000*l.*
4. That instead of the premium offered to the first and second best amounting together to 600*l.*, that sum should be equally divided among all the architects who were invited to compete, as some recompense for their time and trouble in making their designs.

The Gresham Committee most courteously took the above into consideration at a special meeting. As regards No. 1, they informed the competitors that in making their selection they would take the advice of the architect to the Grocers' Company, who was not a competitor. They assented to items 2, 3, and 4, as placed before them by the competitors, and issued amended instructions in the above sense, and with some other minor improvements.

Under these circumstances a certain number of gentlemen submitted designs under mottoes, in the month of October, last year.

Several meetings of the committee having been held, attended as promised by the architect of the Grocers' Company, the design under the motto "Civis," which proved to be that of Mr. Charles Barry, was selected as the best.

When about to invite designs for covering in the area, the Gresham Committee communicated with their several tenants whose premises were lighted in part from the open area, and promised that any design which might be chosen should be submitted to them before it was finally decided on.

Mr. Barry's design was therefore on view at Grocers' Hall, and he was instructed to attend a special meeting there, at which the tenants attended, and ultimately gave their assent to the design.

The separate approval of the Corporation and the Grocers' Company, especially as regarded the expenditure, being also necessary, some delay took place for this purpose, but all assents being finally obtained, Mr. Barry received orders to put the work in hand in June last.

The contract for the ironwork and glass of the roof is undertaken by Messrs. Whitford & Co., of the Regent's Canal Works, who have had large experience in iron roofing of large spaces. The building alteration will be done by Messrs. W. Cubitt & Co., and the decorative features by Messrs. Jackson & Co., of Rathbone-place.

With the view of interfering as little as possible with the convenience of the merchants and tenants of the building, the whole roof will be completed and fitted together by Messrs. Whitford at their works, and the pieces marked and numbered, so that the actual fixing may be certain in execution and subject to no delay.

The ironwork, which, as will be seen from the view we give, is somewhat complicated, is now in course of preparation by Messrs. Whitford, under the inspection of Mr. John Robinson, as clerk of the works, and it is expected will be ready for fixing in January or February next, the whole of the work being finally completed before Midsummer next.

HOUSE AT STOKE, NEAR COVENTRY, FOR MR. OTTO STRIEDINGER.

This building has been erected from the designs and under the superintendence of Mr. William Hale, architect, of Colmore-row, Birmingham, and the work has been well executed by Mr. Thomas Smith, builder, of Nuneaton. The arrangement of the plans was specially considered by the proprietor with a view to comfort, cleanliness, and saving of household labour, and, as contributing to this end, gas has been largely applied for heating the hall, many of the rooms, the two baths, and for the cooking-stoves; and a small gas-engine pumps the water, brushes the boots, cleans the knives, and assists in other domestic work. The bells throughout are on Zimdars' pneumatic system, and the entrance-gate can be opened from the servants' department and the front vestibule by a "Sesame" pneumatic appliance.

The house is efficiently ventilated, and we learn that these labour-saving appliances have satisfactorily borne the test of actual experience.

The outer walls up to the first-floor level are 14 in. thick, built hollow, with a 6-in. cavity, the two half-brick faces being tied together, every 18 in., vertically and horizontally, with iron ties heated and dipped in hot tar, the window and door reveals being built solid for 9 in. from the frames.

The architect has had external walls built in this manner for many years with the result that not only is the work substantial and inexpensive, but the house is cooler in summer and warmer in winter than one in which the external walls are solid; and as it dries much quicker than solid work the permanent internal painted decorations of a building may be

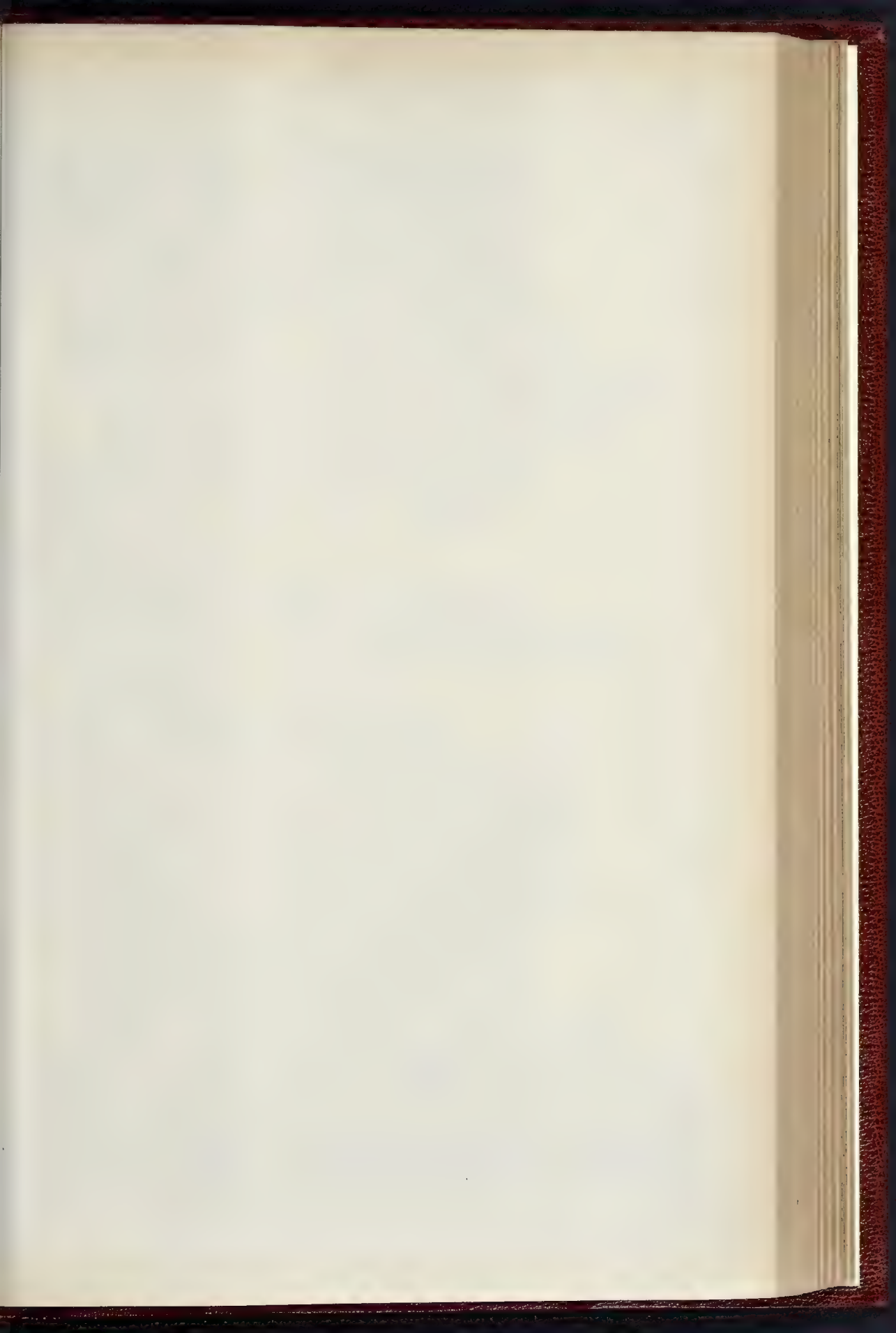
proceeded with as soon as the structure is completed. With the exception of some parts of the main front, the exterior is solidly constructed of timber work, filled in flush on the inside with brick nogging; portions of the outside are covered with upright tiling, and the remainder is filled and lathed and plastered between the timber work. The roofs are covered with Bridgwater tiles. The staircase and its panelled ceiling, the ceiling and dado of the hall and vestibule, and the woodwork of the principal rooms on the ground and first floors, are constructed in selected pitch pine. The chimney-pieces, which have been specially designed by the architect, are in pitch-pine, walnut, and coloured marbles, with brass enamelled and tile panels. The staircase and vestibule have the windows and door-panels filled in with figure subjects in glass, by Mr. Swaine Bourne, of Birmingham, and parts of the other windows have ornamented lead-coloured glazing in simple designs.

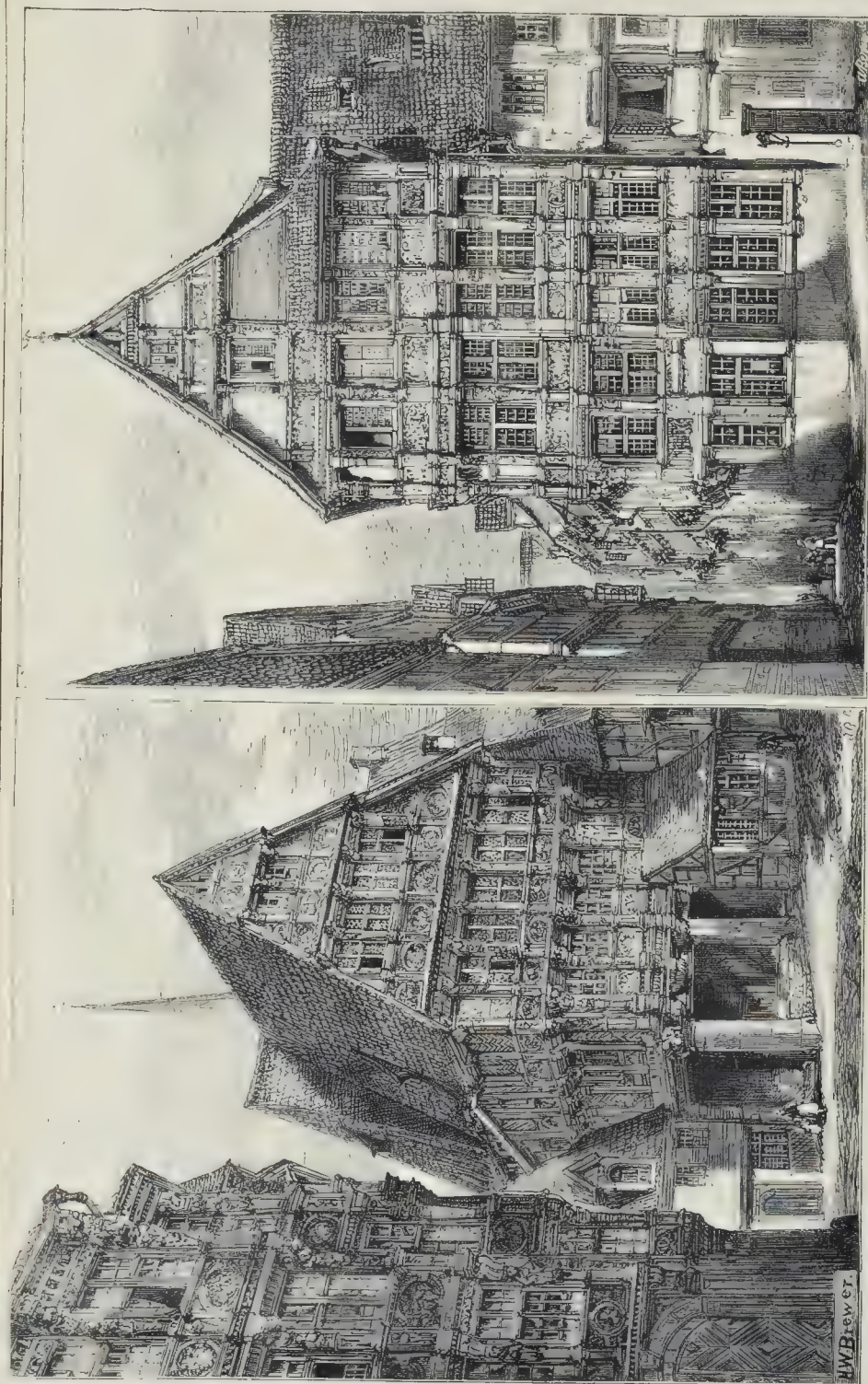
THE LEYS SCHOOL, CAMBRIDGE.

This school was founded about six years ago, for the purpose of affording to the youth of Methodist families and others,—the school being open to all,—the opportunity of high-class public education, free from the special ecclesiastical bias of the larger public schools. The neighbourhood of Cambridge was selected as affording facilities for educational assistance and many other reasons. Twenty-one acres of ground, part of a well-wooded park, were obtained. The design, which was selected in competition, Mr. Waterhouse, A.R.A., having acted as referee, is by Mr. Robert Curwen, of Palace-chambers, Westminster, and Liverpool. The scheme comprises five blocks of buildings, alterations to the old mansion standing on the site, and a laboratory, gymnasium, racquet and fives court, quadrangle, &c.

The north block, which contains lodgings for 80 boys, was erected by Messrs. F. & W. Pattinson, of Ruskington, Sleaford, at a cost of 12,000*l.* There are now about 180 boys, but eventually the schools will be capable of containing 300. The hall, of which we give an interior view, is placed en suite in the centre of the ground, at the back of the old mansion, and was erected by Mr. J. R. Denon, of Cambridge, at a cost of about 3,500*l.* The exterior is of red Haverhill brick and Ketton and Bath stone dressings. The slated roof is surmounted with an ornamental ventilating turret, the dado is of pitch-pine, and the roof of red deal and pitch-pine, varnished. The windows are filled in with quarry-tinted glass, in geometrical and floral patterns. There is also a stone carved chimney-piece at the end. The hall is heated by hot water, by Harlow, of Macclesfield, and has gas pendants by Brawn & Co., Birmingham. Underneath the hall is appropriated to class and other rooms. This arrangement was come to after the design had been selected. The kitchen adjoins the hall. There are also technical schools, so that the boys may be brought up to businesses as well as professions, carpentry, metalwork, music, &c. The other blocks, one fronting Trumpington-street, and the chapels, have for the present been postponed. The quantities were supplied by Mr. J. S. Alder, of Palace-chambers, Westminster. We understand that the school is flourishing and increasing in numbers through the able management of the Governor, the Rev. Dr. Monlon.

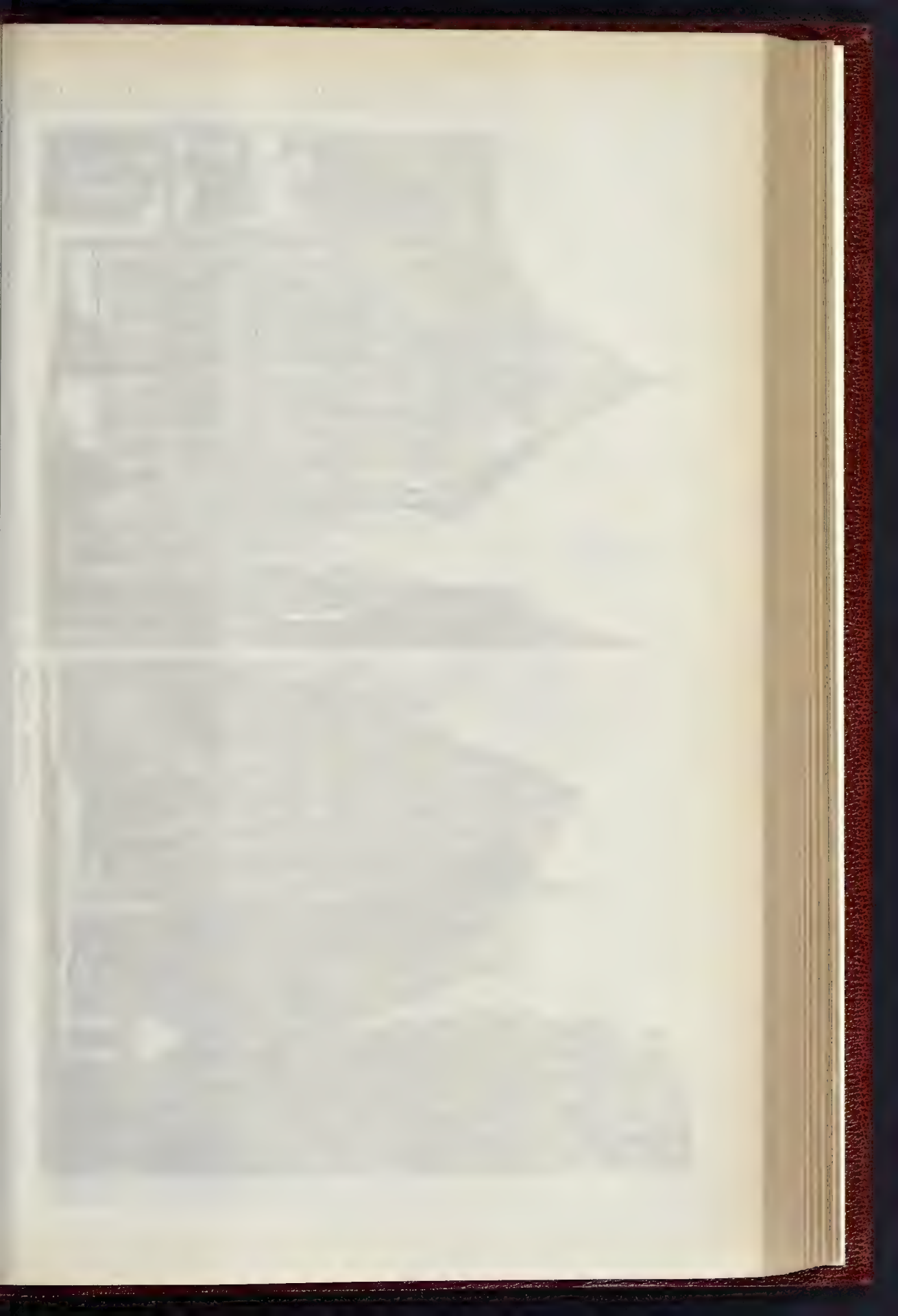
The Victoria Hospital.—A demonstration and church parade has been arranged for Sunday, October 14th, in aid of the Victoria Hospital for Sick Children, Queen's-road, Chelsea. A representative committee, consisting of delegates from the operative masons', bricklayers', painters', plasterers', and other societies, including the Labourers' Union, has been formed with the object of making the demonstration and parade a success. They have issued an appeal to the industrial classes of Chelsea. On the motion of Mr. Kenny, general secretary of the Labourers' Union, who has practically initiated the present movement, that 3,000 programmes, giving the names of the trades and the positions, they shall copy in the line of procession, are to be printed and sold at 1d. each, the proceeds to be applied to the expenses of the bands, so that all the money placed in the collection-boxes shall be handed over to the hospital authorities.



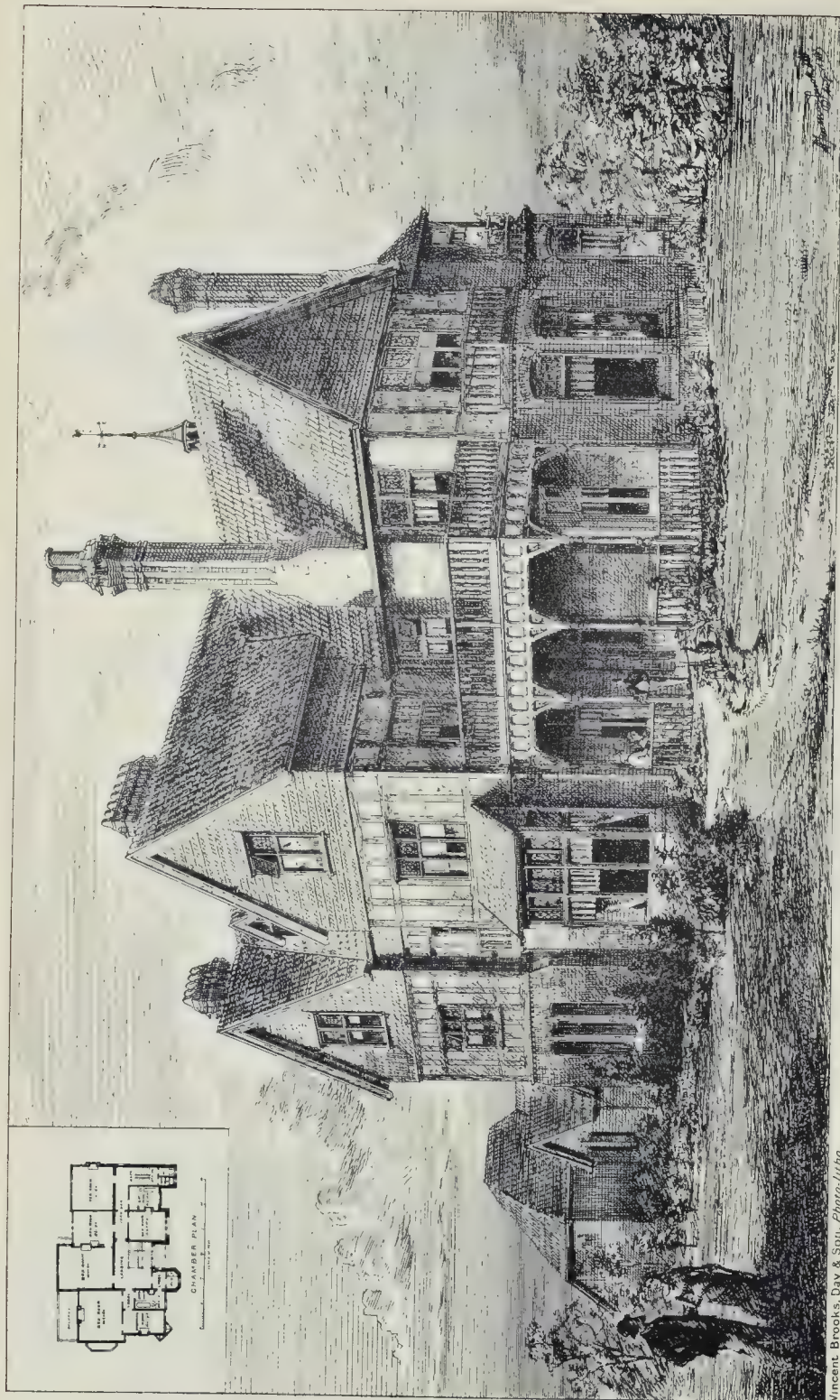


TIMBER HOUSES AT HILDESHEIM.

J.W. Brewer.

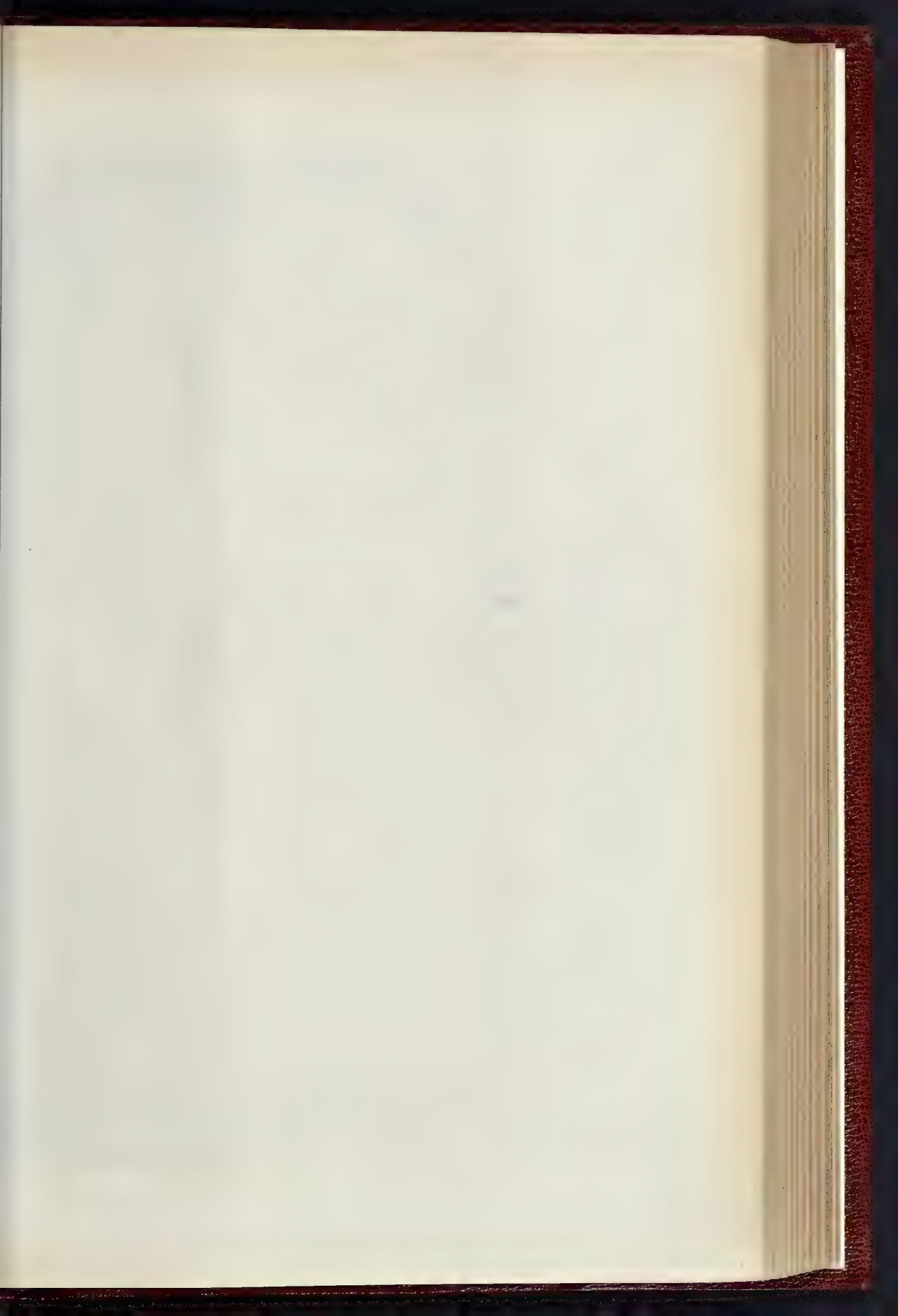


THE BUILDER, OCTOBER 13, 1883

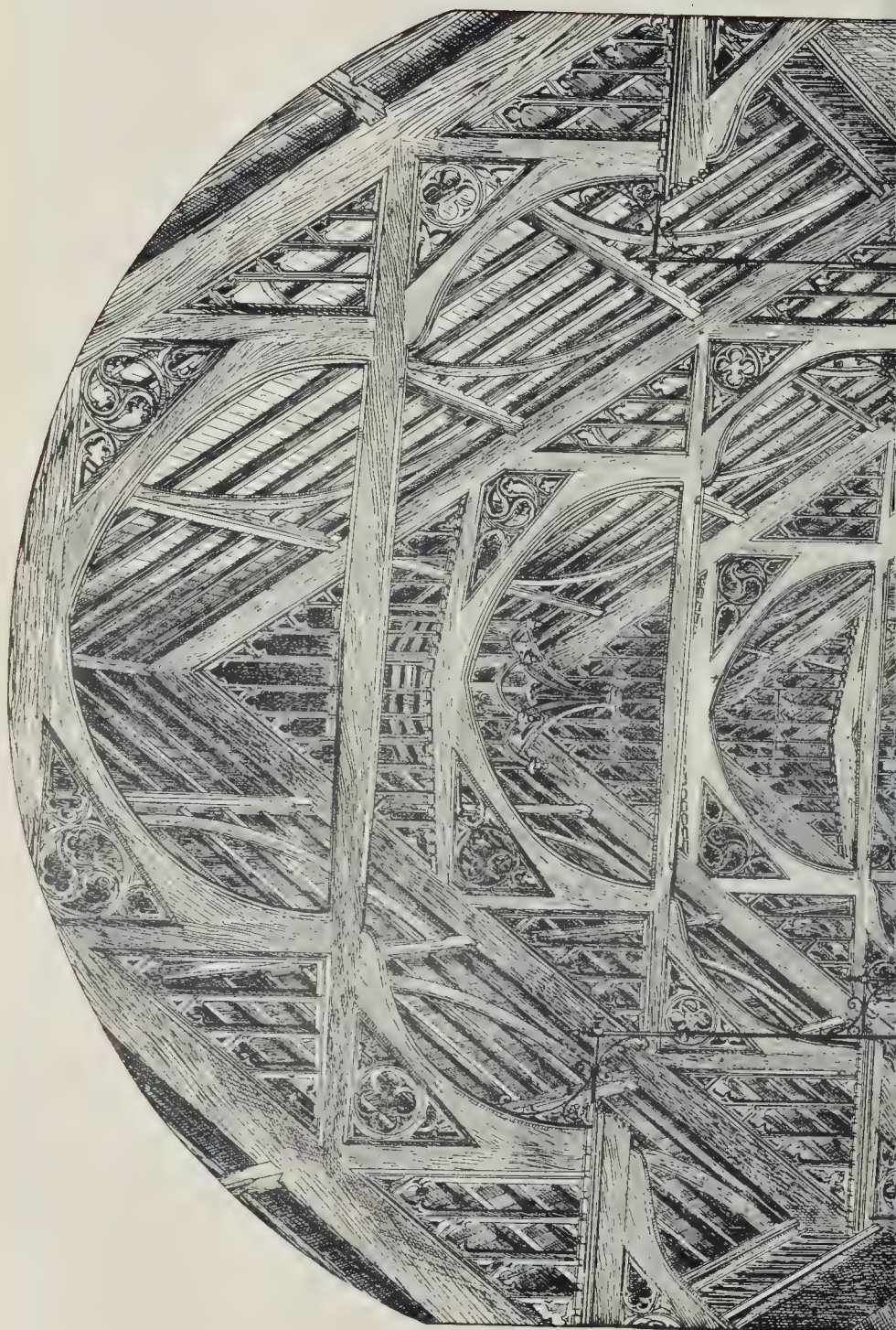


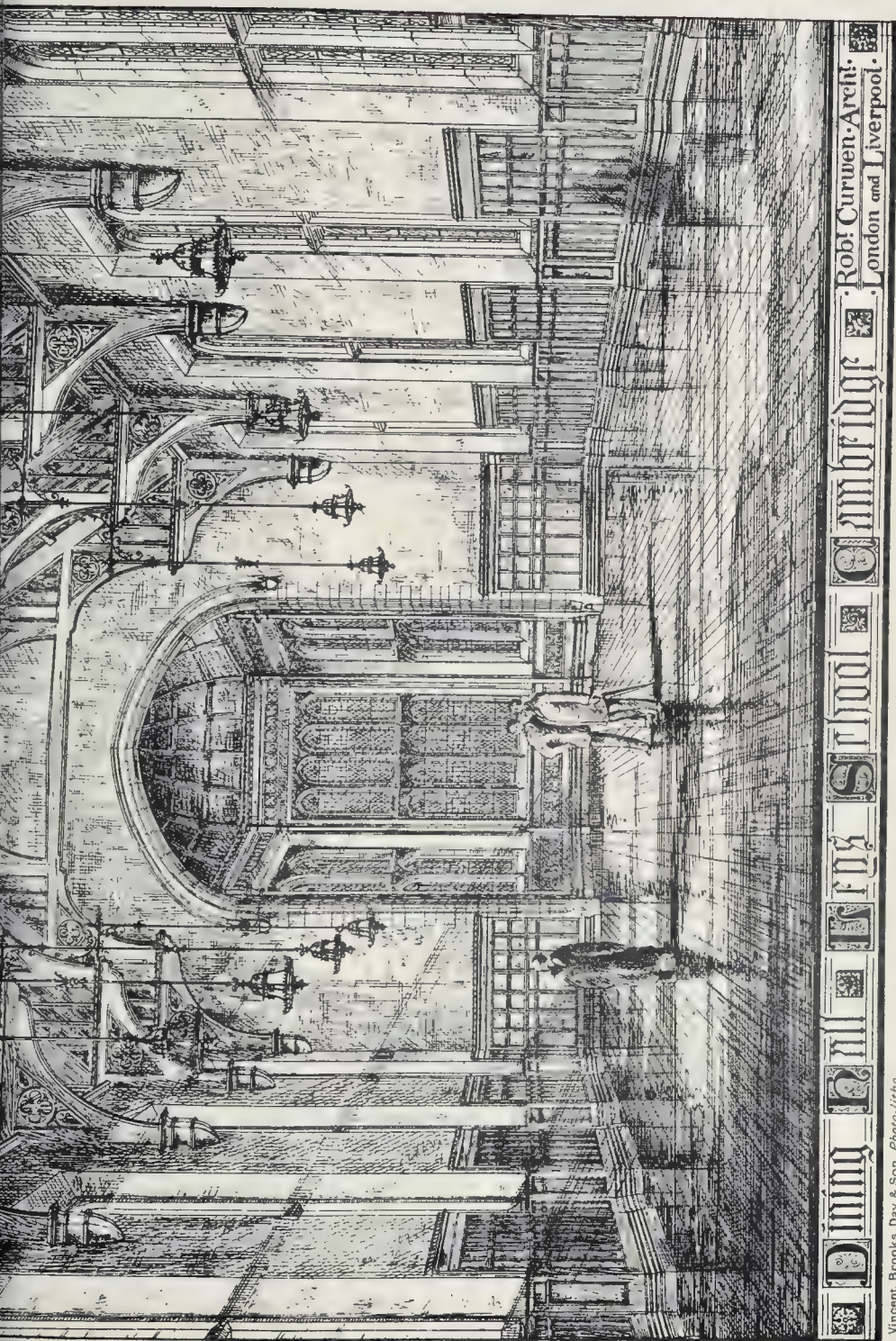
HOUSE AT STOKE, NEAR COVENTRY. S.W. VIEW. MR. W. M. HALE, ARCHITECT.

Vincent, Brooks, Day & Son, Photo. litho

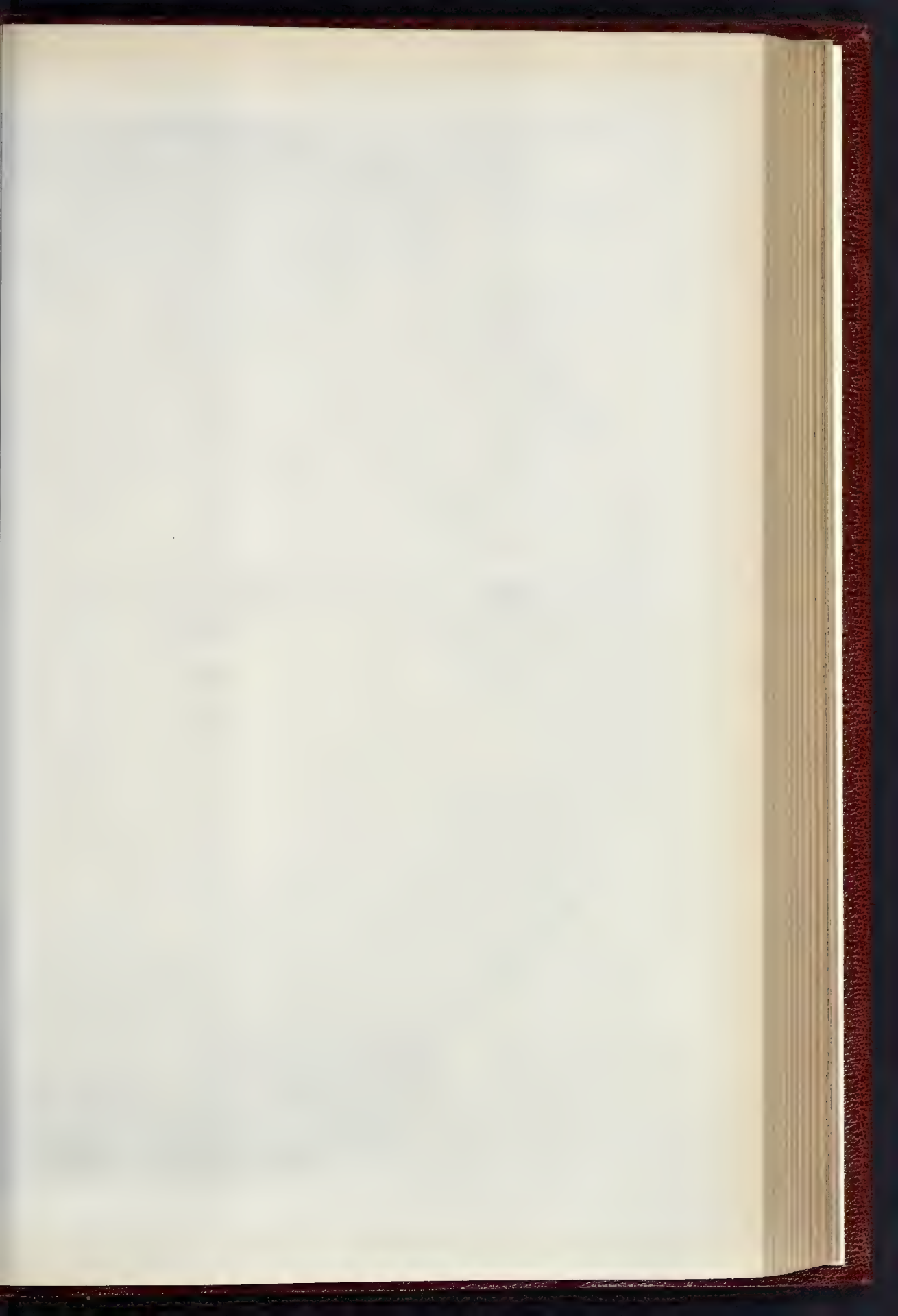


THE BUILDER, OCTOBER 13, 1883

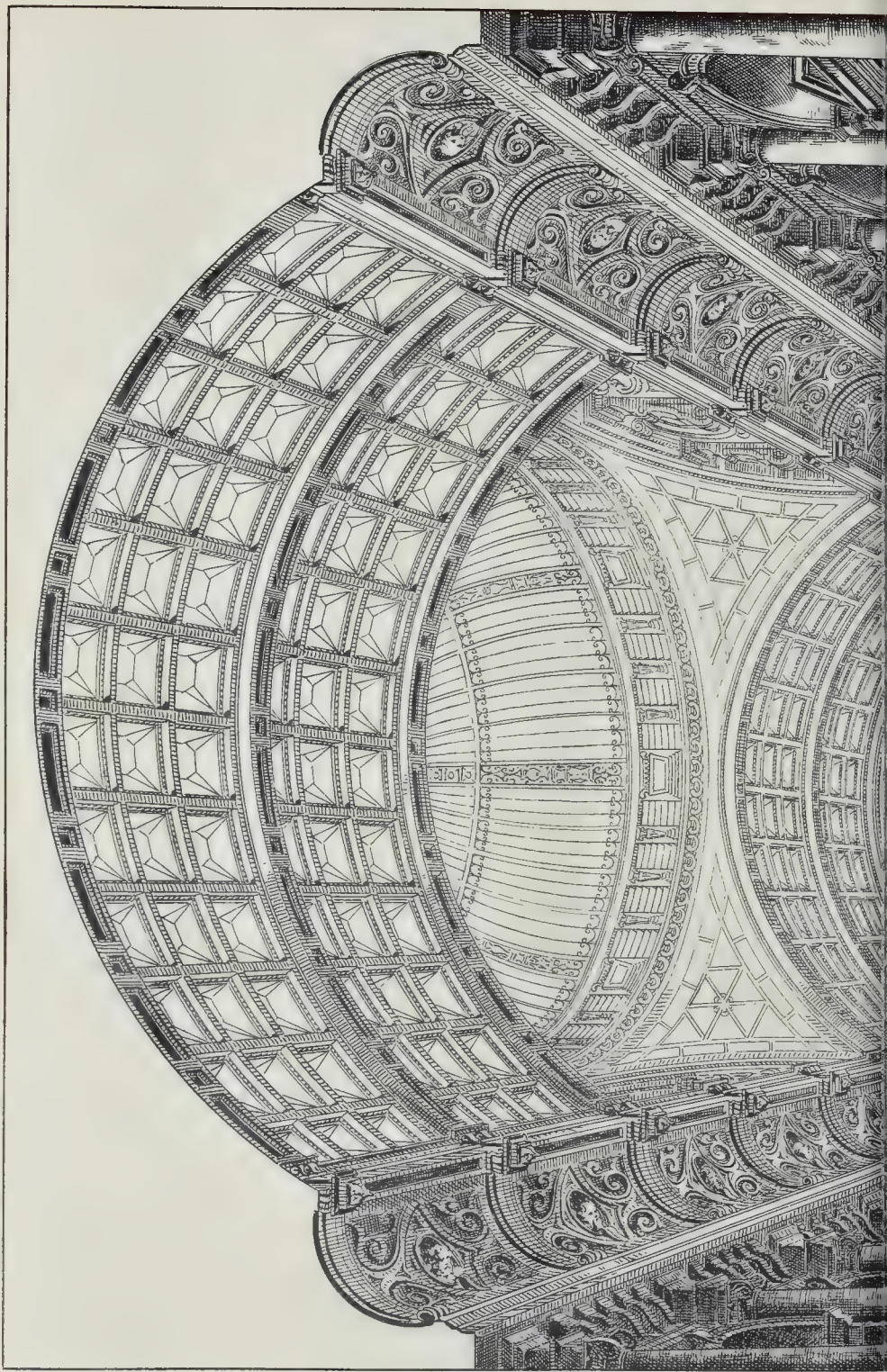


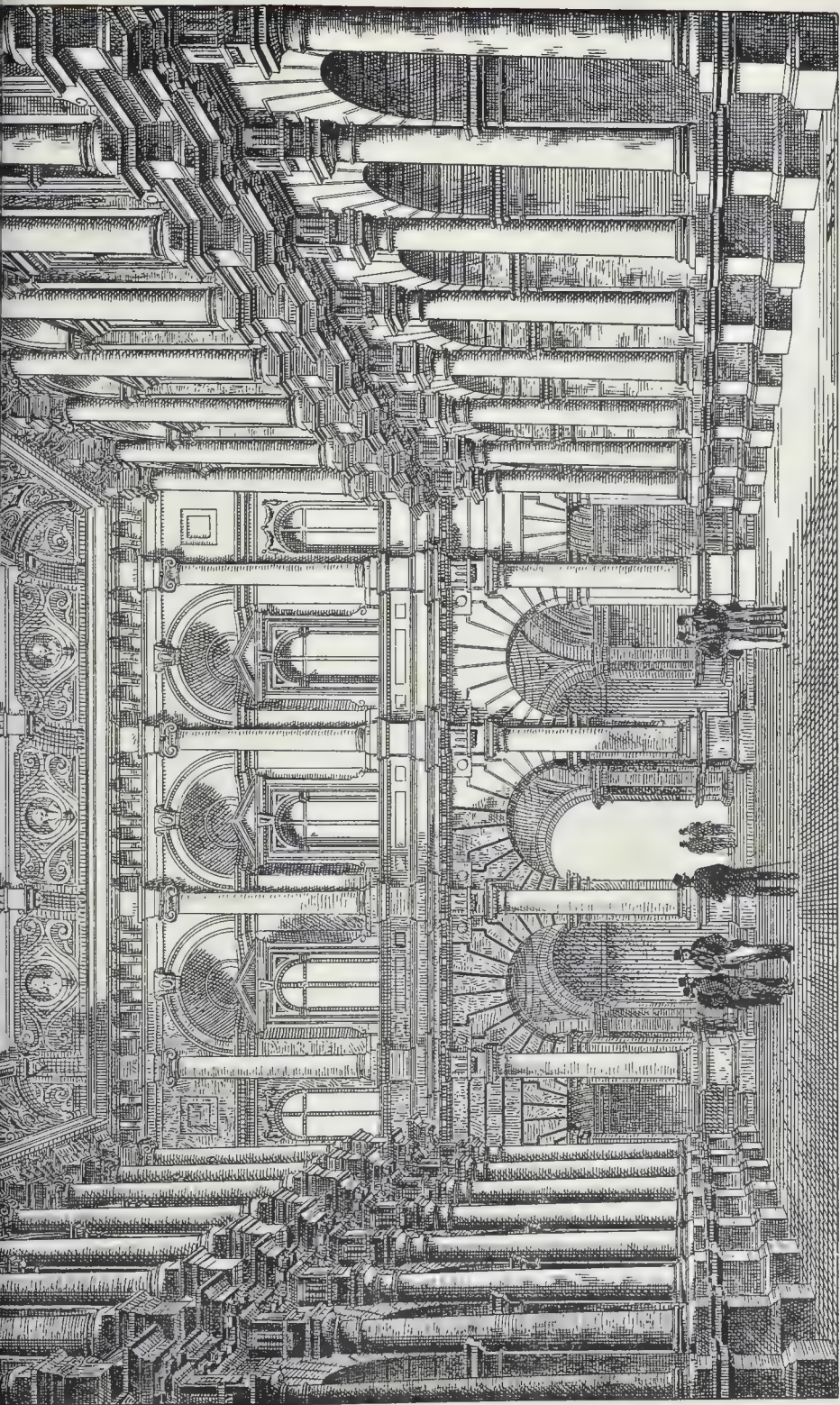


Vincent Brooks, Day & Son, Photo-litho



THE BUILDER. OCTOBER 13, 1883.





SELECTED DESIGN FOR ROOFING OVER THE COURTYARD OF THE ROYAL EXCHANGE.

MR. CHARLES BARRY, F.S.A., ARCHITECT.



HOUSE AT STOKE, NEAR COVENTRY. S E VIEW. MR. W. HALE, ARCHT.

Vincent Brooks, Day & Son, Photo-litho





REBECCA: A STATUE IN MARBLE, BY GIROLAMO MASINI.

REBECCA.

STATUE IN MARBLE BY GIROLAMO MASINI.

At the National Exhibition of the Fine Arts, Turin, the statue of "Rebecca," which we illustrate in this week's *Builder*, was looked upon by many as the most perfect work of sculpture exhibited. The jury conferred upon one of the two prizes available for statuary, those who sympathise with the new tendency inaugurated by D'Orsi cite it as a prototype of sculptural art which, while it adheres to the more elevated traditions of the past, combines perfection and carefulness of execution with the selection of forms, the modesty of movement, and the harmony of lines. In the design of his statue, Masini has discarded the drapery beloved by the traditions of Italian art, and has adopted in its place the costume of a Bedouin woman of the present day, disseminated by French painters. It is assumed that the latter probably differs little, if at all, from the very habiliments worn by the handsome daughter of Bethuel. The habits of life of these tribes have changed but little; their surroundings are still the same, owing to their nomadic life and customs, and their abhorrence of innovation. The statue has been purchased by the rich Frankfurter. The sculptor, Signor Girolamo Masini, is a native of Florence, and the author of a fine statue in the South Kensington Museum.

THE EVOLUTION OF LONDON.

We have no mention of London before the time of Tacitus, who died A.D. 99; he describes as a good place for trade, but not a colony or municipality. It is not referred to by Cæsar in any way, and we therefore surmise that the Romans first became acquainted with the locality when Aulus Plautius, having driven the native forces into the Essex marshes, encamped north of the Thames pending the arrival of Claudius. That Emperor brought reinforcements and thus obtained an easy triumph, A.D. 43. The rise of London was then very rapid, and it became at once a centre of traffic, a mercantile emporium, and base of supply for the Roman troops.

This must of necessity have occurred because of its central position on the main lines of Roman road, a study of which will elucidate its early topography; for this purpose we do not need any recourse to the Antonine itineraries, because the old roadways have all continued in use to the present time. We thus find that this primitive area is bounded on the north by a primitive trackway, as a defined limit in that direction; the roadway in question came from Amulodunum, now Colchester, crossed the River Lea at Old Ford, thence by the drift-way which Old Ford-road is an alternative route, and, by Old-street to the river Fleet, which was crossed at the low ground of Clerkenwell, and proceeding by Portpool-lane across Gray's Inn and to Holborn, Tyburn, Brentford, and along the Portway for the south and west of Britain.

We know this must have been the case from the persistence of the name *Old Ford*; thus showing that the natives passed on clear of the site of London proper, without crossing the Thames, preferring to take the shallows further west. We are thus led to recognise a probable route by which Aulus Plautius had advanced, and we can also infer the course he would take on his subsequent march to Colchester, where was planted the first Roman colony founded in Britain.

I take it as certain that it thus became at once necessary to establish a ferry across the Thames for communication with the south-east coast, and we are thus introduced to Watling-street, which we are told was the legionaries' route, i.e. it was made by Roman soldiers. It is the Kentish coast by three routes for Canterbury, crossed Shooter's-hill *via* Old Kent-road and Kent-street, in the marshes of Southwark; these causeways would be necessary to the ferry from Clink-liberty *via* Stoney-street to the northern bank about Steelyard; with the alternative of proceeding up the Wallbrook as far as Barge-yard, Bucklersbury; but the military route lay by the Dow or Water-gate, up Dowgate-hill, along Watling-street to the Prætorian camp at the summit of the cathedral precincts, where it is assumed that the Roman General Vespasian entrenched his forces, and where Claudius first found Londinium.

The first beginning of Roman London would thus be along both sides of the Wallbrook and Watling-street, and it may be taken for granted this was all that existed at the time of Boadicea's revolt, A.D. 61. Verulamium and Camulodunum both have preceding histories; both places had residential British chieftains with recognised names; both cities show us British coins from their local mints. London has no such precedent annals.

After this disaster London was first walled. It is probable that the N. boundary of the camp was continued S.E. along Cheapside to the Thames, probably at Billingsgate; there is no evidence to show that this was a stone wall. The next, and necessary stage of development, would be to bring the Colchester-road directly within this fortification by Aldgate and Fenchurch-street to a junction with the Watling-street ferry, and again through the camp and across the Fleet at Ludgate, for St. Giles, Tyburn, Verulamium, and Holyhead, including also the previous route S.W. *via* Brentford.

After this a further line of road was introduced called Irmine-street, which left the Sussex Coast, entered Southwark by Red Cross-street, to join the Watling-street at Clink Ferry, crossing London for the north, *via* Stamford Hill, for Royston, Huntingdon, and Lincoln, where was a colony. I am inclined to place the construction of Irmine-street as late as the time of Severus, A.D. 208, who made York an imperial residence, and kept up a continual stream of supplies by this route.

London grew thus till it was again sacked during the usurpation of Allectus, A.D. 293-6, after which, as I take it, in the reign of Constantine the Great, when it became an imperial mint town, it received its final development now known as the City proper, or London within the walls. This fortification extended from the Tower along the present line of London Wall to Ludgate; it was a solid stone wall, bonded with red tile in the finest style of Roman workmanship. Londinium then became Augusta, and after that the deluge!

At the present time, 1883, Aldgate still represents the Roman line of road to the eastern counties, diverted to Stratford in preference to the abandoned Old Ford. Bishopsgate still represents the old line of Irmine-street; Moorgate, Cripplegate, Aldersgate, and Newgate, are comparatively recent. Dowgate was superseded by the bridge, and Ludgate remains the representative of the old campstral Decuman gate.

Thus London was evolved from primitive roadways, as a military necessity of Roman occupation. A. HALL.

PENZANCE NATURAL HISTORY AND ANTIQUARIAN SOCIETY.

The members of the Penzance Natural History and Antiquarian Society held their summer excursion on Friday, the 5th inst., when they were favoured with fine weather. The first excursion was made to Zennor Church in several brakes and wagoettes, and the many points of historical interest associated with the edifice were elucidated by the Rev. W. S. Lach-Szyrna, vicar of Newbyrn West. It is a very primitive little building, dating from the twelfth century. The roof and walls are white-washed and quite devoid of monuments of any kind, a fact which the President (Mr. T. Cornish) thought somewhat noteworthy. The seats are of a rude description, altogether innocent of paint or varnish, and some of the antiquaries were, in fact, inclined to believe that portions of the woodwork had been repaired by remnants of wrecks, which is not improbable, seeing the proximity of the church to the sea-coast. The building is said to be the only unrestored church in Cornwall, and among its chief characteristics is a curious font, an ancient Norman window, and some fair examples of carved bench-ends. One of these is illustrative of the Mermaid of Zennor, with which an old legend is linked. Modern Christians would probably consider a representation of a mermaid an unsuitable piece of ornament for a church, but this is how the apparent inconsistency is explained.—Like as our Saviour represents two natures, the human and divine, so the mermaid also typifies two natures. For this reason the mermaid seems to have been held to be a fit emblem for the church; and the legend has it that, in the old days, the Zennor Church choir sang so charmingly that even mermaids were induced to come up from the coast to hear the music. One of these is said to have entered the church and so fascinated the squire's son by her beauty that she attracted him to the cave. But here he met with a cruel reward for his attention, for he was drowned. Such is a brief outline of the Zennor legend.

The party next proceeded to Trereen, and walked on to the footpath leading to Gurnard's Head, where there is a singular prehistoric structure. No one was able to explain the purpose for which it was designed. It is an inclosure with thick walls, and an extended entrance,—too large for a grave and too small for a dwelling-house, as an observer remarked. Known to have been in its present condition for about a hundred years, the structure has for this reason been accepted as prehistoric. Bosigran was next visited, and after a light luncheon had been served, the site of the Cliff Castle, with its Logan Rock and weather-worn stones, was inspected. The President claimed that it was a very fair specimen of the cliff castles which abound all round the coast. Their peculiarity is that they are built upon inaccessible points along the coast. What the castles were intended for, he said, was exceedingly obscure. They are so placed on headlands that landing on them is impossible. Therefore, Mr. Cornish thought it fair to assume the castles were built for the purpose of allowing the inhabitants of an invaded district to retreat to them until the invaders had departed. Some time was spent in examining the castle, in moving the Logan Rock, overhanging as it does a splendid bit of coast scenery, and the rock basins that are in course of formation. The President would not at all allow that these basins are carved out. He contends that the basins are naturally formed, and pointed to what lay around him in support of his contention.

Subsequently, Chun Castle came under observation. This, it was explained, was one of the best examples of hill castles known in the country, Castle-an-Dinas and Treorner being inferior to it in the order named. The plan of Chun Castle is a double wall, the construction of which is particularly noticeable. The stones are unwrought, and set apparently without tools, being put together so as to make a tight, well-bounded wall. Inside the wall the Cambrian Archaeological Society discovered a font with water in it, and all round the inside there are little chambers formed by small stones, very much after the fashion of Restormel Castle, Lostwithiel. In 1862 the side gates were 6 ft. high, while now they only attain a height of 3 ft.—a fact which was generally regretted. A short distance before Chun Castle is reached, the remains of an ancient British village are to be seen. There was no doubt in the mind of the President that it was a prehistoric village. The huts are well marked out, and can be readily detected; albeit, the inside of each is overgrown with heather and ferns. Villages of this sort have, according to a recent work by Professor Michell, been inhabited in Scotland in the present century.

The party shortly after rejoined the carriages, and drove homeward, calling at Madron Church,—the distinctive features of which were explained by the Rev. J. Morrell,—and returning to Penzance shortly after six p.m.

THE LAND LAWS.

MR. WILLIAM BARBER, M.A., Q.C., Professor of the Law of Real and Personal Property to the Council of Legal Education, presided over the Department of Jurisprudence and Amendment of the Law at the Huddersfield Congress of the Social Science Association, and in the course of his address he said,—The risks which are likely to arise from a too minute subdivision have, I think, been overrated. A statutory minimum limit might, of course, be fixed, but even if there were no such limit, it would generally happen that, instead of an actual partition of a small inheritance, one of the sons would buy up the shares of his brothers and sisters. Another reform which is, I think, much needed, and may now be usefully attempted, is a further reform of the law of mortgage of real estate. I propose that it should be enacted that every mortgage, however created, and whether purporting to convey the property or not, should operate only as an equitable charge; that a power of sale and the other powers commonly invested in mortgage

deeds should be conferred by statute on the mortgagee, and that there should be implied in every instrument of charge a covenant for the payment of the mortgage debt and interest. The operation of the statutory clauses might be controlled by the instrument of charge, but in the majority of cases little alteration would be needed; a short description of the property, a statement of the amount advanced, of the time fixed for repayment, and of the rate of interest, would be all that is required in an ordinary charge. The result would be this: in the comparatively few cases in which a mortgagee is compelled to realise the mortgaged property in order to obtain repayment of the mortgage debt, he would exercise his statutory power of sale, and pass the legal estate to the purchaser, without any necessity for the concurrence of the mortgagor. In the great majority of cases in which the mortgage debt is paid off, no reconveyance would be necessary,—a simple receipt endorsed upon the memorandum would at once extinguish the charge. And then, in order to avoid the complicated questions which so often arise as to the rights of mortgagees *inter se*, a register of mortgages should be established, and the priority of mortgages depend exclusively on the order of registration. The law of mortgage is not one which merely affects the relation of mortgagor and mortgagee; a mortgage transaction is not one in which they alone are selfishly interested: the whole community are affected by the existing law, and a man who never borrows any money on his own land, when he comes to buy or sell or deal with real property, is often burdened with a heavy expense, which is solely attributable to our present cumbrous system. If he buys property, the abstract which is supplied to him frequently consists, more than one-half of it, of mortgages, further charges, sub-mortgages, transfers, and re-conveyances; the legal estate has to be traced through a tangled mesh of incumbrances, and the difficulty and expense of investigating the title are enormously increased. To some extent the Conveyancing Act of 1881 and the shortened statutory forms will lessen the inconvenience; but the only effectual remedy, I am convinced, is to dissociate the law of mortgage from the law pertaining to the conveyance of real estate. Besides the reforms which I have mentioned, there is much preliminary work to be done before any complete system of registration of title can be successfully applied to our law of real property. The large Ordnance Survey must be completed; copyhold and customary tenures must be converted into common socage tenure, for which unification of tenure there can be no simplification of title; the Statute of Uses ought to be repealed; and further restrictions ought to be placed upon the power of a settlor to direct the accumulation of the income of settled property; and there are other subsidiary reforms which must be taken in hand before we can obtain for our landed system a simple tenure and the facilities of ready and inexpensive transfer. But to attempt more than can be successfully carried through is only to divide and weaken efforts, the united strength of which is required if any useful reform, however unpretentious, is to be effected in our law of real property. The programme which I have sketched will furnish more legislative work than is likely to be accomplished before the next congress of this association. These suggestions may seem to be mere nibblings at reform. There are other much needed changes of law as important to the community as any which I have mentioned. The recent amendments of our Bankruptcy and Patent Laws, the extension of the civil jurisdiction of local courts, the operation of the new rules of the Supreme Court, and the great social question, in which I take a special interest, whether the degradation of the poorer classes, "social wreckage," as Mr. Francis Peck has called it, is not at any rate in some measure due to bad law or a faulty administration of law; these and a score of other like subjects might well have found a place in a presidential address. But I have purposely kept within the limits which at the outset I prescribed for myself. A sound landed system lies at the root of national prosperity. If capital is to be more strongly attracted to the cultivation and improvement of the soil; if the title to land and its mode of transfer are to be simplified so as to promote its more free and healthy circulation; if, in short, we are to have a sounder landed system than we at present possess, this result is to be attained, not by startling innova-

tion, but by patiently continuing the process, which the slow working of our legislative machinery makes so unattractive and wearisome, of gradually uprooting from our law of real property the obsolete principles of manifold complications, the growth of ages, which prevent it from adapting itself to our growing social necessities, and from conforming itself to the higher standard of an improved moral sentiment.

ART AS APPLIED TO TEXTILE AND OTHER MANUFACTURES.

In the Art Department of the Social Science Congress at Huddersfield, on Monday last, a paper was read by Mr. Robert W. Edis, F.S.A., on "How can a School of Art, as applied to Textile and other Manufactures, be best supported and utilised, with a view of meeting foreign competition?" He said:—In promoting some schools for the improvement of art and technical knowledge applied specially to textile fabrics, with which Huddersfield and the district are particularly associated, it seems to me essential that the art-teaching of your school should be associated with practical or technical teaching in its largest sense, and with the special object of elevating the defined branches of industry from which the workers of both sexes more especially obtain their livelihood. A competent and sufficient staff of teachers, who shall devote their whole time to the work before them, should start on a basis entirely different to that promoted generally in the present Schools of Art. A proper programme of preliminary and advanced teaching, theoretical and technical, should be insisted upon, somewhat similar to that carried out in weaving schools at Verriers, Mulhouse, Crefeld, Ghent, Rouen, and numerous other places. After the first preliminary course of drawing the students should be taught freehand from natural flowers and objects as far as possible, and to arrange the grouping of natural objects conveniently or naturally in design for various tissues; competent masters should be engaged capable of teaching not only the theory but the practice of weaving, dyeing, and chemistry as applied to various colours, their fixity and durability, with short practical lectures showing by experiments the different arrangements of colours, and pointing out the various combinations and differences effected by the placing in juxtaposition of various colours. The art teaching should be by progressive stages. The technical instructor should teach the students how to apply to practice and to utilise the scientific and artistic knowledge derived from the teaching in the classes for drawing and design. Dexterity of hand, with a habit of rapidity of practical execution, should be sought for rather than the stippling and excess of shading which are now generally taught. The pupils should be taught in a common-sense manner,—each professor or teacher should endeavor to adapt his teaching to the capacity of the pupils; he should strive to place under the eye of the pupil the objects of which he is speaking, and to satisfy himself by frequent questions that his pupils have understood him. The progressive advanced course should include the elements of industrial mechanics and of chemistry, with special reference to its application to local industry; the various processes of weaving, and all connected with it; the theories of tissues, their classification, manufacture, composition, and analysis; the theory of colours, their contrasts and combinations; ornamental design, comprising the drawing of flowers from Nature, the composition of groups of ornaments and flowers, and other natural objects applied to textile fabrics of all kinds, together with instruction needful for their application to the looms, and general industrial design. As far as practicable, foremen of the principal factories should be induced to ally themselves with you, and be paid for short courses of simple lectures; or, still better, conversational discussions, aided by practical teaching with material, setting forth all the preliminary operations of weaving, such as winding the bobbins, preparing and mounting and rolling up the warp; of the various apparatus, &c., employed in these operations for hand and power loom weaving; the preparation of the weft, winding, dressing, &c.; of the setting of patterns, and of general weaving. The pupils should then be taught to set their own designs, and to practise themselves

in the technical work under the foreman or teacher, and explanation should be given in every branch in a systematic manner in all the operations connected with weaving, from the design to its execution on the loom, and, if possible, this teaching should be assisted by periodical visits to the various factories where the work could be explained in a more practical way. The pupils should also be taught to analyse and reproduce themselves, in woven fabrics, all kinds of specimens of stuffs, from the most simple to the most complicated, and thus to acquire a thorough artistic and technical knowledge of everything relating to the production of textile fabrics. I believe such a system as this, as practically carried out in the school of Ghent, would lead to the vast improvement of all textile work, and the pupils thus trained would naturally find employment in the factories at remunerative wages, and the improvement in all work would, I believe, tend materially to improve the trade of the district and to satisfactorily meet foreign competition. Attached to each school should be a well-selected library of works pertaining to ornamental and other design, together with all the best works on applied sciences, and periodical publications illustrating the various inventions and artistic designs of other countries, which such people as might be recommended by the teachers should be allowed to have on loan for a certain period. If this could not be arranged, the library should be made free to all, and pupils encouraged to use and study in it, while occasional short lectures might be given on special subjects, made as interesting as possible by drawings on the black board, or with examples borrowed or provided for illustration. Interest the students by every means in your power. Point out to them in an intelligent manner the difference between good and bad ornament. Show them how to group different forms, to make various combinations. Teach them harmonies of colouring, and exemplify this teaching by surrounding them as much as possible with good specimens of textile fabrics. Have beautiful things about them, for remember if you surround your workers with all that is mean, hideous, and commonplace in design, no teaching in the world will be of any lasting service. It seems to me that the question of the proper support and keeping up of these special schools, in which the artistic and technical feeling should be made especially applicable to the particular trade of the district, is one in which each municipality or local district authority should have a special interest, and that they should be directly supported by the district quite as much as the preliminary or Board schools; for surely it is as much a matter of interest, from a purely commercial point of view, that our workmen and workwomen should receive an education fitting them for the carrying out of the trades of the country, and to meet the ever-increasing improvement in artistic and scientific productions throughout the world, and to hold their own against the art industries of other nations, as to insist on a general education, the primary education of the children of the masses. The promotion of a system of what I may call industrial education, which shall best enable the individual to follow his or her particular trade with advantage to the State and profit to the individual, is surely one which demands State recognition as much as primary education in reading, writing, and casting up accounts, as each district is likely to reap the benefits directly of improvement in its particular trade, by improved education of the workers, and through them of the higher artistic and commercial value, whether directly by higher price or by increased demand. Each district should pay a proportion of the charges for that educational system by which it will particularly reap the profit and advantage. It is unfair, however, that the State should leave the whole cost of this education to the town or district; in all other countries the educational system is properly organised and supported by the State and various local authorities as being of paramount importance to the manufacturing interest of their respective countries. Why should not a similar State education, assisted by local subsidies, be organised and supported in this country?

Mr. G. Marchetti also read a paper on the same question. The author said we must not regard what we have done as being sufficient for at least our own generation, but rather as an incentive to press forward and do more. This can be accomplished in great measure by our schools of art; but to render them efficient

and popular, we must help and patronise them to the utmost of our ability. We must urge the young to attend them, we must all of us do our best in every way to enable them to multiply and prosper. It is, therefore, necessary that schools of art be supplied with every means for ensuring the successful training of students, and for enabling them to acquire that experience that is necessary for keeping at least abreast with their Continental brothers. Manufacturers and merchants should, however, not lose sight of the fact that, in supporting schools of art, they further to a great extent their own interests. No success can be obtained by the former if English manufacturers do not possess the required artistic value, and such value cannot be arrived at unless we support those schools where art is taught.

In the ensuing discussion it was denied that English art was behind Continental art.

THE IMPROVEMENTS IN AVE MARIA-LANE AND WARWICK-LANE.

CHIEFLY under the auspices of the Dean and Chapter of St. Paul's and the Stationers' Company, who have been instrumental in sweeping away several of the dilapidated old structures in the locality, a new face is being imparted to Ave Maria-lane and Warwick-lane, which are at the same time being considerably widened. The Dean and Chapter have already erected several new buildings on the west side, and in the grounds in the rear beyond, as residences for the minor canons and other officials connected with the cathedral, and we now notice that all the old shops and other structures belonging to the cathedral authorities, and extending southward from their new buildings to the boundary of the premises which have just been erected by the Stationers' Company, are about to be taken down, and replaced by new structures. Adverting to the block which has for some time past been in course of erection in front of their hall, by the Stationers' Company, it may be stated that it is now almost completed, presenting a handsome and richly-carved elevation in Portland stone and white Suffolk brick,—what will eventually form the central portion of the Ave Maria-lane frontage of the block to be extended being entirely in the first-named material. Over two arches in this part of the elevation is the following inscription carved in stone:—*Verbum Domini manet in Eternum**, and on each side of the inscription is a carved representation of a large folio volume. From Amen Corner to the south boundary of the building, so far as at present erected, the Ave Maria-lane frontage is 90 ft. in length, but it will ultimately be 150 ft. long when the extension in the direction of Ludgate-hill, uniform with that on the north side of the central portion of the structure, and which is now in progress, is completed.

Another prominent building has just been completed in Warwick-lane, opposite the west end of Paternoster-square. It immediately adjoins the buildings recently erected by the Dean and Chapter of St. Paul's, already referred to, and has been erected for the proprietors of "Whitaker's Almanac." It being the wish of the owners that the building should, in some respects, present an external appearance uniform with the cathedral residences adjoining, the designing of the building was confided to Mr. Ewan Christian. Although, like its neighbours, the building is faced with red brick, set in black mortar, it presents necessarily a more commercial appearance than the chapter buildings, and is carried to the unusual height of 92 ft., containing four lofty stories above the ground-floor, in addition to dormers set back from the general frontage line. At the north angle the elevation is surmounted by a step gable, and at the south angle there is an ornamental chimney-shaft. The entrance to the building at the ground-floor is by a flight of steps in white marble. Mr. Brass, of Old-street, was the contractor. It is intended ultimately to remove all the old buildings on the west side northwards, and to widen the thoroughfare throughout to Newgate-street.

Builders' Benevolent Institution.—The late Mr. Henry Couchman, of Lee-road, Blackheath, has bequeathed the sum of 200l. to this institution. The annual dinner of the Institution will take place on the 8th prox.

EVOLUTION IN ART.

IN the discussion which followed the reading of Mr. Cave Thomas's paper* on this subject before the Art Department of the Social Science Association's meeting at Huddersfield,

The President (Sir Rupert Kettle) regretted that Mr. Thomas was not present, so that he might give a more practical elucidation of some of the propositions he had laid down. It appeared to him, taking the broadest view of the question, that to treat proportion as a fixed quantity was open to exception, because his impression was that the proportion was relative and not positive. If the word "beauty" had been substituted for the word "proportion" in the paper, it would have been more easy to understand. The subject was an occult one, and scarcely to be dealt with offhand, but he considered that the thoughts applied to evolution would have been more appropriate if applied to devolution.

Mr. J. W. Davis (Halifax) questioned the statement that caricature preceded decadence in art, and said that in English art it was the forerunner of the best art that we have seen. The caricaturists of the close of the last and the beginning of the present century were followed by the production of our great water-colour artists, and by the formation of the Water-Colour Society.

Mr. T. C. Horsfall (Manchester) denied that the art of a nation was the index to its intelligence, art being influenced by many things besides intelligence. At the beginning of the present century England possessed domestic art in a greater degree than at present. Every piece of domestic furniture and everything used for domestic life bore the impress of traditional art. Owing to the development of the manufacturing system, domestic art has been forced out of the lives of the larger part of the English people; but, although this was a regrettable fact, they could not say that it was the result of the decadence of the intelligence of the nation. As to the statement that it was a mistake to place in our public galleries the products of archaic art, Mr. Horsfall said that any intelligent working man who might be induced to spend an hour or two in their public galleries could, with a little guidance, easily gain the power of enjoying the pictures of Giotto or Fra Angelico.

After a few remarks from Mr. F. F. Abbey (Kirkburton),

The President, in closing the discussion, said he considered that full justice had not been done to caricaturists as the followers of a branch of art requiring great skill, and spoke of the usefulness of caricature in the work of education.

THE NEW MUNICIPAL BUILDINGS FOR GLASGOW.

A PROCESSION OF BUILDING TRADES.

ON Saturday last the foundation-stone of the new Municipal Buildings for Glasgow was laid with Masonic honours by the Hon. John Ure, Lord Provost of the City, associated with Wm. Pearce, esq., Right Worshipful Provincial Grand Master, and the office-bearers of the Provincial Grand Lodge of Glasgow of Ancient Free and Accepted Masons of Scotland, and numerous other lodges. The day was observed as a general holiday, and the demonstrations of popular enthusiasm, said to be unique in connexion with similar events in the history of the city, were fortunately favoured by the fineness of the weather. A notable feature of the day's proceedings was a monster procession, consisting, it is reported, of fully 25,000 people, made up as follows:—The carters, 600, besides 48 vehicles and nearly 400 horses; the building trades, 5,650; textile trades, 2,100; miscellaneous, 4,700; metal workers, 7,450; Corporation and Clyde Trust employés, 3,200; shipbuilders, 1,600; and the Linthouse Ambulance Corps, 20.

The Building Trades' section of the procession was led off by the *Operative Glaziers*, who turned out to the number of about 250. In front of them the standard-bearer carried a flag with a motto in Latin, meaning "Give us Thy light, O Lord," while one man in the ranks carried the glaziers' coat of arms with the motto "We thank God for the light." Among the other articles borne by the glaziers was a picture of Mr. John

Bright in stained-glass, a crystal model of a monument, a glass crate, window ventilators, several specimens of stained-glass, &c. Close behind the glaziers came the *Operative Slaters*. They numbered fully 350, and in front was carried the Union Jack, while at some distance behind was a banner bearing the motto, "And make sure." Scattered through the ranks were various models,—one showing slaters busy at work on the roof of a house, another two men on their way to work, and others exhibiting a slate knife and hammer wreathed in flowers. The third group, the place for which had been secured by ballot, was that of the *Sawmillers*, who turned out about 400 of their craft. At their head were carried flags showing the motto of the society and with trade emblems emblazoned thereon, while the men carried models of a circular saw-bench, a plane saw-bench, and a saw-sharpener. Accompanying this section were two lorries, each drawn by two horses tandem. One of them carried a bench with saw sharpeners at work, and on the other, which was fitted all round with circular tops of window frames, a planing-machine was kept in operation by means of belting put round small wheels fixed on the axle of the vehicle, and the shavings produced were thrown to the spectators. The *Operative Masons*, who came next in order, numbered 1,400. At their head was the flag of the trade, bearing the motto, "Unity, Friendship, and Truth." On a van was arranged a stone pulpit, whilst on two lorries which accompanied the section were models of the Corinthian capitals, bases, columns, &c. The *Bricklayers* numbered about 300, and they carried two banners and two flags with the name of the association emblazoned thereon, and bearing the mottoes, "We join to protect," and "Let Glasgow flourish." The processionists also carried a gigantic model of a trowel, 4 ft. long in all, the blade being 3 ft. in length by 15 in. in breadth. The other devices carried here were a hammer and a jointer, and a model of a chimney-stalk. The *Operative Plasterers' Protective Association* was represented by 200 men. They carried one banner, bearing the name of the association, and a statuette of Sir Walter Scott, while on a lorry there was shown a model of the new Municipal Buildings. The *House and Ship Joiners and Cabinet-makers* turned out between 1,800 and 2,000 representatives. The central branch headed the section with three flags and a large banner, the principal one bearing the name of the association, and under two hands joined was the motto, "United we stand, divided we fall," another having the trade injunction, "Secure your rights." The other branches represented were the Clyde, Partick, Whiteinch, Govan, Glasgow North, Glasgow South, and Glasgow East. This large division carried no fewer than twenty-eight models, many of them manufactured of curled shavings. Considerable time must have been devoted to the production of some of the articles, and much taste and skill was displayed in the manipulation of the frail material. The *French Polishers* totalled 125. In the front was carried a large two-pole banner, bearing the city arms, with two figures, and the motto, "Union is strength"; and a few yards behind was a smaller banner showing two clasped hands, with the motto, "United to protect, not to oppress." There were also a trade banner and a Union Jack in this detachment. The *Lath-splitters*, though a small body only numbering eighty, had besides their trade flag a number of interesting models. The principal of these were an elliptic arch supported by two columns and two plasters all formed of lath, a model of a cottage in lathwork, and two trophies of tools used in the trade, while on a lorry which accompanied the party were two men splitting laths. The *Painters*, who numbered 300, carried three banners and two flags, one of them bearing the motto, "Ours are the arts of peace, to live like brothers, and to embellish life," and "True to our colours"; and another "The good of the people first." The processionists carried a number of models of implements used in the trade. The *Plumbers*, to the number of 400, brought up the rear of this division of the procession. They had one flag, bearing the well-known motto of the Volunteer movement, "Defence, not defiance," and among the thirty models carried were those of a bath complete, with plunge, shower, and spray; a brass force-pump, ventilators, terminals, &c. At the head of each trade was a brass band or some pipers.

The buildings, which have already been

* See *Builder*, p. 445, ante.

described at some length in our columns,* are being erected by Messrs. Morrison & Mason, contractors, Glasgow, from the designs and under the superintendence of Mr. William Young, architect, London, whose design, as our readers will know, was selected in competition. Mr. E. C. Morgan is the clerk of works. The cost of the buildings is estimated at £50,000.

At the banquet given by the Lord Provost in the evening, Mr. Young, responding to the toast of "The Architect and Contractors," expressed his thanks to Mr. Carrick, the City Architect, to whom he was indebted for the general scheme of the plan of the new buildings, besides many valuable suggestions. Mr. Mason also responded, on behalf of the contractors. Councillor Laing, in proposing "The Referees in the Designs Competition,"—Mr. Charles Barry and Mr. Carrick,—paid a high tribute to the professional abilities of those gentlemen, and stated that Mr. Carrick had now been upwards of forty years in Glasgow acting as Borough Engineer. Mr. Barry, in replying, took occasion to remark that the system which had been adopted by the Town Council of Glasgow in instituting the competition had up to that time been unknown. The conditions were carefully considered by the Lord Provost and the Town Council, with such assistance as Mr. Carrick and himself could give them, with the object of securing the best result for the public, and of being entirely fair to those who were asked to compete. It would be some little satisfaction to the Lord Provost and the Council to know that the conditions of the competition had become more or less a model throughout the kingdom. The Royal Institute of British Architects, of which he had the honour to be a member, had adopted them as their model, and the Government, in the erection of new offices which were now proposed, had adopted them in part. He had little hesitation in saying that they would yet come to be almost universally adopted.

BUILDING PATENT RECORD.†

APPLICATIONS FOR LETTERS PATENT.

- 4,527. R. E. Cox, London. Furnace stoves and grates for slow combustion, &c. Sept. 21, 1883.
 4,546. G. F. Harrington, Ryde. Cowl arrangements for ventilation. Sept. 24, 1883.
 4,586. A. Barker, London. Bracket for seats, shelves, &c. Sept. 26, 1883.
 4,613. W. G. de F. Garland, East Molesey. Construction of fences. Sept. 28, 1883.
 4,618. H. C. Paterson, Glasgow. Ventilating buildings. Sept. 28, 1883.
 4,641. G. G. MacWilliam, London. Water-closet basins. Sept. 29, 1883.
 4,662. O. H. Fitzmaurice, London. Apparatus for ascending towers, chimney-shafts, &c. Oct. 1, 1883.
 4,684. A. J. Boulton, London. Ventilating apparatus. (Com. by L. J. Wing, New York, U.S.A.) Oct. 2, 1883.
 4,697. W. R. Lake, London. Water-closets, &c. (Com. by J. P. Putnam, Boston, U.S.A.) Oct. 2, 1883.

NOTICES TO PROCEED

have been given by the following applicants on the dates named:—

- September 25, 1883.
 2,613. F. Newman, Ryde. Traps for flushing and inspecting drains. May 25, 1883.
 September 28, 1883.
 3,146. M. Syer, J. Gilmore, and W. R. Clark, London. Flushing apparatus, &c. June 25, 1883.
 Oct. 5, 1883.
 4,127. G. M. Edwards, London. Metal laths for use in the formation of ceilings, &c. Aug. 27, 1883.

ABRIDGMENTS OF SPECIFICATIONS,

- Published during the week ending September 29, 1883.
 427. C. Weygang, London. Manufacture of fibrous material applicable for floor-cloths, roofing-felt, &c. June 26, 1883. Price 4d.
 The fibrous material is mixed with a silicic acid, which oil has previously been boiled into a thick condition and rendered mixable with water by means of an alkali.

* See *Builder*, vol. xliii., pp. 224, 620. At p. 626 of the same volume will be found a view of the principal elevation.

† This is scarcely correct; it was adopted at Manchester in respect of the new Town Hall. We regret to hear that an accident has befallen Mr. Barry during his visit, and that he has broken the bone of his right shoulder.

‡ Compiled by Hart & Co., Patent Agents, 186, Fleet-street.

457. A. Arnott, London. Fastenings for doors, &c. Jan. 27, 1883. Price 2d.

These fastenings are so made that on a pressure from the inside the door will open outward. (*Pro. Pro.*)

473. J. Hall, Stourbridge. Manufacture of porcelain fire-clay baths. Jan. 29, 1883. Price 1d.

The outside are painted with priming powder heated, which when cold is rubbed smooth with pumice stone. This is done twice, when three coats of the colour mixed with varnish are given, and the bath is finally enamelled.

481. R. Stone, New York, U.S.A. Apparatus for grappling and hoisting stone. Jan. 29, 1883. Price 8d.

The claws of the grapple are jointed to a crown-piece and connected to a vertical rod. Springs force these claws on the stone, and two ropes are fitted, one for hoisting the stone in the claws, and the other for opening and releasing the same.

489. J. A. B. Bennett, King's-heath, and J. Herd & B. P. Walker, Birmingham. Heating and cooking stoves. Jan. 30, 1883. Price 2d.

The products of combustion pass from the fireplace through vertical flues having deep horizontal corrugations. The air to be heated passes between these corrugations and the outer casing. (*Pro. Pro.*)

505. J. H. Norrington, Harlesden. Attachments for bracket-arms or shelves to their standards. Jan. 30, 1883. Price 6d.

A U-shaped clip passes into a hole in the standard and partially surrounds the same, and its ends have vertical slots to receive the locking-pieces of the bracket socket.

531. M. Benson, London. Drain tiles. (Com. by J. Lynch, Washington, U.S.A.) Jan. 31, 1883. Price 4d.

The upper part is made porous and the lower part is glazed.

532. M. Benson, London. Terra cotta tiles. (Com. by J. Lynch, Washington, U.S.A.) Jan. 31, 1883. Price 4d.

The face is glazed and the back part is porous.

576. D. F. W. Quayle, Cusletown. Window-sashes. Feb. 2, 1883. Price 6d.

Bars are fixed to the sashes, which secure the same when closed by entering recesses in the walls; but when the sash is opened they move automatically with it and cover the opening.

599. S. S. Hellyer, London. Water-closets and slop-sinks. Feb. 3, 1883. Price 6d.

Two orifices are employed for the flushing rim, which are placed opposite each other, and are so set as to deliver their streams round the basin in opposite directions. The overflow lip is formed round the basin a little below the flushing rim.

Published during the week ending October 6, 1883.

- 5,685. F. Smith, London. Walls, arches, and other brickwork, &c. Nov. 29, 1882. Price 6d.

The walls have an inner or outer face, or both, in which the visible joints are much narrower than usual, though the usual quantity of mortar is placed between the bricks. This is effected by making a small beading round the edges of the bricks.

544. F. J. Austin, London. Automatic sanitary flushing apparatus. Feb. 1, 1883. Price 2d.

The cistern is emptied by a syphon consisting of a cap over the discharge-pipe. Above the syphon is a tank containing the disinfectant, the valve of which is opened by the rush of water. (*Pro. Pro.*)

600. F. Fletcher, Warrington. Cooking-stoves or ranges. Feb. 3, 1883. Price 2d.

A passage is made from the oven to the flue, which is governed by a damper. When gas is used the burners are placed in the bottom of the oven, and when coal is used the flues from the fire-places surround the oven. (*Pro. Pro.*)

608. T. Cliffe, Huddersfield. Removing the superfluous body or glaze off enamelled bricks or tiles. Feb. 5, 1883. Price 2d.

The brick, &c., is subjected to the action of a revolving belt on which are pins or teeth. (*Pro. Pro.*)

615. T. Webster, Edinburgh. Apparatus for opening and closing curtains. Feb. 5, 1883. Price 2d.

The curtains are attached to rods which slide in a longitudinal groove in the curtain-pole. (*Pro. Pro.*)

619. G. W. von Nawrocki, Berlin. Hinges for doors, &c. (Com. by O. A. Ludewig, Stuttgart.) Feb. 5, 1883. Price 4d.

The hinge is made in two parts, which are held together by a button, and a disc is made to catch the oil.

637. W. White, London. Rendering existing walls damp-proof. Feb. 6, 1883. Price 4d.

The wall is scraped quite clean, and a face of tiles is applied thereto, which tiles are held in position by a composition as described in Patent No. 4,065 of 1881, which is poured in between the tiles and the wall. The tiles may be made by distributing over their surface a quantity of small coal or coke. The tiles are then pressed and burned, when the coal burns away, leaving a honey-combed surface into which the composition enters and binds the tile to the wall.

662. F. Wirth, Frankfurt. Artificial stones made from cork shavings. (Com. by K. Grunzweig and P. Hartmann, Ludwigshafen.) Feb. 6, 1883. Price 4d.

Pulverised cork is mixed with a heated starch paste and immediately dried at a high temperature.

684. J. G. Stidder, London. Apparatus for supplying, flushing, discharging, and trapping arrangements for sanitary and sewerage purposes with boxes and gratings. Feb. 7, 1883. Price 6d.

This consists of a variety of details for increasing the efficiency of such apparatus in intercepting effluvia, &c., which are shown by twenty figures in the drawings, but which cannot be condensed.

695. J. Hay and G. Robertson, Glasgow. Window-sashes. Feb. 8, 1883. Price 4d.

The cords are attached to sticks which are inserted in recesses in the sides of the window-sash, but which can easily be removed.

705. W. Russell, Manchester. Kitchen and cooking ranges and stoves. Feb. 9, 1883. Price 8d.

The heat from the fire passes through a flue directly to the oven, which this flue surrounds. When gas is used in combination with coal the burners are applied to the top of the oven. Several other details are shown.

712. G. Ermen, Dawlish. Fireplaces. Feb. 9, 1883. Price 6d.

A pipe passes up the chimney to carry off the products of combustion, and the chimney itself acts as a hot-air chamber, the bottom of which is closed, and a pipe leads the heated air to a cylinder beneath the fire-place, whence it is distributed as required.

762. A. Coad, London. Appliances for flushing urinals. Feb. 12, 1883. Price 2d.

An oscillating vessel is suspended within the cistern, and the flush is effected by tilting the inner vessel. (*Pro. Pro.*)

803. W. Mullett, Brierley-hill. Construction of walls for buildings. Feb. 14, 1883. Price 4d.

The wall is made in two parallel parts, which are joined together at intervals by bricks which cross the space between. These bricks are arranged in a vertical series up the whole height of the wall, but a channel is made between each pair of bricks by grooves therein which form a communication between the separate spaces.

812. H. Thompson, London. Construction of domestic stoves and grates. Feb. 14, 1883. Price 6d.

The back of the grate is pivoted at the bottom, so that it can be set at any required angle. The back is counter-weighted below the grate to keep it in this position.

814. J. Kaye, London. Locks and latches. Feb. 14, 1883. Price 6d.

This is an improvement on Patents No. 4,873 of 1877 and No. 1,643 of 1880, in fitting an aperture in the loose knob in which the spindle can slide, and in fixing a collar on the spindle, which presses against the lever and actuates the latch.

905. J. Dunbar, Coalbrookdale. Fire-grates. Feb. 19, 1883. Price 6d.

The panels are capable of being laterally expanded or contracted so that the grate can fit any different size of opening in the wall.

VALUE OF PUBLIC-HOUSE PROPERTY IN FARRINGTON-STREET.

At a sale of the lease of a public-house which took place last week at Masons' Hall Tavern, some novel and interesting facts were incidentally disclosed as to the increased value given to public-house and other property by the external walls being used for advertising purposes. The property offered for sale was the lease of the "Mail Coach" public-house in Farringdon-street, the particulars stating that it was held for an unexpired term of fifty years, at a rental of 105*l.* per annum. The auctioneer, in drawing attention to the great value of the property as an old-established place of business, observed that it was rendered still more valuable in consequence of the rental being reduced to the extent of one half, owing to one side of the house being let, as an advertising station at a rental of 50*l.* per annum. There was an active competition for the property, which was sold for 4,750*l.*

Leadenhall Market.—At the meeting of the Court of Common Council on the 4th inst., Mr. J. L. Dowling moved—"That it is desirable the new street from Leadenhall-street to Fenchurch-street be completed with the least possible delay, and that it be an instruction from this Court to the City Lands Committee forthwith to take the necessary steps to carry out the unfinished section of the Leadenhall Market Act, 1879." The mover complained of the delay that had occurred in the completion of the new street. Mr. Peabody seconded the motion, and, in reply to several questions, the Comptroller (Mr. J. A. Brand) stated that the delay complained of had been occasioned by the time occupied in negotiating for the properties required. All the trade and other interests had now been acquired, with the exception of the freehold of a portion of the land, and that matter was to be referred to an umpire for decision. The motion was agreed to.

SALES OF BUILDING ESTATES.

THE British Land Company have just become the purchasers, through Mr. Jackson, land agent, of Cheapside, of the West Hill Estate, situated between Wandsworth and Putney, and immediately to the north of Wimbledon Park, through which the Metropolitan District Railway is about to be extended from Putney to the London and South-Western line at Wimbledon. The Southfields Station of the intended line will be on the north-east side of the park, just before the intended railway enters it, and within about five minutes' walk of the new station. The property purchased includes the mansion on the estate and about 30 acres of land, which the British Land Company intend once to lay out for building upon. The purchase-money is said to be at the rate of about \$500. an acre.

An important sale of building land at Southsea took place last week at Portsea, which shows the great value of property in that marine and suburban district of Portsmouth. The property consisted of a mansion and the grounds attached, and was offered in thirty-two lots. As indicating the class of houses to be erected on the estate, the conditions provided that no house of less value than 50*l.* a year should be erected on any plot, with the exception of five, and these were to be business premises, but no public-house. For the several plots having frontages to Castle-road, one of the most fashionable thoroughfares in the locality, there was an active competition. One plot, 50 ft. frontage and 60 ft. in depth, commenced with an offer of 20*l.* per foot frontage, and was sold for 1,550*l.* Several other lots, having frontages of 50 ft. and a depth of 84 ft., were sold at prices varying from 1,450*l.* to 1,500*l.*, three plots being sold at 30*l.* per foot frontage. Four plots, having a frontage of 20 ft. to Kent-road, and upwards of 100 ft. in depth, were sold for 450*l.* each, or at the rate of 22*l.* 10*s.* per foot frontage. Offers of 28*l.* per foot frontage were declined for several of the plots in Castle-road.

PROVINCIAL NEWS.

Llandudno.—The new pier extension, and swimming-bath and pavilion, are on the eve of completion. The first portion of the pier, which was finished in 1877, is 1,234 ft. long, all on piles. The extension landwards, which was completed last March, is 1,000 ft. long, being nearly all sea-walls. The swimming-bath, just now temporarily opened, occupies the whole space under the pavilion, and is approached by a double flight of steps from the Pier Extension, one approach for ladies and the other for gentlemen. The bath is 158 ft. long and 50 ft. wide, 7 ft. 6 in. at the deep end, and 3 ft. 10 in. deep at the shallow end; the sea water flows in and out through a 15 in. conduit-pipe with every tide. It is lighted with side windows, all opening for ventilation under four ventilating shafts, and is surrounded by a platform 14 ft. wide. Forty-four spacious dressing-boxes are at present provided, with room for ten more when needed, and it is proposed to fix a spectators' gallery down one side capable of seating 400. Provision is also made for a steaming wash-house, laundry, and drying rooms; also for sixteen private baths. The pavilion, which is the principal building, is 205 ft. long, inclusive of dressing-room, 84 ft. wide, with an additional width of 20 ft. to transients; 45 ft. high to apex of main roof, and 60 ft. to apex of the transept roof; is cruciform on plan with a 20 ft. wide gallery all round, the gallery floor being on a level with the Marine-road, which will be the carriage entrance. The stage is 50 ft. by 34 ft., with four dressing-rooms, water-closets, lavatories, &c., behind for the use of performers. The proscenium, which forms part of the plans, is 26 ft. wide, but is not carried out. On the pavilion floor are: reading room, 50 ft. long and 20 ft. wide; two cloak-rooms, refreshment-rooms, two ticket-offices, with water-closets and lavatories. On the gallery floor is a buffet 50 ft. long and 20 ft. wide, approached from the Marine-road. The general style of architecture adopted is Renaissance. The whole work has been designed and carried out by Mr. B. Nelson, architect and civil engineer, Llandudno. The cost of the whole has been about 39,700*l.* The general contractors have been Messrs. Gradwell, Barrow-in-Furness; T'Anson & Co., Darlington;

Smith & Pilkington, Bacup; and Shelton & Co., Birmingham.

Reigate.—The Corporation of Reigate have adopted a scheme for the regulation and improvement of Redhill and Earlswood Commons, situate in the borough, which comprise 324 acres. The scheme owes its origination chiefly to the generosity of Messrs. W. B. Waterlow and S. Barrow, who besides defraying the expenses of the scheme up to the present time have also paid 2,000*l.* as part of the consideration money to the lord of the manor, Earl Somers. The remainder is to be paid by the Corporation of Reigate.

Dronfield.—It will be remembered that a short time ago the railway rail works of Messrs. Wilson, Cammell, & Co., were removed from Dronfield to Workington. Since then it has been decided by a local limited company to erect a blast furnace there, to work the Bull patent of manufacturing iron and steel.

DOCK EXTENSIONS.

Wishoech.—At a special meeting of the Wishoech Town Council, on the 18th ult., Mr. Abernethy, C.E., attended and explained the details of the proposed docks which the Council resolved to promote in the ensuing session of Parliament. The estimate for a six-acre dock is 143,000*l.*, and for ten acres 188,000*l.* The dock is proposed to be 250 ft. long between gates, and 50 ft. wide; depth of water over sill, 24 ft. at spring tides, and 15 ft. 6 in. at neap tides.

Cardiff.—Another large graving dock was opened on Wednesday, the 19th ult., at Cardiff by the Hills Graving Dock Company. Colonel E. S. Hill, C.B., subsequently gave a luncheon, at which he made special reference to the remarkable development of the port and to the enterprise of Lord Bute and that of his father in providing general dock accommodation. This new dry-dock is the third that has been established at Cardiff in connexion with Messrs. Charles Hill & Sons' system, which was begun in 1856 with a graving-dock on land obtained of Lord Bute near the west dock. This firm afterwards anticipated the requirements of the port by constructing a second graving-dock near the east dock, which was at that time in progress. Dowlais plants were here used for the first time in iron ships. In the spring of last year Messrs. Hill sold their Cardiff business and docks to Mr. Frederick Edwards, who formed a limited company. Colonel E. S. Hill, C.B., who had managed the undertaking, became chairman, Freshfield land was acquired, and on this the extensions have been carried out from designs by Mr. Thomas Hooper. The contract for the dock, which is 400 ft. long, 45 ft. broad, and having 18 ft. 6 in. water over the sill at the entrance, was given to Messrs. Logan & Hemingway. The dock is connected with the railway system of the country.

"THE GLASGOW CITY IMPROVEMENT ACT AND ITS EFFECT ON THE HEALTH OF THE INHABITANTS."*

SIR,—In an article under the above title in your issue of October 6th, you quote the opinion of Professor W. T. Gairdner, that the measures effected by the Glasgow City Improvement Act have been "eminently beneficial," and the opinion of Mr. W. G. Muir, of Glasgow, "that they have been a failure." Both opinions were expressed at the recent Glasgow Congress of the Sanitary Institute of Great Britain, and you say:—"Surely some explanation is needed of the discrepant statements contained in these two papers as to the effect of the Glasgow Improvement Act on the health of the city."

Professor Gairdner and Mr. Muir probably look very much alike at a distance of 400 miles, but I regard the opinion of the *Builder* on such a question as this as too valuable to permit it to be held in suspense from want of local knowledge. I shall best avoid the element of personality which must perforce enter into a critical estimate of the worth of Mr. Muir's views by quoting a few sentences from a leading article in our principal newspaper, the *Glasgow Herald*, Sept. 27th:—

"We do not refer merely or mainly to the nonsense which, under the title of 'The Sanitary Condition of Glasgow and the Means of Improving that Condition' Mr. G. H. Muir inflicted on the intelligent men who were too polite either to exclude his paper altogether or to refuse him a hearing during the time which its reading wasted. That he secured even the amount of attention necessary to give it a complete and incisive contradiction must be credited entirely to the courtesy and good feeling of Dr. Carpenter. I shall not discuss the 'financial' part from the 'sanitary' success or failure. If our improvements have succeeded sanitarily they have succeeded financially, what ever the ledger may say. The Glasgow Improvement Act was passed in 1860. The demolition of houses purchased under that Act was not begun until 1870, so that the ten

* Want of space compels us to use smaller type than we should otherwise.

years, 1861-70 and the ten years, 1871-80, will give a strictly correct comparison between Glasgow before and Glasgow after the Improvement Act:—

1861-70.	1871-80.
1861 ... 27.5	1871 ... 32.9
1862 ... 28.6	1872 ... 34.7
1863 ... 32.4	1873 ... 29.1
1864 ... 32.7	1874 ... 31.4
1865 ... 32.8	1875 ... 29.3
1866 ... 29.8	1876 ... 26.2
1867 ... 29.8	1877 ... 28.1
1868 ... 31.2	1878 ... 29.8
1869 ... 34.7	1879 ... 24.2
1870 ... 39.5	1880 ... 26.0
Mean 31.0	Mean 29.0
1881 ... 26.3	
1882 ... 25.3	

It is true that in what has gone of this year we have had very high weekly death-rates, due to a severe epidemic of measles; but that has passed, and for the week in which I write our death-rate is 18. Still, in estimating sanitary results, neither the high weekly rate of 35, nor the low one of 18, must be looked to, but such long averages as those given above. As to Mr. Muir's reference to the death-rates in Glasgow and in the suburban burghs, that also is a matter which puzzles an intelligent Glasgow man as little as the death-rates of Willesden, Forest-hill, Wimbledon, &c., as compared with Whitechapel, St. Giles's, and other central districts, would puzzle a Londoner. Mr. Muir's statement as to our City Refuse Works I shall leave to the general estimate of the local newspaper. The Improvement Act is a matter of more than local interest, and, therefore, I ask you to be so good as to insert this letter.

JAS. B. RUSSELL, M.D., Medical Officer of Health.

Miscellanea.

The New Manchester Royal Eye Hospital.—Plans have been prepared by Messrs. Pennington & Bridgen, architects, of Manchester and London, for the erection of a new Royal Eye Hospital. The building, for which an excellent site has been secured at the junction of Nelson-street and Oxford-road, Chorlton-on-Medlock, is intended to accommodate 100 in-patients, and will have the extensive arrangements requisite for the daily attendance of 400 out-patients. The administration, which contains suites of apartments for the resident medical officers and the matron, board-room, secretary's room, and rooms for the medical staff, together with a spacious dining-hall, occupies the ground-floor of the Oxford-street frontage. The out-patients' department extends along Nelson-street, and has a spacious waiting-hall, registration-hall, examination-rooms, and a dispensary. The wards, on the pavilion principle, will accommodate sixty males and forty females, with all the requisite nurses' rooms, baths, &c., fitted in the most modern and approved manner. The wards are 25 ft. wide, and are divided longitudinally by dwarf wooden screens. Isolated wards are provided for infectious cases, and spacious day-rooms are arranged contiguous to the wards, with airing-courts available in fine weather. The corridors are sufficiently wide for and are intended to be used as, ambulatories in inclement weather. Thirteen hundred cubic feet are allowed to each patient in the dormitories. The kitchen, stores, and servants' and nurses' day-rooms are in the basement, and the laundry is in a detached block in the rear of the main building. The examination and operation rooms have each due north and top lights. The building has been designed in a simple yet, from its varied outline, effective style of free Classic architecture. The structure will consist of red brick with red tiled roof, and sash-windows with transoms and movable fan-lights. Toned glass will be adopted in all the rooms used by the patients. The joiners' work will be varnished throughout, and all the corridors and staircases will be of fireproof construction.

Sanitary Engineers' Congress at Carlisle.—The annual congress of the Northern District of the Municipal and Sanitary Engineers and Surveyors' Association was held in Carlisle on the 28th ult. The members assembled in the council-chamber, Mr. H. W. McKie, Borough Surveyor of Carlisle, presiding. Papers were read by Mr. J. P. Spence, C.E., Newcastle, on "The Disposal of House Refuse," and by Mr. McKie, Carlisle, on "Matters relating to the Formation of Roadways and Footways."

New Workhouse for the Wandsworth and Clapham Union.—With reference to the report, on p. 471 of our last issue, of the meeting of the guardians of the above Union, Mr. Aldwinckle writes to say that only part of the increased cost of this building, and not by any means the largest part, was due to the cause stated, the remainder of the increase being caused by a variety of circumstances referred to in Mr. Aldwinckle's report of the guardians.

The Ancient Monuments of Egypt.—The Society for the Protection of Ancient Buildings has just issued its "Report on the Measures adopted by the Government of his Highness the Khedive for the Preservation of Monuments of Arab Art in Egypt." The report, which bears Mr. Thackeray Turner's signature, gives a sketch of the measures which have been adopted for the preservation of these beautiful monuments since the date of the first Khedivial decree of December 18th, 1881. The duties of the native Egyptian committee were to make an inventory of the monuments of really historic and artistic value; to watch over the preservation of old architectural and other relics; to examine projects of repair; and to preserve an official record of work executed. The first meeting of the Khedivial committee was held in February, 1882, but owing to the disturbed condition of the country the next was not held until a year after. One of the sub-committees appointed at the first meeting has examined, and made a list of 664 monuments in Cairo and its neighbourhood. Until the reign of the present Khedive, the architectural and other artistic monuments of Egypt have been disgracefully neglected. It is no exaggeration to say that the whole civilised world is interested in their preservation.

The Metropolitan Water Supply.—At the meeting of the Metropolitan Board of Works, on the 5th inst., Mr. Richardson moved, "That it be referred to the Works and General Purposes Committee to consider and report upon the desirability of applying to Parliament in the next session for power to prepare and submit to the Legislature a scheme for dealing with the water supply of the metropolis; and that the committee be authorised to confer with the Secretary of State for the Home Department on the subject." The water companies of the metropolis were most anxious to have the question settled, and he believed they could settle the matter on much better terms than those suggested by the late Government. Sir R. Cross sacrificed the principle of local self-government, and submitted the whole question to a private individual. Mr. Dresser Rogers seconded the motion, and remarked that he did not think it advisable to go against all the companies, as they had done formerly. He believed if Bills were introduced to ameliorate the position of water consumers they would be adopted by the House of Commons. The motion was agreed to.

The Fisheries Exhibition.—Before the close of the International Fisheries Exhibition, which is now definitely fixed to take place on the 31st of this month, it has been decided to hold another series of conferences during the closing week. Two days will be devoted to the discussion by fishermen of matters affecting their craft. The awards will be made known about the middle of this month. The diplomas, which have been executed by Messrs. Goupil, are now ready, and the gold medals will be finished in the course of a few days. In all, upwards of 3,350l. will be distributed in prizes. For the 600l. prize, offered by the executive for the best lifeboat, there are only two competitors,—the National Lifeboat Institution and Messrs. Forrest, of Limehouse. Corporations and private individuals give about 1,000l. in prizes.

School of Art Wood Carving, Royal Albert Hall.—The school has re-opened after the usual summer vacation, and we are asked by the Chairman of the Committee, Colonel Donnelly, R.E., to state that some of the free studentships both in the day and in the evening classes which the Committee are enabled to offer in consequence of the aid afforded to the school by the City and Guilds of London Institute are at present vacant. Orders for carvings are executed at the school, designs and estimates being supplied, and the committee would be glad to co-operate with architects in the execution of designs for internal decorative wood-carving, a branch of the art which they especially desire to develop.

The Calcutta Exhibition.—In view of the expected overcrowding of Calcutta during the Exhibition, the Executive Committee have resolved, with the sanction of the Lieut.-Governor, to erect a temporary hotel furnished in camp fashion for the accommodation of the general public. The building, which will be situated on a spot on the west side of the cathedral, will be divided into a number of blocks, each of which will contain eighty private apartments and a suite of public rooms.

Powers of Vestries in regard to New Buildings.—At the meeting of the Bermondsey Vestry on the 1st inst., among the building notices was one from Mr. Almond, for new shops at Nos. 119, 121, and 123, Southwark Park-road, who, the surveyor reported, had commenced the work already. Mr. Dumphreys thought that all builders should wait for the sanction of the Vestry before commencing. The Surveyor said Mr. Almond had the sanction of the Metropolitan Board of Works, but whether he could go on without giving notice to the Vestry was an open question. The Clerk was of opinion that a magistrate would not convict in this particular case, because the man had an order from one Board which he had carried out, and although he had not delivered the notice to the second Board as soon as he ought, the Vestry approved of the drain put in. Mr. Dumphreys thought speculating builders should be taught a lesson, and in the next case he should move to take action. The Surveyor: Then you will have an opportunity at once. A notice was then received from a Mr. Blake for permission to build a house which the surveyor said was already covered in, and all but finished. Mr. Dumphreys moved that proceedings be taken, which was at once agreed to.

King's College Workshop Classes.—It is announced that the evening classes in the College workshops were resumed last week, under the superintendence of Mr. David Walker, M.I.M.E., and that additions have been recently made to the workshops, and new machine tools and instruments are being added to the plant, notably a testing-machine, by Greenwood & Batley, of Leeds, presented by the Clothworkers' Company. The entire staff of the workshop instructors attend in the evening to carpentry, cabinet-work, engine fitting and turning, turning in wood; additional instructors in these subjects, and for general smith work, are engaged for the evening classes. The workshops are also fitted with the necessary appliances for moulding and casting in brass and iron, copper-plate and plumber's work, and special instructors are retained on five students entering for such class. The Clothworkers' Company give an annual prize of 5l. in books for excellence in wood work, another of 5l. for excellence in metal work, open to all evening class students attending three terms in the year. General and special certificates of merit are also awarded for the work of the students.

The "Homes" of Many of our Board-School Children in London would appear to be shockingly overcrowded. Mr. E. N. Buxton, Chairman of the School Board for London, last week stated that the School Management Committee lately had a report in which an analysis was made of the mode of living of the parents whose children attend Board schools near the centre of the metropolis. In one the scholars came from 313 families, and 182 of these families had only a single room each. In the second school the scholars came from 487 families, 400 of these families having but one room. In a third school the children came from 339 families, 289 of whom each lived in one room. In the majority of these cases there were five and more persons living in one room, and in some as many as nine.

The Sanitary Improvement of Work-houses.—At the meeting of the Kensington Guardians it was reported that the visitors' book contained the following entry:—"I have to-day visited the workhouse; all that came under my notice was satisfactory. The sanitary improvements which are being carried out throughout the buildings appeared to be excellent.—Lutley Jordan, 24th of August, 1883, Inspector, Local Government Board." The buildings have been thoroughly examined and the drainage and other sanitary arrangements are being re-arranged in accordance with the latest canons of hygienic law. The works are being executed by Messrs J. & F. May, Holborn; Clark, Barnett, & Co., Rathbone-place; and J. Mears, Hammer-smith, under the direction of Messrs. A. & C. Harston, architects.

Eastcheap.—It is stated that Sir Henry Peck, bart., has engaged Mr. Alexander Peebles as architect for extensive new business premises in Eastcheap, the completion of the Inner Circle Railway interfering with Sir Henry Peck's present property.

Dewsbury Hospital.—The hydraulic telescopic ram lift, mentioned in our notice of this building last week, was erected by Messrs. Archibald Smith & Stevens, under Stevens & Major's patent.

Antique Rome and Modern London.—The *Nuova Antologia* contains an interesting comparison by Professor Lanciani, founded on history and recent excavations, between the above-named two cities. After describing their similar situation on a river, and the respective height of the soil, the author goes on to compare the superfluities of ancient Rome with that of London. When Augustus recorded the administration of the city, for ancient Rome had also her "city," the buildings had so much exceeded the circle made by Servio Tullio that four of the fourteen regions into which the city was divided were entirely extra-mural. Nevertheless, the names of the old gates remained, and just as the heart of London contains its Aldersgate, Bishopsgate, &c., so Imperial Rome had its vici portæ Collinae, Navia, Rudusculanae, &c., topographical records of a very remote time. Little by little the buildings occupied, more or less, a space the size of modern London. Professor Lanciani has arrived at this conclusion by a careful examination of the remains of the ancient city walls. —Daily News.

Foremen and Clerks of Works.—At the Highgate Youths' Institute it has been suggested that young men already interested in or connected with some branch of the building trade would be willing to join (and to work) in a class intended as a stepping-stone to the more responsible and better-paid positions of foremen and clerks of works. Broadly speaking, the subjects to be brought under the attention of such a class would be:—1. The interpretation or "reading" of drawings. 2. "Setting-out" work, full size, from working drawings; and cutting templates. 3. Measuring work, on the drawing, or in execution (and perhaps valuing same). 4. Taking and plotting plans and levels of sites for drainage, &c. 5. The Metropolitan Building Acts and Regulations, and the By-laws of the Hornsey Local Board. With this object, a special class has been formed, to be held at the Youths' Institute, under Mr. Crisp.

The Arlberg Railway.—The making of the Arlberg Railway is proceeding with great rapidity. The tunnel is now within 1,180 metres of completion; the boring will probably be finished by the end of October, and the line opened for traffic in the course of 1884. The total length of the great tunnel will be 10,270 metres,—nearly 6½ miles,—and it is stated that no similar work of equal magnitude was ever before so rapidly accomplished.

Edinburgh Wholesale Meat Market Competition.—The directors of the new Meat Market Company recently had submitted to them several sets of plans, prepared by different architects, for the market to be erected in Fountainbridge and Seemple-street, and they have selected those of Mr. Peter L. Henderson, architect, 122, George-street. The market is to be a commodious building, covered by an open-timber roof in two spans.

Water.—The works for the water supply of Bradford, Wilts, were formally opened on the 3rd instant by Sir Chas. Hobhouse, bart., Chairman of the Town Commissioners. A general holiday was observed in the district, the town being gaily decorated on the occasion. A banquet took place in the Town Hall in the evening. The works were designed and carried out by Mr. Robinson, C.E., of Westminster.

The Cork Exhibition.—We learn that Mr. Richard Q. Lane, of the Ann-street Iron Works, Belfast, has been commissioned by the Executive Committee of the Cork Exhibition to design their "Certificate of Merit." It is to be in character with the Prize Medal, also designed by Mr. Lane. The certificate will measure about 20 in. by 17 in., and will be surrounded by an elaborate border characteristic of the Celtic style of ornament.

The Social Science Congress at Huddersfield came to a conclusion on Wednesday last, when it was announced that the Council had accepted an invitation from the Mayor and inhabitants of Birmingham to hold the Annual Congress of the Association in 1884 in that borough from the 17th to the 21st of September.

The Cost of Lifting by Hydraulic Power.—In the abstract of Mr. Ellington's paper on the supply of hydraulic power, published in our last issue (p. 468), it was stated that the cost to consumers for lifting by the public hydraulic power is from 1s. 2d. to 3s. 4d. per ton lifted 50 ft. This was a misprint for one half-penny (½d.) to three farthings (¾d.).

Thames Valley Sewerage.— Another attempt has been made to solve the problem of disposing of the sewage of the Lower Thames Valley, a subject which has been for many years under the consideration of the Lower Thames Valley Main Sewerage Board, the question having also several times occupied the attention of Parliament. In their desire to comply with the requirements of the local Government Board, which they have hitherto failed to satisfy in the matter, the Joint Sewerage Board has obtained the assistance of Mr. James Mansergh, C.E., and Mr. J. C. Melliss, C.E., whose report upon the subject was considered in committee by the Board a few days ago, and the details of which have been made public. The report states that "total diversion and simple irrigation being eliminated from the question, the most important point to determine was that of the site or sites for the treatment of the sewage." The committee have arrived at the conclusion that it is better to have only one place for the treatment of the whole of the sewage of the district than to have several places. The second conclusion they have arrived at is that this one spot must be on the banks of the Thames, the "natural drain" of the whole district. The report continues:— "There are only three places to select from, namely, first, the Soap Works site, at Barnes; second, a piece of market garden on the Surrey side of the river between Mortlake and Kew; and, third, some part of Ham Fields below Teddington Lock. . . . The cost of the respective sites is estimated as follows:—Mortlake site, total for works, 276,647*l.*, the total annual charges upon which would be 25,534*l.*, to which a rate of 8*o*4*d.* in the pound would be required; Barnes site, total for works, 23,814*l.*, annual charges 28,124*l.*, requiring a rate of 8*o*5*d.* in the pound; Ham Fields site, total for works, 237,034*l.*, annual charges 3,697*l.*, requiring a rate of 7*o*3*d.* in the pound." A committee of the Joint Sewerage Board has been formed to ascertain on what terms certain sites can be obtained.

The Indian Public Works Department.— Times telegram from Calcutta says that the committee lately appointed to consider the re-organisation of the Public Works Department has recommended the adoption of the Secretary of State's proposal, with certain modifications. Among these are the payment of pensions in conventional sterling, increased pensions to executive engineers who are compulsorily retired, and the extension of the new working rules to all the members of the Department. The committee express the opinion that the emoluments of the civil and military members of the Department should be equalised, and the Department reconstituted on a purely civil basis.

French Palaces, and other Essays.— Under this title Mr. Robert Hannay will issue a volume of papers on literary and historical subjects. It will be published by Mr. Elliot Stock.

TENDERS.

For new roads, sewers, surface water drains, &c., on the British Land Company's Estate, at Bedford. Mr. Henry B. Michell, surveyor:—
 Nowell & Robson, Kensington £2,495 0 0
 Kosble, Regent's Park 2,286 0 0
 Harris, Camberwell 2,223 0 0
 Killingback, Camden Town 2,179 0 0
 Bloomfield, Tottenham 2,150 0 0
 Pell & Sons, Bromley, Kent 2,068 0 0
 Pizzev, Hornsey 2,025 0 0
 Wilson, Walthamstow 1,897 0 0
 J. Jackson, Leyton (accepted) 1,968 0 0

For new roads, sewers, surface water drains, &c., on the British Land Company's Estate, at Norwood Junction. Mr. Henry B. Michell, surveyor:—
 Nowell & Robson, Kensington £2,637 0 0
 Harris, Camberwell 2,493 0 0
 Killingback, Camden Town 2,470 0 0
 Kosble, Regent's Park 2,386 0 0
 Wilson, Walthamstow 2,314 0 0
 Bloomfield, Tottenham 2,225 0 0
 Jackson, Leyton 2,200 0 0
 Pizzev, Hornsey 2,150 0 0
 Pell & Sons, Bromley, Kent 2,068 0 0
 * Accepted.

For alterations and additions to Paddock Villas, Highgate-road, Kilburn, for Messrs. Michell & Phillips. Mr. A. R. Barker, architect:—
 J. G. Egan & Co. £2,397 10 0
 W. Rogers (accepted) 2,849 0 0
 R. Van Camp 2,925 0 0
 Handover & Brown 2,243 0 0

For decorations, &c., to be done at 40, Lowndes-street, Westminster-road, Kilburn, for Messrs. Giesler & Sons, surveyors:—
 S. G. Bird 463 0 0
 Howard Bros. 118 0 0
 Kinnmonth & Sons 397 0 0
 Clarke & Mannock (accepted) 392 0 0

For Cromore Schools, Chelsea Division, for the School Board for London. Mr. E. R. Robson, architect. Mr. W. H. Barber, surveyor:—
 W. H. Smith £13,940 0 0
 Langmead & Way 12,493 14 4
 A. Thorn 12,093 17 0
 O. Webber 11,997 0 0
 Parson & Son 11,506 0 0
 Holloway 11,468 0 0
 Atherton & Latta 11,317 0 0
 P. Higgs 11,300 0 0
 W. Oakey 11,246 0 0
 Lathley Bros. 10,990 0 0
 Shurmer 10,989 0 0
 C. Cox 10,968 0 0
 J. Smith 10,863 0 0
 W. Reading 10,800 0 0
 Stimpson 10,671 0 0
 Kirk & Randall 10,653 0 0
 Patman & Fotheringham 10,399 0 0
 W. T. Niblett 10,347 0 0
 M. Manley 10,344 0 0
 P. Croaker 10,332 0 0
 W. Brass 10,309 0 0
 S. J. Jerrard 10,298 0 0
 W. Scrivenor 10,273 0 0
 H. Hart 10,272 0 0
 C. Wall 10,224 0 0

For Mantle-road Schools, Greenwich Division, for the School Board for London. Mr. E. R. Robson, architect. Messrs. Northcroft, Son, & Neighbour, architects:—
 Perry & Co. £9,947 0 0
 W. Brass 9,856 0 0
 Nightingale 7,764 0 0
 P. Sargent 9,675 0 0
 C. Reading 9,480 0 0
 H. Hart 9,358 0 0
 Patman & Fotheringham 9,300 0 0
 J. H. Farant & Son 9,301 0 0
 Lathley Bros. 9,254 0 0
 Langmead & Way 9,220 0 0
 J. Oliver 9,190 0 0
 W. & F. Croaker 9,171 0 0
 J. Mansland 9,103 0 0
 C. Wall 9,089 0 0
 P. Higgs 9,063 0 0
 J. Grover 8,961 0 0
 W. Shurmer 8,982 0 0
 S. J. Jerrard 8,779 0 0
 Kirk & Randall 8,739 0 0
 Lowermer Bros. 8,749 13 0
 W. Scrivenor 8,660 0 0
 Stimpson 8,637 0 0
 J. S. Smith 8,626 0 0
 W. Shephard 8,618 0 0
 Atherton & Latta 8,610 0 0

For Union-street Schools, Greenwich Division, for the School Board for London. Mr. E. R. Robson, architect. Messrs. Northcroft, Son, & Neighbour, architects:—
 Perry & Co. £8,358 0 0
 B. E. Nightingale 8,169 0 0
 H. Hart 8,083 0 0
 Reading 8,067 0 0
 Langmead & Way 8,023 0 0
 Patman & Fotheringham 7,900 0 0
 Lathley Bros. 7,889 0 0
 W. T. Niblett 7,867 0 0
 Croaker 7,849 0 0
 J. Grover 7,729 0 0
 C. Wall 7,714 0 0
 S. J. Jerrard 7,693 0 0
 W. Tongue 7,564 0 0
 Higgs 7,530 0 0
 J. Smith 7,464 0 0
 M. Manley 7,412 0 0
 Atherton & Latta 7,419 0 0
 Scrivenor 7,399 0 0
 J. H. Farant 7,184 0 0
 Kirk & Randall 7,175 0 0
 Shephard 7,231 0 0
 Lowermer Bros. 7,275 0 0
 F. Johnson 7,238 0 0
 Stimpson 7,103 0 0

For New Theatre, Northampton, for Mr. J. C. Franklin. Mr. C. J. Phipps, architect, London. Quantities by Mr. C. Dorman, Northampton:—
 Foster & Dicksee, Rugby £3,384 0 0
 Branson & Son, Northampton 5,845 0 0
 Archer & Brown, Northampton 5,700 0 0
 Ireson, Northampton 5,655 0 0
 Smith Bros., Northampton 5,625 0 0
 Reynolds & Son, Northampton 5,475 0 0
 Green Bros., Northampton 5,473 0 0
 Woodford & Sons, Northampton 5,249 0 0
 Wingrove, Northampton 5,249 0 0
 Martin, Northampton (accepted) 4,970 0 0

For additions and alterations to Messrs. Hayward Bros. & Eckstein's premises, Union-street, Southwark. Messrs. Henry Jarvis & Son, architects, 29, Trinity-square, Southwark:—
 E. Lawrence £2,370 0 0
 W. N. Joselyne 3,370 0 0
 T. R. Walker 2,325 0 0
 T. Rider & Son 2,284 0 0
 H. Barman & Son 2,197 0 0
 Canning & Mulins 2,067 0 0
 R. Conder 2,050 0 0

For proposed villa residence, St. Peter's-parc, St. Albans, Herts, for Miss Christian Morant. Mr. T. Foster Woodman, architect, St. Albans and Hemel Hempstead. Quantities not supplied:—
 Sparrow, St. Albans £769 0 0
 Mead, St. Albans 740 0 0
 Austen, St. Albans 719 0 0
 Pratt, St. Albans 678 0 0
 Miskin, St. Albans 647 0 0
 Savage, St. Albans 639 0 0

For the erection of billiard-room and coach-house, and alterations to bar at the Horse and Groom, Stream-hill, for Mr. J. W. Pettigall. Mr. E. L. Swatman, architect, 38, Parliament-street:—
 Walker £715 0 0
 Dancan 685 0 0
 Le Gassick & Co. 615 0 0
 Alterations.
 Walker £180 0 0
 Dancan 180 0 0
 Le Gassick & Co. 183 0 0

For the erection of a new drying-shed, offices, &c., and repairs to cottage adjoining, in Galsley-walk-road, South Bermondsey. Mr. Cross, architect, 32, Bermondsey-square:—
 B. Wells £823 0 0
 Whitaker 595 0 0
 T. & F. Drake 592 0 0
 W. Brockwell 517 5 0
 J. Almond 491 0 0
 J. Ballers (accepted) 440 0 0

For building new school at Cross-street Chapel, Islington. Messrs. Scovic & Hayes, architects:—
 S. Wontner Smith, Islington £910 0 0
 J. Grover, Islington 892 0 0
 L. H. & R. Roberts, Islington 887 0 0
 J. Woodward, Finsbury 750 0 0
 Dearing & Son, Islington 750 0 0
 Wilson & Exton, Horton 712 0 0

For new warehouse for Messrs. Clark, Hunt, & Co. Mr. W. Birdseye, architect:—
 Galsford £1,613 0 0
 J. Grover 1,568 0 0
 Ward 1,563 0 0
 R. Conder 1,477 0 0
 W. Shurmer 1,395 0 0
 C. Marr 1,362 0 0
 T. Boyce 1,373 0 0

For the erection of house and shop, Godstone-road, Caterham Valley, for Mr. William Edmunds. Mr. Fredk. Eliff (successor to Mr. Richard Martin), architect, Caterham:—
 Lee & Son, Addiscombe £1,144 0 0
 W. Thompson, Caterham Valley 1,135 0 0
 Masters & Sons, Anerley 1,080 0 0
 R. Ward, Warrington (accepted) 1,050 0 0

For the erection of semi-detached villas, East Grinstead, Sussex. Mr. Thorold Lowdell, architect, 9, Great James-street, Bedford-row, London:—
 Allen & Sons, London £1,750 0 0
 Godly, East Grinstead 1,440 0 0
 Charlwood Bros., East Grinstead 1,284 0 0
 Head Bros., Lingfield 1,281 0 0
 * Accepted.

For three cottages, Baldwin's-hill, East Grinstead, Mr. Thorold Lowdell, architect, 9, Great James-street, Bedford-row, London:—
 Godly (accepted) £410 0 0

For repairs and painting at 10, Goldsmith-road, Brighton. Mr. Thorold Lowdell, architect, 9, Great James-street, Bedford-row, London:—
 Parsons £142 10 0
 Bruton 132 10 0
 Barnes (accepted) 133 0 0

For alteration to roof, forming additional story, painting, &c., to 49, Chayne-walk, Chelsea, S.W., for Mr. Joplin. Mr. Thorold Lowdell, architect, 9, Great James-street, Bedford-row, London:—
 First Design.
 Doughty £231 0 0
 Pyle & Co. 192 0 0

Second Design.
 Pyle & Co. (accepted) £243 0 0

For alterations and additions to a house in Parkside, Wimbledon Common. Mr. Godfrey Pinkerton, architect:—
 Ashby Bros. £4,187 0 0
 E. Conder 4,274 0 0
 Adamson & Sons 4,249 0 0
 F. Paine 4,234 0 0
 R. Ariss & Co. (accepted) 4,060 0 0

For alterations and repairs at the Cogers' Hall, Salisbury-court, Fleet-street, for Mr. T. Swift, proprietor:—
 No. 1 Contract.
 Gower & Pettipher (accepted) £232 10 0
 No. 2 Contract.
 Gower & Pettipher (accepted) £175 0 0

For alterations at 21, Warwick-square. Mr. Edward Power, architect:—
 Oldis Bros. £246 0 0
 Hill & Bridge 305 0 0
 Birch & Moor 271 0 0
 G. S. Pritchard 558 10 0

For alterations and repairs to cottages on the property of Mr. T. J. Mann, Bishops Stortford. Mr. A. R. Barker, architect:—
 W. Cornwell £437 0 0
 J. & A. Franklin (accepted) 426 0 0

For alterations and additions to Wellawood, Torquay, for Admiral Ryder. Mr. A. R. Barker, architect:—
 W. A. Goss, Torquay (accepted) £1,969 17 0

For alterations and additions to Varnell's Cottage, Hambleton, for Admiral Ryder. Mr. A. R. Barker, architect:—
 E. L. Millington (accepted) £255 19 4

For alterations and additions to King's Somerby Vicarage, Hants. Mr. A. R. Barker, architect:—
 C. Wilks, North Waltham £774 14 0
 H. A. Annett & Son, Andover 746 9 6

For the restoration of the parish church of All Saints, Newchurch, Isle of Wight. Mr. A. R. Barker, architect:—
 Norton & Moses (accepted) £565 0 0

For the erection of new Sunday school at Bowes Park, Wood-green. Mr. A. R. Barker, architect:—
 J. Wheeler, Winchmore-hill £1,894 10 0
 W. Gardener, Waltham Abbey 1,283 10 0
 Patman, Enfield (accepted) 1,263 0 0

For completion of The Management House at St. Thomas's Home, Basingstoke. Mr. A. R. Barker, architect. Quantities by Messrs. J. S. Lee & Son:—
 H. J. Goodall, Basingstoke £299 0 0
 * Accepted.

For fitting up shop and warehouse, High-street, Beckenham, for Mr. R. H. Howes, Stream-hill:—
 Le Gassick & Co. (accepted).

For alterations and additions to Wain Fawr and Machen schools, Newport, Mon., for the Machen School Board. Mr. E. A. Lansdowne, architect.—

W. Rouser, Ricca.....	£498 0 0
S. B. Moore, Newport.....	465 0 0
J. Jones, Newport (accepted).....	453 0 0
<i>Machen Schools.</i>	
J. Jones, Newport.....	£578 0 0
S. B. Moore, Newport.....	563 0 0
T. Phillips, Machen (accepted).....	478 0 0

For the construction of a footway at Stoke Newington Common for the Incorporated Society of Licensed Victuallers. Mr. H. I. Newton, architect, 27, Great George-street.—

Royal (accepted).

For alterations at the Five Ails, Battersea Park-road, for Mr. C. Lacey. Mr. H. I. Newton, architect.—	
Cook.....	£193 10 0
Lamble.....	193 0 0
Walkley.....	193 0 0
Walker & Byford (accepted).....	113 0 0

For new road and sewers at Elm-ley, for the trustees of the late Mr. H. Stephens. Mr. John Cree, surveyor:—

J. Bell, Wood Green (accepted).

For sewer outfall extension, Old Park Estate, Enfield. Messrs. Hickson & Son, surveyors:—

J. Bell, Wood Green (accepted).

For the enlargement of St. Michael's Church, Ipswich. Mr. E. F. Bishopp, architect:—

R. Tooley.....	£1,830 0 0
R. Gilling.....	1,798 0 0
R. S. Smith.....	1,747 17 0
C. A. Wyatt.....	1,728 0 0

For detached cottage, Denzil-road, Guildford. Messrs. Peak, Lunn, & Peak, architects:—

T. E. Downes, Guildford.....	£370 0 0
Billmore & Smith, Guildford.....	335 0 0
Harme, Woking.....	316 0 0
G. & R. Smith, Guildford.....	301 0 0
E. Elliott, Guildford.....	285 0 0
Tribe & Robinson, Guildford.....	293 9 6

For row of six cottages, Cemetery-road, Stoughton, proprietors finding bricks and tiles. Messrs. Peak, Lunn, & Peak, architects:—

G. & R. Smith, Guildford.....	£285 0 0
H. Christmas, Ripon.....	325 0 0
R. Elliott, Guildford.....	759 0 0
F. Frampton, Guildford.....	689 10 0
A. Robins & Sons, Farnham.....	550 0 0

For boundary-walling, Epsom and Sydenham roads for Mr. V. Wells. Messrs. Peak, Lunn, & Peak, architects:—

R. Pink, Milford.....	£244 10 0
G. & R. Smith, Guildford.....	234 0 0
Martin, Wells, & Co., Aldershot.....	200 0 0
Garrett & Mills, Guildford (accepted).....	173 0 0
E. Elliott, Guildford (withdrawn).....	128 0 0

For alterations at the old British School premises, Guildford, for the Guildford School Board. Messrs. Peak, Lunn, & Peak, architects:—

E. Elliott, Guildford.....	£293 16 0
Burdett & Son, Guildford.....	259 9 8
H. Lunn, Guildford (accepted).....	205 5 0

For building two houses, stabling, &c., at Venner-road, Sydenham, for Mr. J. V. Kay. Messrs. Tolley & Son, architects, 66, Cannon-street:—

Faulkner, London.....	£3,765 0 0
Walker, Cardiff.....	3,183 0 0
Maneniale, Croydon.....	3,010 0 0
J. Olley, Forest Hill.....	2,880 0 0
Smith, Sydenham.....	2,567 0 0

For building a new branch bank at Brentwood, Essex, for the London and County Banking Company. Mr. Zep. Rinz, architect, 1, Victoria-street. Quotations supplied by Mr. Jas. Schofield, 8, Southampton-street, Bloomsbury:—

Rider & Son.....	£2,328 0 0
Winter Bros.....	3,325 0 0
Cross.....	3,102 0 0
Blyth.....	3,008 10 0
Shurmer.....	2,983 0 0
J. S. Hammond, Romford (accepted).....	2,987 0 0

For the erection of a greenhouse at Shroff's Park, Halifax, for the Corporation:—

Messenger & Co., Loughborough.....	£490 0 0
------------------------------------	----------

* Accepted.

For new floor, &c., to Tan Room, for City of London Brewery Co. Mr. J. Jewhurst, architect:—

W. Spencer.....	£525 0 0
W. Shurmer.....	436 0 0
Jackson & Todd.....	469 10 0
Langmead & Way.....	398 0 0

For alterations and additions at High-street, Kensington, for Messrs. Derry & Toms. Mr. G. G. Stanham, architect:—

Aviss.....	£985 0 0
J. Hearle & Son.....	£982 0 0
W. Shurmer.....	981 0 0
Adamson & Son.....	981 0 0
Turtle & Applton.....	872 0 0
Cawley.....	877 0 0

For villa at Woodford. Mr. R. W. Crawley, architect:—

Katon, late Reed & Son.....	£1,376 0 0
Alexander, Bow.....	1,374 0 0
Hoskins, Forest-gate.....	1,367 0 0
Robson, Woodford.....	1,246 0 0
W. Shurmer, Clapton (accepted).....	1,200 0 0

To Contributors and Correspondents.

ALL LETTERS AND COMMUNICATIONS referring to LITERARY AND ARTISTIC MATTERS must be addressed—

"To the Editor of THE BUILDER,
46, Catherine-street,
Covent Garden, W.C."

And not to any individual by name.

Comp.—H. R.—J. & Sons—Whiston—L. M.—W. C.—D. & Son—E. C.—G. F.—J. H. G.—G. & P.—J. J.—A. R. H.—T. A.—E. P.—W. E. M.—H. B. M.—Q. L.—Le G. & Co.—C. J. P.—E. O.—J. H.—Major R. W.—W. S.—J. W. C.—E. A. L.—C. F.—H. H. S.—W. M.—A. W. B.—A. R. H.—M. M.—A. V.—M. S.—H. P. S.—G. H.—D. S.—D. P. L. & P.—D. J. M.—W. M.—J. A. O.—W. Son & A.—E. C.—J. D.—P. R. R. (send particulars to accompany view and plan).—H. P. (a file of the *Builder* can be seen at the publishing office).—J. B. F. C. (take advice on the spot).—Victas (we cannot reply on *ex parte* information).

Correspondents should address the Editor, and not the Publisher, except in cases of business.

All statements of facts, lists of tenders, &c. must be accompanied by the name and address of the sender, not necessarily for publication.

We are compelled to decline pointing out books and giving addresses.

Note.—The responsibility of signed articles, and papers read at public meetings, rests, of course, with the authors.

NOTICE TO ADVERTISERS.

Persons advertising in the *Builder* may have REPLIES ADDRESSED TO THE OFFICE, 46, Catherine-street, Covent-garden, W.C.,

FREE OF CHARGE.

Letters will be forwarded if addressed envelopes are sent, together with sufficient stamps to cover the postage.

CHARGES FOR ADVERTISEMENTS.

SITUATIONS VACANT, PARTNERSHIPS, APPRENTICESHIPS, TRADE, AND GENERAL ADVERTISEMENTS. Six lines (about 100 words)..... 6s. 6d. Each additional line (about ten words)..... 0s. 6d. TRIPLETTER IS ABSOLUTELY NECESSARY. Stamps must not be sent, but all small sums should be remitted by Cash in Registered Letter or by Money Order, payable at the Post-office, Covent-garden, W.C. to DOUGLAS FOURDRINER, Publisher.

Advertisements for the current week's issue must reach the office before THREE o'clock p.m. on THURSDAY. The Publisher cannot be responsible for DRAWINGS, TESTIMONIALS, &c. left at the office in reply to Advertisements, and strongly recommends that of the latter COPIES ONLY should be sent.

TERMS OF SUBSCRIPTION.

"THE BUILDER" is supplied gratis from the Office to residents in any part of the United Kingdom at the rate of 18s. per annum, FORTH—Remittances payable to DOUGLAS FOURDRINER, Publisher, 46, Catherine-street, W.C.

Best Bath Stone.

WESTWOOD GROUND,
Box Ground, Combe Down,
Corsham Down,
And Farleigh Down.
RANDELL, SAUNDERS, & CO., Limited,
Corsham, Wilts. [Adv.]

Bath Stone.

Facilities for selection and quality unequalled, having upwards of 350,000 Feet Cube In Stock of all known descriptions. PICTOR & SONS, Box, Wilts. [Adv.]

Douling Freestone and Ham Hill Stone of best quality, in blocks, or prepared ready for fixing. An inspection of the Douling Quarries is respectfully solicited; and Architects and others are CAUTIONED against inferior stone. Prices, delivered to any part of the United Kingdom, given on application to CHARLES TRASK, Norton - sub - Hamdon, Herefordshire. Somerset.—Agent, Mr. E. WILLIAMS, 78, Charlotte-street, Portland-place, W. [Adv.]

Douling Freestone. Of best quality, supplied from their own Quarries and Kilns by STAPLES & HAY, Stoke, Herefordshire. Agent, Mr. H. MITCHELL, 5, Augustus-road, Hammersmith, London, W. [Adv.]

Asphalts. Seyssel, Patent Metallic Lava, and White Asphalts. M. STODART & CO. Office: No. 90, Cannon-street, E.C. [Adv.]

Asphalts.—The Seyssel and Metallic Lava Asphalte Company (Mr. H. Glenn), Office, 38, Poultry, E.C.—The best and cheapest materials for damp courses, railway arches, warehouse floors, flat roofs, stables, cow-sheds and milk-rooms, granaries, tun-rooms, and terraces. [Adv.]

Immense quantities of
DRY WAINSCOT,
DRY MAHOGANY,
DRY WALNUT,
in all thicknesses.
B. J. HUDSON & SONS,
Whitfield-st., W., and Great Peter-st., S.W. London. [Adv.]

J. L. BACON & CO.,
MANUFACTURERS OF IMPROVED
STEAM AND HOT-WATER
APPARATUS.
FOR WARMING AND VENTILATING
Private Houses, Churches, Schools, Hospitals,
Manufactories, Greenhouses, &c.
OFFICES AND SHOW-ROOMS:—
No. 34, UPPER GLOUCESTER PLACE,
DURSET SQUARE, LONDON, N.W.
And at DUBLIN, BELFAST, GLASGOW, and
NEWCASTLE.
Illustrated Pamphlet on "Heating" post free.

CHAPPUIS' PATENTS FOR REFLECTING LIGHT.

DAYLIGHT REFLECTORS OF EVERY DESCRIPTION,
ARTIFICIAL LIGHT REFLECTORS.

WHY BURN GAS?—CHAPPUIS' REFLECTORS DIFFUSE DAYLIGHT.—They are exclusively adopted by and fitted at Buckingham Palace, all H.M. Government Offices, Houses of Parliament, H.M. First Commissioner of Works, the Metropolitan Board of Works, British Museum, South Kensington Museum, Royal Institution, Guildhall Museum, on board H.M. Ships, also Railway Companies' Offices, Hospitals, Institutions, Banks, Insurance Offices, Manufactories, Private Houses and generally from Noblemen's Mansions to Artisans' Work-shops. 30,000 in use in London alone. Patronised by leading Architects, Engineers, Contractors, &c., &c.

N.B.—For Prospectuses and Diagrams, address Stamped Envelope to
P. E. CHAPPUIS, Patentee and Manufacturer, 69, FLEET-STREET, LONDON.

NOTICE.—The POLYGONAL REFLECTOR (Latest Patent) FOR ARTISTIC AND PICTURE GALLERIES.
Its construction allows of the angle of light being readily altered so as to reflect in any desirable direction.

The Builder.

Vol. XLV. No. 2124.

SATURDAY, OCTOBER 20, 1883.

ILLUSTRATIONS.

Portal of the Dresden Museum : from the South (Double-page Engraving).—The Late Professor Semper, Architect	518
Sion College, founded A. D. 1631	520
Old Westminster	520
Lewisham Congregational Sunday Schools.—Mr. Geo. Sherwin, Architect	516
Screen, Ludham Church, Norfolk (Double page Photo-Lithography).—Drawn and Partially Restored by Mr. M. Underwood	5-5, 545
Artisans' Dwellings, Whitechapel (Plan, 523).—Mr. James Webster, Architect	527

CONTENTS.

The Temple of Diana at Ephesus	507	The German Reichstag Building	516	Royal Exchange Re-fitted	575
Architecture in the Abstract; an "Idea" of a War Office	508	Lewisham Congregational Sunday Schools	516	Licensing Plumbers	535
The Flooding at the Severn Tunnel	510	Sion College, London-wall, E.C.	516	An Architect's Claim for Professional Services	536
The Economy of Steel Buildings, and What has Come of It	510	Old Westminster	516	Building By-Laws: Mortar	536
Queer Clients	511	Screen, Ludham Church, Norfolk	516	Building Patent Record	536
The Burlington House Colonnade again	512	Artisans' Dwellings, Oxford-street, Whitechapel	516	Drainage and Sewerage Items	536
Something about the Art of Java	512	The Dresden Museum	523	From Scotland	536
The Relation of Oriental Art to European Art: its Limitations and Application	513	Education and Health	523	Provincial News	537
The Hall of Fame and Military Museum at Berlin	514	Glasgow Institute of Architects	524	Church Building News	537
A Story of Chapel Court	514	Evolution in Art: The Discussion	524	Dissenting Church Building News	538
St. Katharine's Coleman	515	Prevention of Fires in Theatres	525	Roman Catholic Church-Building News	539
Discovery of a Lost Picture by Raffaele	515	Edinburgh Philosophical Institution	525	Stained Glass	539
Lectures on Architecture at University College	516	Obituary	525	School Building News	539
Discovery of a Work by Poussin	516	New Post Offices and Telegraph Buildings	525	Variety	539
		London and County Bank, King's-cross	525	Miscellaneous	540

The Temple of Diana at Ephesus.

HE excuse for returning at this moment to the subject of Mr. Wood's great discovery at Ephesus must be sought for in a paper by Mr. Fergusson, printed as an addendum to the recently-issued volume of the Transactions of the Institute of Architects. To some portions of the printed record of the Transactions of the past session we have already referred, and further notice of them would not be called for; but the essay in question did not form a

portion of the Transactions at the sessional meetings, but is a communication submitted to the Council of the Institute, and is headed "Paper communicated and ordered to be printed 11th June, 1883," and is, therefore, new matter.

The writer's reason for putting forth a fresh criticism on the subject just now we do not gather from the contents of the paper; the fact of the erection of further excavations at Ephesus, and the means for meeting their expense, having been publicly discussed recently, may have been the suggestion for it. The main object of the paper is to show that Mr. Wood's restoration of the temple is unsatisfactory, and to follow up in some degree, in reference to this special instance, the reasoning which Mr. Fergusson has already published in regard to the lighting of Greek temples and of the Parthenon particularly.

There is one point on which Mr. Fergusson insists at the commencement of his remarks, in which he is absolutely right, and which those intending to take up the occupation of digging out old temples would do well to make a note of. "If," says Mr. Fergusson, "when Mr. Wood returned home in 1874, he had been content to publish a plain narrative of what he found at Ephesus, accompanied by his working-plan of the remains, without any attempt at restoration, his name would have stood among the first of archaeological explorers." Mr. Wood's name does still stand among the first of explorers, inasmuch as he did make, by dint of uncommon energy and perseverance, one of the most remarkable and interesting archaeological discoveries of the age. But Mr. Fergusson's point, as indicated in his ensuing remarks, is that Mr. Wood did a good deal to injure the position he had acquired, by publishing a popular treatise with some very question-

able illustrations, instead of producing a publication appealing especially to the learned minority, whose opinion alone is worth much on such a subject; and that he thus added to the reputation of a great explorer, which he had fully earned, the much less valuable reputation of being a very bad restorer. This is precisely what we observed at the time of publication of Mr. Wood's book, which was reviewed at length in our columns (vol. xxv., p. 171). It was, as we then said, a book for free libraries and drawing-room tables, not one for learned archaeologists to look upon with respect; and on turning back to it with reference to Mr. Fergusson's present remarks, we are even more struck with its deficiencies in this respect. Even if the idea of the restoration is correct, the drawings in which it is shown are quite unworthy of the occasion, and such as one can hardly understand that any serious student of Greek architecture would have put forth. In short, it is one thing to be an architectural explorer, another thing to make a successful restoration. It is to be hoped that Mr. Wood will still be able to publish the full and adequate record of what he found, with illustrations of the highest class representing actual and not imaginary things, which Mr. Fergusson rightly wishes he had published at first, and which would form one of the most valuable and interesting monuments of archaeological research in our libraries. But in the first instance Mr. Wood dropped the substance of archaeological repute, which he had safely, to snatch at the shadow of popular applause by publishing a popular book. The moral to the "young explorer" is, Go thou, and do not do likewise.

Apart from this, Mr. Fergusson's essay may be described as an adverse but amicable criticism of Mr. Wood's restoration. Mr. Wood's restored plan being reproduced, with his concurrence, for comparison with Mr. Fergusson's restoration. The three main points of discussion are in regard to the number of the columns, the reconciliation of the various widths of upper and lower steps as given in ancient authors and as inferred from Mr. Wood's discoveries on the spot, and the question of interior plan and lighting. The question of the number of columns, most of our readers will remember, has always been regarded as a puzzle, owing to Pliny's statement of it as one hundred and twenty-seven, "centum viginti septem," giving the unusual problem of an uneven number of columns. Mr. Wood refused this altogether, and made the number of columns one hundred, taking it that the following "viginti septem" referred to the special columns which were "the gifts of kings." This reading of the Latin, as we observed in our former review, is condemned by Latinists, independent of archaeological probabilities. Mr. Fergusson's main point against it is this, that the reduction of columns to one hundred leaves the temple at Ephesus inferior in scale and magnificence to that of

Apollo at Didyme, yet the Ephesus temple is universally chronicled as the most magnificent of its day, while few ancient references to the temple at Didyme are to be found. "This," says Mr. Fergusson, "seems to me a thing quite unaccountable, which no improvement in the drawings could explain away. . . . The Temple of Apollo at Didyme, as restored by the Society of Dilettanti, and now excavated by Messrs. Rayet and Thomas, was a larger and finer temple in every essential respect than that of Ephesus as restored by Mr. Wood. It had 120 columns of the Ionic order, nearly 65 ft. high, against 100 columns, 60 ft. in height,—Mr. Wood makes them only 55 ft. 8½ in.,—at Ephesus. It was the same width as Ephesus, but 13 ft. more in length. Against this Ephesus could only adduce its thirty-six 'columns celatae,' but the value of even this exceptional adornment was diminished by the richly-carved bases of the ten front columns at Didyme." Mr. Fergusson seems to have a little overstated his case here. It is surprising to find such a mistake in a writer usually so accurate, but if Mr. Fergusson will count again the columns on the restored plan of the Didyme Temple, given by the Society of Dilettanti, he will find there are only 112, not 120; Rayet gives the larger number, and some interesting examples of carved bases, but not such as could be regarded as an equivalent to the sculptured columns of Ephesus, of which such an exquisite example is now in the British Museum. The bases show some elaborate carved ornament, but that is all. But, though this is pushed a little too far, it is quite true that the plan, as restored by Mr. Wood, does not give that decided supremacy to the Ephesus temple, in richness and magnificence, which is accorded to it by all ancient writers who mention it. Whether Pliny's uneven number of columns is to be accepted is a separate and more difficult question, but, at all events, we are disposed to think that his 127 is, probably, much nearer the mark than Mr. Wood's 100, and the acceptance of it would then leave things in harmony with the sentence of Pausanias, quoted by Mr. Fergusson, that the Ephesus temple "excelled all others in magnitude, and splendour, while next to it came the Temple of Apollo at Branchidae" (Didyme); Pausanias, it will be observed, referring 'to magnitude as well as splendour.' Mr. Fergusson accepts Pliny's figures, odd numbers and all, and the way he works the problem is, to say the least, exceedingly clever and ingenious, though proceeding on a rather bold assumption. His argument is briefly this,—there can be little doubt that in the pronaos of the Ephesus temple the centre intercolumniation was abnormally wide. The width between the two extreme columns, it must be remembered, is fixed within very narrow limits by the two columns of the peristyle found by Mr. Wood *in situ*; it is known that the temple was octastyle, and the existence of a very wide central inter-

columniation is equally implied by the representations on coins, by the relation of the remains of the cella walls to the portions of the discovered columns, and by Pliny's account of the anxiety of the architect about the front of the temple, in consequence of the immense size and weight of the epistylum, and the legend of his having obtained supernatural aid in getting the huge mass into its place. But, says Mr. Fergusson, need we necessarily suppose that they repeated this difficulty in the posticum of the temple?

"There is, perhaps, no temple anywhere which has so markedly a front and a back. The front towards the west face looks to the city and the port; the back, or east front, is looked down upon and partially hidden by the hill on which the modern village of Alesuk stands, and could not be seen from any public place or road. The temple stood on the very edge of the alluvial plain ('*loco palustris*'). From the portico behind it, the hill rose with a slope of about 1 in 12, till it reached an elevation between 60 ft. and 70 ft. at about 500 ft. or 900 ft. from the Temple steps. It seemed, therefore, the most natural thing in the world to treat this as the back of the temple, not requiring the same elaborate treatment as the front facing the city, and by introducing another column in the centre, to get over the whole difficulty. To adapt the decastyle arrangement there would have been too violent a contrast with the octastyle of the front. By adopting nine columns they could use the 19 ft. 4 in. epistylia, which was evidently the one they most admired, as it is found at all the four angles, where in dignity it surpasses the 17 ft. 1½ in. of the flanks. . . . The introduction of a central pillar is by no means an unusual feature in Greek architecture. There is an enastyle temple at Paestum, and the great temple at Agrigento has seven pillars on each face. Wherever the ridge of the roof was supported by a range of internal columns—as was, for instance, the case with the so-called Incanada at Salonic, where a central pillar externally was almost indispensable, and in this instance, where there was no central entrance to the posticum, but two entrances, as at Aizani and Agrigento, the introduction of a central pillar seems to have been the most appropriate mode of treating this facade. At all events, as will appear from the sequel, it was the mode that was adopted by those who would have been better judges of the effect than we can pretend to be."

We must be excused for indulging in a smile at Mr. Fergusson's characteristic way of assuming as a proved fact, in the last sentence, what he is just then suggesting as a probability; and at the odd little argument in a circle about the "two entrances" to the posticum, which are quietly assumed, without a shadow of evidence, to explain the necessity or convenience of the central column arrangement. However, Mr. Fergusson, is not the only writer, either on architecture or on other subjects, who has shown at times a capability of being logical and illogical in the same sentence; and at all events he has got in Pliny's 127 columns, and got them in a manner perfectly possible, though we should require a good deal of evidence to make us believe that a temple of the first order would really have been built with a different columniation on the two faces. There is however, the practical reason of the great size of the building, which rendered the wide intercolumniation such a difficulty, and we may at least thank Mr. Fergusson for another addition to the list of brilliant and ingenious architectural suggestions which we owe to him. For the precise arrangement of his plan the "Transactions" must be consulted, though, we presume, the matter given there will eventually be "published" in the fuller sense of the word.

The next point is the reconciliation of Pliny's dimensions with Mr. Wood's discoveries. The columns discovered have fixed, as we observed, the width of the temple between the external bases of the columns as nearly 164 ft., and a bottom step which was found *in situ* fixed the width over the bottom step at each end as 230 ft. and something over. But Pliny's measurement for the width of the temple is 220 ft., probably Greek feet, equal to 225·6 English, which accords with neither of the discovered measurements. Mr. Wood disregarded this measurement altogether, as incompatible with what he found on the site. Starting from his bottom step, which is fixed by what he found on the ground, he introduced a continuous flight of steps all round, which land the spectator on the temple level, with a space of about 15 ft. between the upper step and the bases of the columns. As Mr. Fergusson truly says, the effect of this would have been very bad, as cutting off the view of the

bases of the columns from below; besides which he accepts Pliny's 220 ('*ducentorum viginti*') feet as correct. His explanation is that there was a break in the steps at the level of the cella of the first temple (the great one being the third on the same site), and that from this level, the third step from the bottom, rose the podium, which would answer to Pliny's 220 ft., and which Mr. Fergusson regards as a vertical wall covered with sculpture and with flights of steps running into it at intervals. It may be pointed out that his podium and balustrade cut off the bases of the columns from external observers as completely as Mr. Wood's unbroken flight of steps, but the plan is nevertheless a much finer and more effective one, and really gives a meaning for Pliny's dimension, taking this to apply not to the actual temple itself, but to the "universum templum," or the exterior wall of the podium. The three steps outside, round the podium, Pliny might have been supposed to have omitted, as merely accessory; the long sculptured wall of the podium, 5 ft. 6 in. high, with a balustrading on the top, striking the eye as the real boundary, architecturally, of the temple. We may quote Mr. Fergusson's own words as to the imagined effect of the whole on his scheme:—

"If any one can realize, in his mind's eye, the splendour of a temple of pure Greek-Ionic order, adorned with 127 columns of white marble, 60 ft. in height, and nearly one-third of which were sculptured to a considerable height above their bases, he will understand why the temple was so much admired by the ancients. If to this he will add that it was raised on a stylobate, on which were carved 700 ft. of bas-reliefs, which was further adorned by at least six great groups of sculpture, and sixty or seventy statues either in marble or bronze, besides altars and minor objects innumerable, he will begin to appreciate the raptures into which all fell who in ancient times wrote about the Temple of Diana in Ephesus. The Parthenon may have been more pure, but there was a glory about this temple, unsurpassed by that of any temple in ancient or modern times with which we are acquainted. If the temple did not possess the 127 columns mentioned by Pliny, and its podium had not been ornamented by sculpture to at least the extent indicated above, none of these conditions would have been fulfilled, and this famous temple must be content to rank only as the third or fourth in the ancient world."

Accepting Pliny's lateral dimensions, Mr. Fergusson is, however, obliged to accept his longitudinal dimensions, 452 Greek feet; and these get him into difficulties. Of these he disposes in a most ingenious, but what we can hardly regard as a probable, manner. What makes Mr. Fergusson's speculations of this kind such interesting and suggestive reading, however, is his brilliant manner of connecting his assumptions with this or that fact or phrase in architectural history, and springing upon us sudden and unexpected analogies. To work in his podium to Pliny's measurement, having regard to the position of one of the *ante* found *in situ*, he has to assume a triple colonnade across the front and back; an arrangement inherently very improbable. But there is a passage in Strabo to the effect that "Chersiphron built the temple, but afterwards another enlarged it. This has generally been considered as a mistake or mistaken insertion, for how, it has been asked, when a Classical temple is once finished, can it be enlarged? The obvious answer is, only by adding another range of columns at either end." The Ephesians, it is suggested, were dissatisfied that while the Temple of Jupiter at Athens had 120 columns, and the neighbouring temple at Didyme the same number (if we accept M. Rayet's restoration), theirs had only 118. This would be a somewhat analogous proceeding to that of the Peterborough builders, who played a game of brag with their west front against the west front of Ely. Again, Mr. Fergusson's podium has to be cut off sheer in the rear, close to the columns, while it extends as a *perron* in front; but "this is the usual arrangement in all the temples we know in Assyria and Babylonia," where "the slope of the front is very gradual and adorned with flights of stairs, and in the rear it is steeper and unapproachable"; and, though Alexander was not permitted to finish at his own cost the temple building when he visited Ephesus, his architect may have been concerned in it nevertheless, and that architect, from his patron's long residence in Babylon, must have been familiar with the temples there, and hence this Asiatic anomaly in a temple essentially Greek. If all this seems a little too ingenious and far-fetched, it is, nevertheless, "as

good as a play" to read; and some of the suggestions, starting at first, may turn to have more in them than at first appears.

On the third point, the question of lighting, we have not space to dwell now, further than to say that Mr. Fergusson entirely condemns Mr. Wood's old-fashioned hypæthral temple, *sub Jovi*, and here we are with him. His gives the large central cella covered, and lighted from windows in an open hypæthral court at each end of the cella, forming really what in a plan for office-buildings on a crowded site is general specified on the plan as "area for lighting." With this idea of a means of lighting, in itself, we have no special dispute, but we cannot accept Mr. Fergusson's idea of the great statue in the centre of the cella and lighted by a cross light from either end. No arguments could render such an arrangement probable. But we must leave the subject now, having indicated the principal points on which Mr. Fergusson's examination of the problem turns. He has suggested a great deal for consideration, and advanced the subject of the restoration of the Ephesus temple materially; and even where we cannot think his conclusions probable, they are too interesting in themselves to lose. One result we hope may arise from any new interest which his paper may awake in the subject, viz., that further subscriptions may be forthcoming, either from the public or from the Government (who are sadly half-hearted and remiss in regard to such matters) towards the complete investigation of the site of the Temple of Diana, and the possible discovery of fresh facts which may throw unexpected light on the subject.

ARCHITECTURE IN THE ABSTRACT: AN "IDEA" OF A WAR OFFICE.

ONCE more a great opportunity is opened to the architects of England for the design and erection of a public building of national, of imperial interest, noble in its object and magnificent in scale. The various offices required for the central control and administration of the all-important services of the Army and Navy have long been scattered in a variety of inconvenient, separated, and imperfectly adapted premises. Even economy has at last demanded a more reasonable system of arrangement: the requirements of efficiency have been clamorous long ago. At last the site for a central establishment has been decided on, and has been secured; though, as we have already said, not the site which appears to us by any means the most architecturally desirable or suitable. However, the choice is made; and an appeal is now addressed to the ambition at least of the profession, by conditions of competition which may or may not be susceptible of improvement, but which, in their ultimate form, will no doubt meet with the response which the occasion merits and requires.

It would be hard, indeed, if architectural genius were dependent for its opportunities of exercise and display on the rare chance of appeals of first-rate public importance, and then on the too numerous chances which past experience warns us may balk after all the worthiest aspirations; neither is the value of architectural opportunity necessarily enhanced in the proportion of area, magnitude, and multiplicity of the work to be undertaken. Numerous structures which are relatively very small and very simple, owe it to the genius of their designers that they remain to command the admiration of all Europe,—of all time. A large canvas no more implies a great picture in the b sense than a large building is identical with a fine building. In either case the very sense of magnitude which might seem secured by the primary condition of unusual dimensions, may easily be forfeited. It is dependent upon treatment as truly artistic or otherwise, whether of two buildings the vastly larger does not create and leave the impression of being very much the smaller; and still worse, if that may be, if it does not affect us with repugnance as being mean or paltry even for its apparent not inconsiderable size. A great opportunity is thus beset with a liability to even a disproportionately great failure. The poet may be excused for palliating the rashness of Phaeton by the suggestion that if he failed he failed at least in a daring attempt,—*magnis tamen excidit ansis*; but a compliment to ambitious presumption at the expense of professional competence and artistic endowment will not be welcome solace to an architect. To fail nobly in a noble

* Not unknown, but we should call it "unusual."—Ed.
† Stuart's "Athens," vol. iii., ch. ix., p. 53.

attempt is a fate which has had its consolations for many an architect on receiving back a portfolio of competitive drawings of which arbiters have been unworthy; but the best friends of a successful competitor may look round in vain for consolations to offer when a noble opportunity has been so dealt with as to make it difficult even to invent any plausible apology. The disappointment of the world at large, which is uninfluenced by personal friendship, and not always disposed for tenderness, is likely to find expression in terms that have direct relation to the magnitude of the works which have provoked it. It is well if, after one or two such failures, the world does not become disheartened and its purse-strings are not found hopelessly constricted when new proposals are made for costly art to attempt once more to add a charm to mere accommodation.

We have not, however, arrived at this point yet. Neither is there any reason for our architects to flinch from confronting all the liabilities which are of necessity concurrent with the largest opportunities. If the success of a work is not necessarily proportionate to the scale and dignity of an undertaking, none will be found to disallow that the scope for success is relative to these conditions; that what is truly massive may be made to tell with still more imposing force by artistic management, quite as surely [as it may by different treatment be degraded to apparent flimsiness: even as surely as loftiness may lose all its impressiveness in a weak composition, may it double its relative effectiveness when dealt with to the best advantage by a master. Therefore it is that we would fain have seen the area appropriated to the new War Office extending clear up to Spring-gardens and absorbing the sites of the two great banking-houses which intrude upon the block plan at a returning angle. Still, the site obtained has its capabilities, and in the aspects of frontage towards St. James's Park and the Parade-ground and westward, is perhaps difficult to stimulate the ambition of our contemporaries to occupy it with a building worthy of the traditions of the great services to which we owe no little of our national greatness, and all our national security.

It is impossible not to regard the present buildings of the Admiralty and Horse Guards with feelings of interest and respect which are to be shared between early and patriotic associations. The memories are still lively of "the Duke" on his way from Apsley House, as lively as of the mounted guardsmen in their niches seen only yesterday as for many and many a day in long past years. There live those among us in this day, when the electric wire has put a girle round the earth that makes the forty minutes' work of Puck only a weak metaphor, who remember the extended arm of the semaphore above the Admiralty, and how they gazed at it with awe to think of the momentous messages which it had once despatched and acknowledged when Nelson was afloat and England, if sanguine, still was in suspense. But even these prepossessions must not blind us to the fact that both the buildings are unworthy of their associations. They are very contrasted in style and design, but neither approaches at all to what should be its ideal. Still the Horse Guards would be missed with great reluctance, and it seems to be rightly intended that it should remain. It is only to be hoped that the new structure, which will closely abut upon it, will not be held to an obligation of keeping it in countenance by conforming to and exaggerating its most salient, which are not its best, characteristics.

But while all is and must be for so long uncertain and unsettled, let us endeavour to forget the past, the possibilities of the future, and even present actualities, and endeavour to appreciate an ideal aspect of the problem of which we shall still have to wait some time for the statement in precise terms and still longer for the solution. It is no fruitless exercise of the mind to take up a question in the first instance independently of cramping limitations.

It is enough, then, for those who are disposed for an exercise in tentative speculations to start from the foregone necessity that the War Office of a mighty empire must be an establishment upon a very large scale, involving the requirements of a variety of divisions, departments, and communications: that the structure must needs be vast if not enormous, and therefore susceptible of treatment in the style and on the scale of one of the most conspicuous monuments of a metropolis.

The conception or idea of a War Office is in itself a coherent unity, and so far we have secured the first condition of telling artistic effect. But at the next stage of analysis this unity is found to be dependent on the co-operation of forces as structurally distinct as those of Army and Navy. The organisation, then, of a War Office, and the organic distribution of the structure which is to house it, must be correlative; and we are brought at once to military and for providing departments for not to interfere with each other, and yet with common relations to a central department which is equally concerned with both. To borrow an illustration from the homologies of the human frame, the functions of military and naval armaments are as contrasted as those of arms and legs, but like those limbs are analogous in their composition when not similar, and both are brought into harmonious co-operation by common dependence on a central power which is provided with appropriate means of controlling and stimulating both in concert. We seem, then, even already to have arrived at the elements of a composition comprising a centre and two wings; though their proportionate distribution at present must be left undefined. Thus it is by no means necessary for either the convenience or the expression of this scheme of composition that the two great establishments should each present their main extent of front upon the same line. It would be quite consistent with architectural logic for the Military Office to have an exclusive front in one direction,—the Naval in another, while each made only such appearance in a third as both effected and expressed dependence on that central office of War which, as the ultimate predominant power, would rightly be permitted to assert its supremacy by holding both in control.

In one combination or another it appears imperative, as at the same time it appears advantageous, that these primary relations of the administrative functions should find in their building the expression of that proper symmetry and correlation which is of the very essence of their efficiency. It is manifest how naturally this distribution would subserve the characteristic enhancements of sculpture and sculptural enrichment. The symbols of warfare by sea and by land would take their several places around heroes of one or other element, the Drakes, Howes, and Nelsons in one direction, the Marlboroughs, Moores, and Wellingtons in the other, while in the central composition both services would join hands as "the State's whole thunder" be shown as at the command of central authority, supported it may be by the offices of such Ministers of War as our history may supply of worth deserving place beside the great Earl of Chatham.

But let us descend for a time to the consideration of the questions of material accommodation. Again we have one leading distinction, a functional distinction, which involves a due structural adjustment. A very large allowance of space must be set apart for what we will not call the servile but the secondary or quite subordinate functions or duties,—most important, doubtless, but matters of routine or quasi-mechanical office work. With the space required for these may be classed that which is demanded for purely mechanical operations and for storage of all matters for constant use or occasional reference. On the other hand, we have apartments to provide for the more dignified and the superior occupations and transactions which have diverse characteristics among themselves to which it may be of interest to return.

Here, again, we may find an illustrative analogy in the structure of the human frame, in which the nobler organs and senses are assembled in the upper division of the body, in chest and head, and segregated thus from the subordinate, however indispensable, ministrations of material support, of nutriment and growth. In metropolitan architecture, so long as the smoke demon is unquelled,—that true prince of the powers of the fuliginous air,—the upper rooms even of lofty buildings will be deprived of what should be their natural advantages. The time may come when the closest light and purest air and most enlivening outlook will be sought and found and valued upon level roofs, and at freely-opened windows of the stories which are now given over to attics and garrets, to servants' bedrooms and box-rooms. But, in the meantime, it is in these elevated regions in

one direction, and then in the basement, that circumstances direct us to locate the more general storage which must needs accumulate with the special records of particular incidents and enterprises, and also the offices for the more subordinate official duties. The due improvement of the opportunity of the basement is in this respect most important; there is no difficulty, between lifts and telephones, in placing it in direct communication with the upper stories, and electric lighting still further extends its capabilities.* The mass of records which must necessarily be preserved, beginning from the logs of voyages and general reports, and which yet must be so stored as to be available for reference, is enormous. A considerable portion of these, while still necessary to be preserved, must gradually approach to the nature of dead bulk, for which appropriate domicile may be assigned to the most sequestered cellage.

Where space is so valuable there can be no excuse for not securing one perfectly well-lighted basement story or series of rooms suitable by airiness as well as light for occupation by officials whose duties and services are even superior to those of ordinary clerkship. There could be no greater mistake than for the best use of space, so conveniently situated, to be forfeited, for the sake of snatching an easy chance of architectural display, or, let us even be allowed to say, of masking architectural shiftlessness, by interposing a cumbrous overcharged screen, or lowering the height and reducing the width of windows, as the readiest means of increasing the dignity of those of the more important floor above. When that best of blessings daylight has thus been made the most of, there is no reason why modern construction should flinch in a public office, any more than in a mercantile, from sinking to a still lower depth a vast and lofty vault, accessible and available throughout by aid of the electric light and lifts, of which it would house the apparatus and machinery for the use of the entire building.

The number of upper stories which would be available for business of routine, especially such as require or is consistent with seclusion, would, of course, be determined and only limited by such requirements. Is it even now necessary to make one warning protest? May it never be fated for us in the future to enter an office occupied by penmen where the windows are as near to the floor as they ought to be to the ceiling, and therefore where what light is really available is chiefly reflected from the ceiling. The plea of necessity to preserve the external ordination of windows, which must be made to accommodate lofty apartments in one quarter and divided stories in another, must be sternly disallowed. Necessity has been called the tyrant's plea; the necessity, however, which is urged by a tyrant, whether political or architectural, will be found to have reference to his individual convenience, and, in either case, his victims will be wise to accept for themselves an incumbent duty and necessity to rebel.

The accommodation of a superior class which the proprieties of the occasion demand is partly such as responds to the needs of the higher functionaries in their official business, and then to the interests of state and dignity. It is necessary that provision should be made for dignified receptions in the departments in both services. Rooms for levees and audiences must be something more than the rooms in which even the very highest functions of administration centre, and it would be right also that the approach to these latter should have, in staircases, halls, and ante-rooms, some preparatory indications of distinction and authority. As regards the actual centre of all control, it were superfluous to insist that it must be central in the most effective sense,—the very focus to which the reports of every subordinate office may be instantly conveyed at a signal, and from which the governing will may transmit requirements or commands with the instantaneousness of a reflected ray.

Considerations of dignified expression are of still more importance in connexion with the proper commissure of the two services,—the War Office of right, as representative of the combined and co-operating forces of the empire

* We appear to be far behind our American neighbours in the matter of the utilisation of basement room. The amount of possible rental property (to say nothing of the convenience and health of inmates) which is annually squandered through neglect of any scientific attempt to render basements light, airy, and healthy, is very great.

for attack and defence by land and by sea. State apartments,—a suite of state apartments,—here must be at once more spacious and more multifarious, and here the symbols of all arms and all forces and memorials of all past warlike achievements will naturally set their mark in details of ornamental enrichment.

It is greatly to be desired that the space at command may be so economised without appearance of pinching or crowding, that it may be possible to allow to the building a forecourt at least sufficient for the convenient entrance and departure of carriages. This is desirable, not merely on account of the carriages, their drivers, and occupants, on either public occasions or for private convenience, but for the sake of some relief,—if indeed it may be spared to us,—from that sense of living in a city so compressed and crowded up to the last half foot of available space which really is becoming oppressive.

Perhaps it is not necessary to attempt to give a semblance of more definite reality to the "airy nothing" which imagination has so far vaguely bodied forth. The style which shall be adopted,—if we may venture an inference from historical experience,—is, perhaps, to be sought most confidently among those which may promise the greatest contrast to the most recent great experiment. The law of action and reaction has been traced by Macaulay, among others, in the alternating policies or even excesses of English political parties in times gone by. Something of the same kind is observable in the flux and reflux of architectural taste. Politicians assure us,—party-politicians especially,—that in result the country makes good social and legislative advance, so good that it is but rarely that an important change once adopted has to be repented of. It would be pleasant to think that aversion to persevere in a style of architecture adopted for one enormous public building is due to something pleasanter than bitter experience of its inconveniences. But if it must be so, it is at least encouraging to live in a world that never refuses to profit by experience, and is not to be deterred from a bold revulsion to simplicity and elegance, to refinement and dignity, by apprehension of being taunted with fickleness or with faithlessness to traditions.

THE FLOODING AT THE SEVERN TUNNEL.

WE have no wish to pass as either pessimists or alarmists, but it is idle to attempt to disguise the serious character of the irruption that took place, on the 11th current, into the Severn tunnel. It is quite conceivable that it may necessitate the abandonment of the undertaking; and while we shall gladly find that the water proves to be under the control of the engineer, it will be well, from the first, to remember the alternative, and to grapple with the problem as one of which it is essential, as soon as possible, to ascertain the controlling elements. The first account which has reached us of the event (partial and hurried as all such accounts must necessarily be), spoke of the sudden rise of water over a space of some 7 feet square, and its inrush at such a rate as to have rendered it impossible to withdraw the horses in time to save the lives of several of them. Fortunately no miner has been lost; and it is proper to say, in the first place, that the casualty seems to be one of those which no skill could foresee; and that no shadow of blame can attach to any of the conductors of the undertaking, unless it be held that the scheme itself was too audacious to offer a fair prospect of success. As to that, we say nothing. It is, however, something of a consolation, in regarding what under any circumstances must prove a costly misfortune, to remember that if such risks beset a subaqueous tunnel on a site comparatively so well known and so accessible as that of the Aust passage, they must be small compared to those that would beset the longer route beneath the Channel, which encounters a known change of a very decided character in the dip of the strata on the two opposite coasts.

The influx has been calculated by the engineers at 30,000 gallons per minute, of which the six pumps available raised only 11,000 gallons per minute, or 72,000 metric tons out of 197,000 metric tons in twenty-four hours. Ten times this quantity, or two million tons, was raised in the twenty-four hours from the Haarlem Lake; but this took the united ener-

gies of three steam-engines, of 350-h.p. each, to accomplish.

The real question, of course, is the source of the water. If it be derived from what has been called a subterranean reservoir,—that is to say, a permeable stratum lying between impervious beds, and filled by the stores of the rainfall,—the question is only one of steam-power; and, if this be ample, the reservoir can be in time exhausted. If, on the other hand, there be a connexion with the channel, the supply is unlimited, and prolonged pumping can do nothing but increase the flow.

In the case of the irruptions of the Thames into the original Thames Tunnel, the river made its way through the shallow stratum which had been left over the top of the shield. No doubt the tunnel was set out at too high a level, but the mischief was repairable by the use of bags of clay, which, in fact, puddled the silty bed of the Thames. In the present case, however, when the water rises from the bottom of the tunnel, no such expedient is available, nor does there appear to be any other resource within the power of the engineer,—if it be necessary to stop the leak before the tunnel can be emptied,—than sinking a cylinder directly down on the spot from the surface of the channel. It may well be doubted whether such an expedient, however admirable on paper, would come within the practical reach of financial possibility.

The rise or fall of the water, as compared with the exertion of the available pumping powers, will be watched with the greatest anxiety. If a decided gain be shown by the decline of level, the best hopes may be entertained. If the water gain on the pumps, the inference will be too obvious. If, as sometimes happens, a sort of equilibrium be obtained between the pumping and the supply of water, it will be important to ascertain from day to day the quantity of salt contained in the water extracted. If this water prove fresh, it will indicate as the source a water-bearing stratum disconnected with the sea. If it prove brackish, and especially if it increase in its saline constituents, little doubt can be left that there is a direct communication with the sea.

Long experience in tunnels leads to the opinion that their construction, especially of any considerable length, in any spot where they cannot drain themselves by gravitation when complete, is liable to very serious objection. Mines, of course, are dependent on constant pumping for drainage; but cases in which mines have been suddenly and irrevocably flooded are well known. When the sea is at hand, with its unlimited supply of water, if the least practicable leak be found, the risk becomes almost prohibitive. Between the passage of the Mersey at Liverpool and that of the Severn below Gloucester there is an immense difference of width. And however high be the function of the engineer as the *minister natura*, there will always be a question whether, in the endeavours to shorten topographical distance by running under the sea, he is not exceeding his privilege, and engaging in a strife in which nature will inevitably conquer. That such would be the case in an attempt to burrow beneath the English Channel we have held from the first moment when such a scheme was proposed.

And there is another question which comes within the province of every man of business to consider. Is the game worth the candle? What will be the advantage to the Great Western Railway Company of the sub-Severn line? The saving, it will be said, of so many minutes in the route to Wales. But at what cost will that be attained? As far as the company are concerned, their profit would be more on the longer than on the shorter route, unless by virtue of a special Act of Parliament to raise the rates on the latter. The only gain, *per contra*, will be the stimulus to traffic given by the reduction of time. It must be very long before this could pay for the tunnel.

As far as the travelling public are concerned, however, it may be said that the shortening of the route will be clear gain. Of that we are not so sure. Let any confident advocate of the tunnel look at p. 104 of the Evidence before the Select Committee on Canals (1883) and consult the report of M. le Hardy de Beaulieu which is there cited. In face of the great reductions of fare that are promised on the Continent, any heavy outlay on an English railway that is not manifestly remunerative and self-supporting, may hereafter assume the aspect of a serious evil, not only to the company that has incurred

it, but to the customers of the line, and indeed to the nation itself.

The water continued to gain on the engines until the 14th current, from which time the rise has been checked. It is almost to be regretted that the water was not allowed to attain its level before the pumping commenced, as the question of the source might then have been elucidated.

THE ECONOMY OF STEEL RAILS, AND WHAT HAS COME OF IT?

THERE is one point in the address of Mr. Brunlees (p. 413, *ante*), as to which, while accepting the facts cited, it is possible to draw a somewhat different conclusion from that advocated by the speaker. And the subject so intimately concerns the very life-blood of English industry, that it is impossible to pass over it in silence. We refer to the economy effected in railway transport by the substitution of steel for iron rails.

As to this, while it is possible, by the aid of the laborious statistics of Mr. Price Williams, and other analysts, to go with some accuracy into the subject, we are content for our present object to take the figures cited by Mr. Brunlees, to the effect that under a traffic of 7,000,000 tons of gross weight per annum, the life of a steel rail is double that of an iron one. Such a traffic is, of course, exceptional; as it appears from Mr. Conder's evidence before the Select Committee on Canals that the average gross traffic on the railways of the United Kingdom is under 2½ million tons of gross weight per annum. Over portions of the great trunk lines, however, there is no doubt that as heavy a traffic as 7,000,000 tons gross may be carried, the Taft Vale having actually reached the average of 4,700,000 tons gross weight over the whole mileage in the year.

It is the calculation of Mr. Brunlees that a saving of 104*l.* per mile, which he puts at ½ per cent. of the working cost of a railway, may be attained, or rather has been attained, by the replacement of the iron way by steel rails. Now, taking this to be so, we are unaware of the extent to which the substitution has taken place, and are thus unable to estimate over how large a proportion of the capital of our railways this reduction in working cost has been effected. It would be worth while for the Board of Trade to furnish information on this head. Nor is it necessary to wait for any legislative sanction of any change in the form of the returns furnished by the railway companies for this purpose. The reports of the directors to the half-yearly meetings give particulars, from time to time, of the length of steel rail laid; and it would merely involve the application of a certain amount of clerks' work by the officials of the Board of Trade to provide the shareholders and the public with this very valuable information; which, to be most serviceable, should be given in a tabular form, showing the change effected from year to year in each line, and noting whether it was paid for out of capital or out of revenue.

The great point, however, of the speech of the President of the Institution of Civil Engineers is that the substitution is effected without any undue inflation of capital; solid steel rails being now sold at a price which a little time back would have been considered low for iron. In fact, it is little more than one-third of the price which was paid for iron rails while the Great Western Railway was in course of construction. That, no doubt, is a most important fact; and as regards new lines in the colonies or elsewhere, it is wholly in favour of the investors in, and makers of, railways.

The point, however, which has been left out of sight is, that the saving of 104*l.* per mile (or whatever proportion of it has been effected in each case), in the working expenses of the Railway Companies has been so wholly swallowed up by the increase of other items of expenditure as to have attracted no attention in the accounts. In the absence of direct statements we are not about to attempt to give the dates of the introduction and extension of steel way. But it was not till about 1862 or 1864, according to the paper we are quoting, that rails were made entirely of steel. If we take 1870 as a year from which a noticeable saving

in the annual expenditure or maintenance of way has been effected by this change, we shall thus be in accordance with Mr. Brunel's. In 1870 the gross revenue of the English railways averaged 8.19 per cent. on capital, and the net revenue averaged 4.41 per cent.; the working expenditure being 48 per cent. of gross income. The working cost per mile in 1870 was a little under 1,350*l.*,—on which a saving of 104*l.* is very appreciable. By 1880 the gross return on capital had risen to 8.64 per cent., and the saving by steel rails had gone on to some considerable amount, and yet the net return on capital was only 4.38 per cent.,—and the proportion of working expenditure was 51 per cent. of gross revenue, instead of 4.41 and 48 per cent. respectively. Thus not only has the saving due to the introduction of steel been wholly swallowed up, but the absence of any definite statement on the subject in the railway returns has been mis-guiding. Working expenses have not only risen from 48 to 51 per cent. (having been as high as 54 per cent. in 1874), but the difference against the railway shareholder is more than that 3 per cent. transferred from one to the other side of the account. It is three per cent. *plus* the saving on steel rails.

In regarding the railway movement of the period,—not from half year to half year, but decade by decade,—it is of great importance that such a point as this should not be overlooked. For while, on the one hand, the low price and durable quality of steel rails is a matter highly advantageous to the railway maker, the fact that a considerable economy, as compared with the cost of maintenance of way twenty years ago, has been silently swallowed up, is not satisfactory. It is a source of economy which we cannot expect to recur. It would be difficult to put the finger on any item in railway expenditure in which it is conceivable that some improvement in scientific mechanics will hereafter allow of an economy of 100*l.* per mile. And in all those questions which have taken so strong a hold of the consideration of the manufacturing districts as to the best and cheapest mode of carrying produce to and from the seaboard, that fact of steady increase in working costs is one of the most disquieting. Steel rails are a great gift. But down to the present time some cause or other has more than counteracted all the advantages which the railway engineer has derived from this great improvement in the furniture of the lines.

The non-progressive character of the net railway receipts is one of the most serious features of our industrial condition. Capital cost has increased by 22 per cent. in twelve years. Gross income per mile has increased in a higher ratio, by 27.5 per cent. And yet net earnings on capital shows a slight decline in the period. If we contrast these ugly facts with the promises of the past, or with the rose-coloured statements of the present, we shall have abundant food for reflection. And that reflection will be all the more anxious when we realise how far the good hope that was offered to the shareholders by the production of cheap steel has been not only discounted, but counteracted.

The item of wear and tear of permanent way is one that has no existence on canals. A water route is absolutely indestructible. Indeed, the whole maintenance of way and works, which amounts to rather more than a fifth of the working cost of our railways, is shown by the "Report on the Comparative Cost of Transport by Railway and by Canal" (Spon, 16, Charing-cross), to be not one-tenth as much on canals as on railways. The reader will naturally say, "But what is the proportion of traffic on the two?" And this is a question which, at the present moment, it is very important to answer.

It is only justice to a gentleman with whom we do not always find ourselves in full accord, M. de Lesseps, to remark that at an early stage in the history of the Suez Canal he called attention to the fact that the increase of profit followed a different law by water and by land, on canals and on railways. The experience of the canal system of the early part of this century, both in England and on the Continent, justifies this remark; and at the present moment it is so fully illustrated by the growth of both gross and net revenue, with comparatively little augmentation of capital, and no augmentation, but reduction, of working costs, in the case of the Suez Canal, that the figures which we have here thrown into a tabular form cannot

be regarded otherwise than as highly instructive.

Comparison of the Progressive Improvement in Railway and Canal Property, from 1870 to 1882.
RAILWAYS OF THE UNITED KINGDOM.

	1870.	1882.	Progress per cent.
Cost per mile	£34,106	£41,635	+ 22
Gross revenue per mile	2,801	3,705	+ 27.5
Working expenses per mile	1,388	1,959	+ 40
Net earnings per mile	1,503	1,746	+ 16
Proportion of working expenses to gross revenue	48	53	+ 10
Net earnings on capital	4.41	4.32	- 2

SUEZ CANAL.

	1870.	1882.	Progress per cent.
Cost per mile	£177,560	£193,352	+ 9
Gross revenue per mile	3,709	25,363	+ 587
Working expenses per mile	5,531	2,654	- 53
Deficit per mile	1,821	—	—
Net earnings per mile	—	22,709	—
Proportion of working expenses to revenue	149	14.6	—
Net earnings on capital	—	17.0	—

As the traffic, as well as the cost, of the Suez Canal is very high, we subjoin the figures of one of the few railways which exceeds these rates:—

METROPOLITAN RAILWAY, 1878.

	1870.	1882.	Progress per cent.
Cost per mile	£639,315	—	—
Gross revenue per mile	38,615	—	—
Working expenses per mile	14,688	—	—
Net earnings per mile	23,927	—	—
Proportion of working expenses to revenue	35.63	—	—
Net earnings on capital	5.14	—	—

QUEER CLIENTS.

WITH the exception of the Church, the medical profession, and, perhaps, the Law, an architect in full practice sees as much of the world and its ways as most men. He occupies a middle position between the trading classes, who conform pretty much to a fixed type,—and the wealthy classes, who are as various as can well be imagined,—and he sees a good deal of both which is not seen by any one else. It has often struck me as a matter for regret that amongst all the "recollections," and "reminiscences," and experiences with which the members of the liberal professions have enriched our literature my own profession is almost unrepresented. It may sometimes happen that those who are the busiest and would consequently have the most to tell are not very skilful in the use of the pen, but the contrary is not unfrequently the case. However, skilful or unskilful, they one and all abstain from recording the incidents of their several careers, or, at any rate, from making the record public. And one can but regard it as a loss that this should be so.

Take Nash for example. His career was to the full as varied and eventful as the celebrated Beau who bore his name, and must have been brimming over with material both entertaining and instructive. The Wyatts could have furnished a whole biographical library; or, to come nearer our own time, Sir Chas. Barry could surely have made out for us a much more interesting account than that which his accomplished son has given us. I for one take it to be a positive misfortune that the life and experience of Sir Gilbert Scott, who was an excellent raconteur, have not been written for us as fully as he could have written them, had he been disposed, in the Autobiography by which he left, to take us more fully into his confidence. We are allowed to see but little of that remarkable tact with which he conducted for so many years a singularly large and varied practice, without, so far as we know, a single law-suit, or reference, or one serious disagreement with his employers. He worked in quiet times, when men's feelings were deeply stirred, and High Church and Broad Church, Low Church and no church, were in a state of ferment, and of mutual repulsion and antagonism. He contrived, nevertheless, to pick his way amongst them all, and to secure the favour and esteem of each in turn. Carrying out the Apostolic precept he was all things to all men, if by any means he might gain some. But are we to suppose he met with no queer clients, no refractory or impracticable ecclesiastics other than those he has adverted to, no very difficult cases, or that his consummate tact was not sorely tried by the efforts necessary to conciliate so many conflicting interests? What an account he could, with his marked literary facility, have left us if he had chosen to be entirely frank and unreserved.

The "queer client" of fiction has been drawn for us by a master-hand. Let me attempt a

rough outline of a specimen or two of the queer client of fact, met with in a very limited range of experience, and drawn from the life.

Once upon a time I received a flimsy-looking letter bearing an African postmark and stamp. It was a puzzling missive, for I knew no one in that quarter of the globe. After much fruitless speculation as to what it could mean I opened it,—one always *does* delay this operation in such cases, why I know not,—and found it contained a well-written request that I would professionally assist the writer in the building of a dwelling-house for himself. He mentioned the name of an officer in the Army who was known to me and whom I knew to have been stationed on the African coast.

I wrote to my military friend and learned in reply that Mr. Black (let us call him) was a native gentleman of prominent position, a "leading card," and, by repute, extremely wealthy. It was thought that I might safely undertake his work.

It transpired that he was desirous of building himself a large house on the European plan, something very superior to the class of structure about him. The drawings had been got out locally, but might want some amendment to bring them quite up to the European standard. This I was to look to, and also to arrange for the purchase and shipping of the bricks and other materials. I was to have all the joinery prepared and the carpentry fitted ready for putting in position, on its arrival, by natives, who were equal to this duty and no more. The drawings arrived in due course, and shadowed forth a goodly dwelling so far as size and costliness went. There were large and small dining-rooms, and the means of combining them into a sort of dining-hall. A ball-room and a "Bible-class room" were side by side. I had learned from "Uncle Remus" that dancing and devotion got a little mixed in those latitudes, and was not astonished at the arrangement. There were "saloons" for Mr. Black, and "boudoirs" for Mrs. Black, and ample nursery accommodation for little Blacks, separately planned in the rear. I made all the necessary calculations, obtained the necessary tenders, and advised accordingly, and I waited patiently for nearly a year without hearing anything more of the matter. Then I reminded my dark correspondent that the affair had been some time about, that I was so far out of pocket by the transaction, and I asked whether he had abandoned his intention to build, and, if so, begged that he would remit my charges, of which an account had already been furnished and tacitly approved. He replied that he was delighted with all I had done for him, that he longed to make my acquaintance, that he was coming to England very soon, and would settle all outstanding matters between us. And so matters went on for another year, when I renewed the application and received a reply similar to the former. The application was repeated a third time, and then I received a note to the effect that he was really on the point of setting out for England, and soon after I obtained an appointment to meet him at a well-known hotel.

I called with my bundle of plans, estimates, &c., to find he had left for the North of England on most important business. A note set forth that his business was about to be enormously extended by the aid of British capital. He would want a still larger house, and not that only, but mills and workmen's dwellings, and overseers' quarters, and no end of special and costly machinery, and the necessary arrangements for all these things were to be in my hands. A golden prospect! As for the account already rendered, that trifle should be discharged on his return, when he would be happy to meet me at the hotel before alluded to. I called again with my roll of plans and my bundle of papers. But I was again disappointed; for, like the vulgar little boy in Barham's legend, he was not to be seen, nor heard of. He had not returned to the hotel, and nothing was known as to his whereabouts. And so I went back disconsolate, baffled, angry with myself for having wasted so much time and money, and determined to waste no more. I did not see my way to "have the law" on this invisible Prince; it is hard fighting so airy and impalpable an enemy with half the round world between you.

Some time after,—when I had almost forgotten the subject and its annoyances,—I received from a friend to whom I had mentioned the matter, and who chanced to touch

on "Africa's burning shore," a shabby-looking news-sheet announcing the death of my queer client, and requesting that all claims against the estate might be sent to So-and-So. Of course, I sent mine. Hope springs eternal in the human breast. I complied with all the necessary formalities, and I have had my trouble for my pains. I have since heard that Mr. Black's wealth was, like Antonio's, "in supposition," and that there was no estate to administer. I cannot tell how the truth may be. The whole thing seems like a dream. Yet there are his letters, and there are the plans, of no use even to the owner. If any reader of this tale of woe should think of settling in that salubrious locality, and wishes to build himself a mansion of exceptional magnificence, he may be glad to know that plans and everything necessary are ready to his hand, and very much at his service. And so ends the story of one of my "queer clients."

THE BURLINGTON HOUSE COLONNADE AGAIN.

ONE of the periodical references to the prostrate columns at Battersea, and projects for their resurrection, which are now and again started, has recently turned the attention of a few persons once more to these ill-used ruins, the decaying remnants of a day of classic taste. Once more a question was asked recently, just before "the House" broke up, what was to be done with them, and a wild suggestion made for their resurrection and utilisation, whereof a word anon. It is true that no suggestion made even in that place of eccentric architectural criticism, the House of Commons, can be much more wild than the ideas as to these ruins, their origin or purpose, which pass from mouth to mouth of cockneydom on the river steamers, or straying in the Arcadia of Battersea, or are doled out to it by the wisdom of imaginative officials. There is, perhaps, some excuse for this "progress of poetry" in regard to what is in reality a simple though absurd fact. The *disjecta membra* have lain on their present site so long that there has been time for several successions of fresh theories about them, till curiosity has returned blunted upon itself; and a generation has arisen which tacitly accepts them as "of and belonging" to their present situation as naturally as if they were an eccentric outcrop of the sandstone formation. Foreigners, and occasional visitors to London, who during the summer months take boat for Kew or Richmond, have in their time been sorely perplexed by the various accounts of these unworldly structures, which for some fifteen years past have had, as it were, cyclonic gusts of circulation. But it has been only upon the more adventurous wayfarer, resolved to land and investigate these curious relics of antiquity on the spot, that the full gravity of the "problem of the stones" has dawned. It is the official mind, however, as locally represented by a highly courteous staff of park-keepers, that has suffered most from the burden of "the problem." For years past any appeal to an authorised custodian has been forbidden to those who may have remembered the agony to which a like question had given birth when propounded on the occasion of any former visit. Children have grown into men and women, and have left the neighbourhood, bearing with them grateful recollections of many a frolic among the stones. Other playful infants are to-day sowing the seed for a harvest of similar memories. In truth, the stones constitute an undeniable base of sportive operations almost rivaling the excellencies of a timber-yard. That highly elaborate cornices and mouldings, enriched keystones and soffits, as well as quaint heraldic devices, should be conspicuous among the mass, makes the stones only the more desirable for "I spy," and juvenile *soirées*. It is perhaps to be regretted that the official body could find no outlet for the official mind in this particular. The consequences have been those commonly attendant upon a suppressive mode of treatment. For a considerable time the impression prevailed that the dishonoured fragments had been "brought from abroad," and were designed to form a gateway for one of the entrances to the park at some time or other. This was followed by the rumour that a parochial stone-yard was to be established in the breezy situation, and that a few hundred tons of suitable material had been "shot" there preparatory to the commencement

of pauper discipline. One particular park-keeper of more than ordinary intelligence had convinced himself that the strange objects of daily inquiry were destined to form the piers of the then talked-of Albert Bridge; but the subsequent erection of an iron structure and the continuance of the stones in their grass-grown beds was such an emphatic refutation of this conjecture that the official ever afterwards remained obstinately "mute of malice," the disappointment having possibly contributed to his early retirement from the field of prophecy.

Thus balked in its surmises as to the purpose for which they were intended, the local mind,—following a law of its nature,—began to develop in another direction; to operate, so to speak, upon a new plane of cleavage, and to concern itself with the inquiry where the stones had come from. The official referred to is supposed to have had an idea that they were distinguished visitors from Italy, for he had once been assured by an "authority at sight" that they were of a strictly Italian style of architecture. A widespread superstition among the inhabitants of the Battersea side was that the fragments had formed a portion of the dismantled Colosseum in the Regent's Park. This theory, however, was controverted with some heat by "Old Chelsea," many of whose ratepayers had finally convinced themselves that the subjects of inquiry were nothing more than a part of the famous river frontage of Somerset House, removed to make way for the Victoria Embankment. In default of any meteoric or cosmic *raison d'être* for the stones, such as might lay the restless spirit of inquiry, it seemed likely that the last verdict would stand, when, but a few weeks since, it was disturbed in a manner altogether startling and unexpected. An announcement appeared in the papers that a movement had been set on foot for the utilisation of the façade and colonnade of Old Burlington House, by embodying it in the main entrance to the former Dublin Exhibition building, now in course of erection in Battersea Park. Battersea and Burlington? Let the most be made of the alteration, for assuredly it is the only congruity which can be found in such a scheme. Let us once more jog the public memory as to the real origin and architectural meaning of the remains which it has been proposed thus to travesty.

The colonnade of Old Burlington House was the striking addition made by Richard Boyle, third Earl of Burlington,—Pope's "Man of Taste,"—to his ancestral mansion in the early part of the last century. Designed in confessed imitation of the palace of Count Vercelli, at Vicenza,—one of Palladio's masterpieces,—this colonnade was the architectural feature pronounced by Sir W. Chambers to be the finest thing of its kind in Europe, and described by Horace Walpole as "one of the edifices raised in fairy tales by geni in a night time." The colonnade, moreover, was the "classical remnant" which, having with its mansion been purchased by the Government, was advertised for sale in 1858 as "the admired stone erection of the colonnade and gateway at Burlington House, and was subsequently withdrawn from public competition in deference to the storm of indignation with which the announcement was received. Storms of indignation, however, commonly die away in a drizzle. The work of art that might not be desecrated by the auctioneer's hammer has been allowed to subside into a ruinous oblivion. As they were removed from the Burlington courtyard, the stones were numbered and carted away to Battersea Park, where for the past fifteen years they have been bleaching and crumbling in perfect security. It is not apparent to whom is due the present choice idea of "embodying" a stone colonnade of Italian design and classic reputation with a meagre structure of brick, iron, and glass. The suggestion is probably the offspring of despair. At all events, the state and position of the ruin is sufficiently anomalous,—too sacred to sell, too useless to preserve. It does not seem to have occurred to any authority for the time being that here was an admirable opportunity of suitably adding to the charm of a place of growing beauty. Nothing is wanted but to rebuild the colonnade on the site which now dishonours it. It was beyond question designed as an ornament, and it would fulfil its function in being ornamental, as it certainly might be made, with a fine river frontage and a wealthy background of luxuriant foliage. That the stones should be allowed to weather out another winter is a national reproach;

to "embody" them as suggested would be an act of grotesque barbarity, almost eminently English. It must, of course, be admitted that "Boards" shall fully retain their ancient privilege of "moving in a mysterious way their wonders to perform"; but considering the misleading warp which this Classical remnant has given to the minds of so many of her Majesty's lieges, it is greatly to be hoped that it will finally be allowed to delight those whom it has so long been permitted to puzzle.

SOMETHING ABOUT THE ART OF JAVA.*

AMONG the architectural remains of ancient Javanese architecture, it is the Temple of Borobodor which, as we have already remarked, has received the chief attention of archaeologists. The interesting study of Dr. Leemans,—the Director of the Oriental Museum at Leyden,—the result of the accumulated researches of the Batavian Society of Arts and Sciences, supplies, with its large number of plates, almost all the data requisite for a complete acquaintance with the huge temple, which it will, indeed, be a subject for deep regret to hear has received any further serious damage than has so far visited it.† By a rare good fortune the temple has so far escaped human desecration; the iconoclastic fury of the Mahomedans would not appear to have been wreaked on the wonderful series of sculptures, and it is chiefly neglect and volcanic action which have reduced the pile to ruin. It is from the curious sculptures in this interesting temple that our chief store of information respecting the civilisation of ancient Java is gathered. The temple,—for a more detailed description of which we refer our readers to a previous notice,—is about 400 ft. square at its base, and about 120 ft. high; it assumes a pyramidal form, consisting of nine stories or galleries rising one above another. Along and around each gallery, on both sides, runs an uninterrupted series of sculptured representations of the life of Buddha,—a line which it has been calculated would, if extended in one direction, reach to hard on three miles in length. These three miles of bas-reliefs, sculptured with the minutest care and at a period when the Buddhist religion was at its highest development, constitute, it can be understood, a rich mine of information as to the life of the Javanese at the period when the temple was built, but they offer another interest, for they form, as Fergusson justly says, "a perfect illustration of all we know of Buddhist art and ritual."

Authorities differ as to the exact date of Borobodor. The Dutch archaeologists place the date at about the ninth century, perhaps even the eighth. Fergusson, however, whose acquaintance with Indian architecture entitles his opinion to great weight, argues for a century earlier, from a comparison with the *celes* of Ajanta in the Western Ghats. Dr. Leemans' detailed study of this interesting monument affords, as can be imagined, a large field for inquiry, one which would lead us much further than the limits of the space at our disposal. Dr. Leemans describes at great length, and with copious references to the plates which accompany his work, every detail connected with the monument, its construction, resemblance to, and difference from, other Hindoo edifices of the same stamp, and, above all, the wonderful and complicated ritual of Buddhism which is so minutely represented in the long line of bas-reliefs.

Passing over this interesting aspect of these sculptures, we may, however, rapidly follow the learned doctor in his enumeration of some of the less strictly religious details represented in the bas-reliefs of Borobodor. From these we can form some idea of the Javanese at the time when the temple was built; for though it was, we know, not the creation of the Javanese proper, research reveals that the natives largely conformed to the habits and customs of their more refined rulers.

In the first place, the costume throughout is completely Indian. What architecture is represented is interesting as showing the existence of houses of more than one story, while a slight glimpse is obtained of the mode of interior decoration. Tables, chairs, sofas, footstools,

* See p. 410, ante.

† Though the original of this work is in Dutch, the author has prepared an excellent French translation, which is an indispensable guide to the mass of plates in the Dutch edition.

‡ See *Builder*, May 22, 1880, p. 624.

and coffer are represented, all richly carved. Cushions and pillows are largely used. The tables are not very high, and are covered with flowers. If we are to judge by several of the bas-reliefs, pictures were evidently hung on the walls. We see in one instance, —reference may be made to the plates in Leeman's work,—the framed portraits of a man and woman; but most frequently these pictures, when not paintings, are embroidered, such as we see to this day used in China and Japan. Fans are frequently represented, and from their various positions, clearly folding fans; some of these are most richly decorated. Cups of the most graceful design are largely introduced among the offerings made to Buddha. Some of these would appear to be made of paper and singularly resemble the paper covers which are sometimes used to this day to place round flower-pots. Mirrors and numerous other accessories of the toilet are often represented. Intractable as the material is in which these reliefs are carved, it is singular how successfully the sculptor has brought before our minds the richness and variety of the vases, ewers, and cups represented, and specimens of the originals of which exist in the Oriental Museum of Leyden, to afford comparison. The cooking utensils appear also to be most delicately decorated, the process of cooking, in one instance, being minutely pictured. Plates, cups, and saucers are largely used, as also spoons, and of these, it may be mentioned, many originals exist in the Museum. The flower-vases represented singularly resemble those used to this day in Japan. One vase can be seen to be filled with aquatic plants.

It is somewhat strange that very few artisans' tools are to be found represented on these bas-reliefs. In one case we see a man using an axe, and in another case an instrument much resembling a sickle. Ploughs are represented. Coolies are employed to carry heavy burdens; and, for purposes of locomotion, palanquins, comfortably provided with cushions. Carriages, open and covered, all with four wheels, and all beautifully decorated, constantly occur. They are often drawn by two horses, sometimes by four, in which case there is a postilion; the harness is invariably richly decorated. Of their ships, these bas-reliefs give us a very adequate idea, as also of their arms, clubs, sabres, daggers, bows and arrows, bucklers, and the sarbacane or blow-pipe, still in use in the Malay Archipelago. Of regal and official insignia there is a large variety represented, among them the parasol and the sceptre. The drum, cymbals, flute, and several stringed instruments also appear. The worship of Buddha consisting largely of offerings of jewels, food, flowers, and incense, a vast field of purely decorative art is displayed in the adornment of the numerous cups and vases in which these offerings are made. Of one detail of domestic life we have a most characteristic proof,—one, too, showing the high degree of civilisation to which the ancient Japanese had arrived, the important place taken both in private and public life by the women, who in every case are represented as sharing in the labours, the pleasures, and the offerings of the men. Agricultural scenes occur, and scenes of hunting and fishing. The market scenes are most diverting. In one case a dealer is represented weighing a bird in the scale against a gold bracelet. Music and the dance occupy a large place among the amusements represented, the dancers, male and female, being covered with the richest jewelry.

It can be seen by this hasty summary of some of the features of the life of the Japanese in the past, how different is the Japanese of the present; the race is not indeed the same, the type bears no resemblance; the modern architecture contains no traditional evidence of its earlier stages. The condition of woman has utterly changed; a love of music and the dance*, and an innate superstition, constitute perhaps the sole relics of the past civilisation. The story is not a long one, from the days when the Indian colonists introduced their refinement into the island and founded a brilliant empire, and ruled the natives, whose temples they built and whose religion they dictated. Then, as change took place in the mother country, undergoing the inevitable home influences, Buddhism overcoming Brahminism, and then gradually the

Hindoo power becoming shaken by civil dissensions. During all this time the natives had remained in reality outside the foreign influence of their rulers, and so in course of time came to assert once more their existence, and the Japanese fell back to their original condition, Mahomedanism having produced but little effect on the country. Then came the Europeans on the scene, and under their rule the future of the colony is gradually being developed. Once more a new period of prosperity is promised to the Japanese, and one of the first elements of it has been the spread of an acquaintance with the past refinement of their ancestors, than which it has been generally found there exists no more potent factor in the regeneration of a nation. There still remains, however, a large field for inquiry, and with the recent announcement made of the foundation of a journal of Indian Art, it may be hoped that further advances may be made in our familiarity with an architecture which bears an intimate connexion with the art of our great Indian Empire.

THE RELATION OF ORIENTAL ART TO ENGLISH ART: ITS LIMITATIONS AND APPLICATION.

UNDER this title Mr. A. H. Mackmurdo, A.R.I.B.A., who is hon. secretary of the Art Department of the Social Science Association, read at the recent Huddersfield meeting an interesting paper. Starting from the fact of the greatly different climatic influences under which human character is developed in the East and in this country, he observed that the art of a people being "the crystallised essence of a people's life," we could but expect to find in the work of races living easy lives under a warm climate, a joyous play of natural fancy quite distinct from the more logical and severe character of European art, the work of races who lived under severer laws of circumstance. Admitting that Oriental art gives more spontaneous and universal pleasure, the author continues,—“What then is the remedy? Make our art less intellectual, more spontaneous and simple? No, certainly not this; but rather add to its nature characteristics such as we can take of those belonging to Oriental work. Add to our art more brilliancy, give it cheerful life of colour, and nice delicacy of finish. For these are the only qualities we can well borrow from our friends in the East, and we shall do well to copy them here. How to do this I will suggest when speaking of the application of Oriental art to English uses, and after having pointed out the actual concrete characteristics of the two kinds.

Now the beauty of Eastern work depends primarily upon its small patterning of bright colours. Never are there large spaces of even colour placed next large spaces of even colour. Every kind of colour, if large, is broken by some pattern playing over its surface, as daisies and buttercups break the monotony of our broad green meadows. When, too, the colour is of small patches, as in most enamels, every colour is outlined by thick lines of gold, white, or neutral tint; just, in fact, as we have learned to do by thick lead lines in our stained glass windows, which are unequalled in point of colour. In this way it is difficult not to produce an harmonious effect, as each colour, being of small extent, lends some of its hue to that beside it, and this visual overlapping of colours is the cause of the never-failing harmony existing in every kind of Oriental art, however brilliant.

Were the spaces larger, although of the same colour, the effect would be anything but satisfactory, for in that case each colour would be too completely isolated or disconnected from the rest to mingle with them. But when an Oriental designer does employ larger spaces of colour, they are usually of darker tone and quieter hue. However, ordinarily the colours are brilliant and rich, closely scattered throughout.

Now, in textile fabrics, though we may yet greatly improve upon our dyes, we can never hope to equal the colours of India and Persia, this being impossible from the exigencies of a climate that acts deleteriously upon our dyeing agents. But with regard to form, Oriental art is often poor, it being either of simple geometrical character or imitative of the commoner floral or animal forms. The mere geometrical patterning is that of all primitive art, pretty in effect, but feebly drawn.

And when flowers, birds, &c., are the subject of design, though they are generally drawn with much character and apparent attempt at portraiture, they are often without beauty of form *per se*, as without selection of design.

English art, on the other hand, is very different, on this ground. Where it is strong, it is always strong in form. There is always a conscious effort to draw the ornament rightly. If the art be realistic, then the form is to be true and exact; if idealistic, the form must be intrinsically beautiful. When working out a design for himself, and not stealing his art, the English designer always has a leading motive in his work, an idea to embody, or a fact to tell. “He is serious, even in his play,” says the Frenchman, and so also is he grave in his art, and taking things gravely, he is thoughtful and conscientious, doing his utmost to get truth of portraiture to forms outside him, or strength of portraiture to the idea within him that he seeks to embody. The Englishman, again, never designs in pure play as the Eastern,—never gives himself over to his fondest fancy, to lead him where else will, now flashing this form now that across his imagination, till and he has covered his bowl or crowded his plate with as many detached ornaments as it will can receive. No; he must string his beads on some leading thought, or his ideas have neither unity nor sequence. And yet with regard to colour we can score one point at least against the Eastern in our management of greys. Born and bred under a grey sky, where the low-toned light allows tender harmonies of grey to tell out in all their pearly beauty, and the low browns of foliage and cattle to be so enhanced in loveliness by their silver setting of rain-cloud and mist—woven veil of vaporous air; born and bred mid earth haze below and heaven haze above, the eye becomes keenly sensitive to low tone and neutral tint, thus enabling us to deal instinctively with greys and low-toned hues, in the same successful way that the Eastern, by similar instinct, can deal with fiery, bright reds, and full-bodied blues.

But beautiful as these colours of our home landscape are, we all have now and again a longing for something more intoxicating in its excitement, more potent in its sensuous appeal; something with some rapture of colour to uplift us from our dull monotony of business routine,—something that shall give us those buoyant and common-to-all sensations experienced on hearing light open-air music on some sunny afternoon when all the world makes holiday; something akin to the lively chirping of birds in a lone drear wood. And this Oriental art provides: a bit of Eastern enamel, or brodered silk of Oriental make, placed anywhere in our dulllest room, brightens up all around it so happily that we seem to feel the air itself is somewhat lighter as it sends a thrill of pleasure through us, deceiving fancy into fond belief that life is fairer than erst we had thought it. And it produces this effect upon us because it is the art of a joyous, careless, simple, fearless people, living a life of sunny and sensuous ease. But further, though this art is in a sense joyous it is, compared with English art,* wanting in real feeling. This Eastern art always fails to touch deep-lying emotions or educe strong sympathies. It delights, but it does not inspire. It is the poetry of colour, but not the poetry of form; therefore not the poetry of emotion which always expresses itself in form. There is no marked sympathy shown with the animals depicted; and if there be human figures introduced, they are for the most part grotesque, or depicted in cold portraiture of commonplace incident, that will not for a moment compare with our peculiarly sympathetic treatment of animals, nor with our warm expression of social feeling.

Yet before we can, to any good purpose, make use of the art of another race we must bring ourselves into sympathy with it by study of its best achievements and knowledge of its predominant characteristics. We must feel its temper and discern its vitalising spirit. It is not enough to do as is generally done, to take it piecemeal, and, without any modification, introduce it into the midst of work of our own doing and devising. To take, for instance, a Japanese sketch and apply it straightway to the panels of a Queen Anne door. Again, it is only a blind abuse of the art-treasures we are fortunate enough to procure from other nations, to take a Persian ornament

* The author would have gone more to the point if he had said “European art,” instead of limiting the contrast to English.—Ed.

* It may be remembered that not long since a Japanese *gamelan*, or musical and dancing troop, visited England, when the evident antiquity of the display largely interested those who were fortunate enough to witness their performances.

from some vase and print it off on fabrics for our own furniture or personal dress.

This stealing of another people's patterning is of no real or lasting service to us, for it leaves us just where we were before, nor do we get any pleasure out of it. For the qualities that make the original delightful to us are inevitably lost in the imitation, and we have the crust instead of the core of Oriental art, that as a dead skin clings to the warm blood body of English design. On the other hand, studying this Eastern work we may find out the secret of its life, which, when solved, we may take and apply to increase the richness of our own native work. We may take its colour, its glow, and its richness, to enliven therewith our own original designs without marring their complete form or detracting from their ideal character. Into the well-knit sombre designs of English artists, that are made for prints, papers, and tapestries, we may, with advantage, add some of that spangled quality of bright colour, some of that interweaving of pure tinted hues which is a never-failing source of admiration in all Oriental products. Certainly there is much to be done by England in all kinds of textile fabrics, if we will but give up this wretched habit of introducing into our work fragments stolen from other nations. There is now at Manchester, a town in which our friend Mr. Horsfall is doing so much for the art-culture of its people, an exhibition of ancient stuffs woven and printed, lately opened for permanent possession by the town, an exhibition which may be turned to most successful account would but designers study and not steal its contents. And as an evidence of the use such a collection is likely to be to the manufacturers there, I may mention that within the last few days some leading manufacturing firms (weavers and printers) have asked me to suggest to them ways by which they may most advantageously benefit by this exhibition, and apply to their own productions the lessons to be learned from these rich exhibits. But to return. We are not Japanese, nor are we Persians, but Englishmen, and our art, if it is to have any life-blood and vigour of soul, must be the product of English hands and English hearts. Whatever bereceived from external sources,—and no source should be voluntarily closed,—must be assimilated to our own natures, be melted down in the alembic of our own minds and cast into moulds modelled by our own home-born sentiments. It is not fragments of foreign language we want to introduce into our conversation, but the wit and thought of foreign people, translated into our own vernacular.

THE HALL OF FAME* AND MILITARY MUSEUM AT BERLIN.

THE doors of the old Berlin Arsenal, which for several years past have been closed to the world while the process of transforming the edifice into a Hall of Fame and Military Museum has been going on, will shortly be once more thrown open. The work of reconstruction and decoration is now practically completed. The task of converting the old Zeughaus into a Temple of Fame was the last work upon which the celebrated German architect, Herr Hitzig, was engaged. He threw himself into the work with the greatest enthusiasm, but he did not live to carry it to completion. After his decease the duty of conducting the operations fell to the lot of Herr Baurath Ende. The Zeughaus was a work of the last century, and a characteristic example of the old Brandenburg or Prussian style of art. Its architects were Nehring and Schlüter. When, some ten or twelve years ago, it was proposed to transform it into its present shape, there were not a few among the historical critics, architects, and artists of the day who expressed great concern at the proposal. Many were unwilling that any alterations whatever should be made in a building of so much historical and architectural interest. Still greater was the anxiety felt when it was subsequently proposed to add to the building a dome or cupola as one of the leading features of the reconstruction. The cupola of the neighbouring Old Schloss or Royal Castle inevitably suggested comparisons, and it was not thought probable that Herr Hitzig would be more successful than Schlüter had been. All objections, however, were overruled.

* "Ruhmes-Halle"; difficult to translate into any neat English equivalent.

and the new cupola is now finished. The fears formerly expressed have not been justified, but the reason, in a large measure, is, firstly, that the cupola has been placed not at the principal front, but at the hinder frontage of the edifice abutting on the narrow thoroughfare of the Giesshaus or Foundry; and secondly that the cupola is very modest in its dimensions and ornamentation. It is not lofty, rising only a few yards above the level of the surrounding roof, and its attic shows the same terminals, composed of armour, helmet and sword, as the rest of the building, so that the general effect of the exterior is harmonious.

In the interior the changes which have been made are far more considerable. The extensive enclosed court has been roofed with glass, but there has been no attempt at elaborate ornamentation in the ironwork. Opposite the entrance is a double free flight of stairs, leading to the circular hall under the dome. As regards their form, their balustrades, and their ornamentation, the two staircases harmonise with the general architectural character of the façades in the court. They do not rest directly on the walls, so that the old architecture of the latter is nowhere concealed. The masks of dying warriors, by Schlüter, on the key-stones of the windows on the ground-floor, are all preserved in their original form. From the uppermost landing-stage of the staircase we pass into the large room occupying the first story of the hinder frontage. The proportions of the central room beneath the dome, which forms, in an especial sense, the Hall of Fame, the vaulting of the cupola, and the rich colours of the paintings with which the walls are adorned, unite to produce a grand and impressive effect. From the central hall two arched galleries lead on opposite sides, while on the walls between them are four great mural paintings, depicting striking episodes at the most important epochs in the history of Prussia. One of these pictures represents the Great Elector, or "Grosser Kurfürst," crossing the Haff; a second depicts the ceremony of proclaiming King William of Prussia as Emperor of the new German Empire in 1871, in the palace of Versailles. These two paintings are both the work of Herr A. von Werner, the president of the Prussian Academy of Arts; a third, by Herr Bleibtreu, represents the Estates of Silesia doing homage to Frederick the Great; and the fourth, by Herr Camphausen, symbolises the foundation of the Prussian Landwehr, or Universal Militia, in the year 1812. Beneath the central light of the cupola, running round like a circular frieze, is an allegorical painting of War, executed by Herr Gesselschap; while in the four spandrels beneath are four female figures, emblems of the manly virtues of Fortitude, Temperance, Wisdom, and Justice. Around, near the walls and pillars, stand a series of statues of the principal sovereigns of Brandenburg and Prussia. The side galleries are roofed with beautifully-painted basket-handle cross vaulting, with small square lights in the centre. On the walls and centre pillars, which are faced with red and yellow marble, are placed the busts of the most celebrated warriors of Prussia, from Derfflinger and Sparr down to Wrangel, Moltke, and Prince Frederick Charles. Two admirably-executed grates of wrought iron, from Pule's Artistic Locksmith Works, separate the Hall of Fame from the galleries of the adjacent wings, the decorations of which are much simpler than those just described. The lighting is through side windows, and here is some beautifully-modelled stucco ornamentation after the style of Schlüter.

The entire first story of the reconstructed edifice is taken up with the extensive collection of weapons. In glass cases and on simple stands we here find, methodically arranged, all kinds of arms of offence and defence, ancient and modern. Some of them are relics of great value, intermingled with all sorts of trophies, banners, standards, and captured weapons with which interesting historical reminiscences are connected. Various kinds of armour and articles of equipment of former times are also to be found here in classified order, and apart from the rest is a splendid collection of Oriental weapons. All the other contents of the museum are arranged in historical order, from the Stone Age down to the days of the needle-gun and Chassepot rifle. The ground-floor to the right of the entrance is filled with heavy artillery. Amongst several hundred guns, besides many pieces of historic interest, we find the most

extraordinary specimens of murderous weapons belonging to former times,—stone cannon and culverins of the fourteenth century, leather cannon, hand guns, breechloaders of the fifteenth century, heavy guns of the same period, from 16 ft. to 20 ft. in length, and so-called organ guns, the prototypes of the mitrailleuses and Gatlings of the present day. Amongst the modern ordnance, in addition to a number of bronze guns and mitrailleuses taken from the French in the campaign of 1870-71, we find two German balloon guns, with slender tubes of 2 to 3 centimètres' calibre, moving about a central axis and provided with butt ends for taking aim, which were manufactured for use during the siege of Paris. The left half of the ground-floor of the building is occupied by a collection of models of military weapons and appliances. Here, under glass, we find the nearest possible models of army and hospital trains, gun-carriages with horses, and hospital and bivouac tents. Then there are numerous models of fortresses which were formerly in the Zeughaus, as the earthworks of Duppel and the fortifications of Sedan, Strasburg, Paris, &c., and likewise the battle of Königgrätz in miniature. Altogether the new Museum and Hall of Fame will henceforth form one of the most interesting sights of the German capital.

A STORY OF CAPEL COURT.

THERE is Vandalism and Vandalism, much the same as one of Molière's characters once remarked that there was a calculable variation even in the comparative quality of faggots. We have all come more or less to understand the meaning of the term "Vandalism," and however unfair it may be thus indirectly to blacken the memory of the Northern barbarians who, in the early days of Christianity, showed their want of appreciation of Roman refinement, we have universally come to associate with Genseric's Vandals all those thoughtless acts of destruction of works of art which, though not quite so common as formerly, are still not unknown. The good old days of churchwardens and vicars, and of those they led into the paths of destructive vice, the builders,—have not entirely passed away. What with the meetings of archaeological societies in every corner of the country, what with the great ecclesiastical movement of the last generation and the more general spread of an acquaintance with the brilliant art of the past, some advance has been made. It is true we still await the formation in our country of such an inventory of art-treasures as that to which the French Government from time to time adds fresh volumes, and which, taken in connexion with the work of the Commission of Historic Monuments, promises within a near future to catalogue in a permanent manner all the more interesting of the artistic possessions of the many churches and museums scattered over the country. In the case of the Paris churches the inventory is, comparatively speaking, complete, while in the provinces the work is steadily progressing, largely aided, of course, by the clergy, who, where their antiquarian knowledge is imperfect, are simply called upon to fill up a printed form carefully prepared by the committee. It is an admirable system, to which we have more than once in these pages referred, and it is to be regretted that we should not have a counterpart in this country, where each year the labours of our archaeological societies reveal an interesting fund of information destined to be buried from all but the most earnest research in the interminable volumes of "Transactions," whose arrangement is necessarily far from methodical. Even when a paper appears in such pages as these, it may be only said to have received a temporary respite from eventual interment. It is not often that it obtains the saving grace of reprint from the pages of the journal or "Transactions." When this is the case, we have time to learn at leisure of some of the misdeeds of the past generations side by side with their vanished glory; we meet with lamentations over the destruction of monuments and works of art which can never again be produced, and bewail the ignorance of our ancestors, whose traditions, we discover in this direction at least, have only too successfully been handed down to our own time; while the consciousness of the undiscovered crimes committed in every direction comes only the more forcibly to cause a regret that there should not exist in our country such a body of artists and

antiquaries as that which now for some years has been preparing across the Channel the "Inventaire des Richesses artistiques de la France."

Of a characteristic specimen of the many silent acts of Vandalism committed throughout our country, even by those with whom it might be imagined rested the guardianship of such treasures, we are reminded by a little publication lately brought under our notice, the reprint of a paper on "The Capelle of Rayne Hall, Essex," read by the Baron de Cosson before the Royal Archaeological Institute, and extracted from the pages of the *Journal* of that society.

The subject of the paper, which deals with the members of one of the richest of our London merchant princely families of the past, was, strangely enough, suggested to the author, an earnest collector of armour, by his coming (indirectly, it is true) into possession of an English helmet of great rarity through just such a wanton act of Vandalism as was far from uncommon forty or fifty years back. The helmet had, it would appear, formerly hung,—as was not unusual in the past,—above the tomb of its wearer. This helmet, purchased many years ago "of a builder in a country town, in whose yard it lay," had, it seems, been ruthlessly torn down from the tomb above which it had been placed three hundred years ago. The builder who sold it informed the owner "that his father had bought it with the stonework of the tomb over which it hung, and other old materials, from the building committee, when the old church of Rayne in Essex was pulled down in 1840; and, furthermore, that he remembered that it used to hang on an iron bar over a large and beautiful altar-shaped tomb of the Capells who lived at Rayne Hall during the early part of the sixteenth century, and who were ancestors of the present Earl of Essex." Provided with this clue, the present owner, the Baron de Cosson, with true archaeological zeal, set to work to discover further information respecting the wearer of this interesting relic of the now defunct and once noble art of the armourer. A first inquiry,—aided by good luck,—led to the discovery of the existence of three other helmets, taken from the Capell monument in 1837; of one of these the Baron de Cosson soon became the possessor, the others remaining, one in private hands, the third in the Saffron Walden Museum, having, it appears, with characteristic neglect, "long lain uncared for in the belfry of the church."

So much for the act of Vandalism, by which it is clear that some forty-five years back a rare and beautiful monument of the sixteenth century was ruthlessly destroyed. Of the great merchant family of the Capells, the Rothschilds of the Renaissance, there remains to this day the memory in our metropolis, in the name of a famous court turning out of bustling Bartholomew-lane, and still not unconnected with the great monetary transactions of the City. A merchant prince, who in the verse of a poet of the time, Alexander Barclay, one of the immediate predecessors of the glorious period of Spenser and Shakespeare, is named side by side with Cosmo de' Medici, was, it can be seen, a "personage" in civic society.* Research proves the family to have been of Suffolk origin, from a manor in which county they derived their name. Of the sons of John Capel, who died in the middle of the fifteenth century, William devoted himself to commerce, and founded the great city family, receiving at the coronation of Henry VII. the honour of knighthood,—a politic step on the part of a monarch whose peculiar power of amassing wealth has left him a rare and historic position among the monarchs of the world. Capell's wealth soon brought him under the extortion of those two notorious characters so familiar to our schoolboy days and modern examination papers, Empson and Dudley. The fines laid on the worthy merchant, who had, since his knighthood, been nominated Member of Parliament and Sheriff of London, and purchased the manor of Rayne Hall, were certainly enormous,—an ungenerous proceeding on the part of the king, who, by all accounts, had been most handsomely treated by Capell, the old story told of Puggor's destruction in presence of the German Emperor Charles of his bonds for moneys due, being paralleled in the case of a grand entertainment offered by Capell to the king; another story being related of the merchant, in a frolic, drinking to his majesty's health, in emulation of Cleopatra, a dissolved pearl of great value. In

spite, however, of my Lord Bacon's indignant expressions against the extortionate mode in which Henry VII. filled the royal coffers, we can understand that a subject thus lavish of his wealth seemed a by no means unfit object of Henry's avaricious envy. Although a Member of Parliament and a twice-elected Lord Mayor, Capell, for refusing to pay the fines levied on him, was, it appears (being "a man of hard stomach"), imprisoned in the Tower, and there he remained till the king's death. In 1515, he died, and was buried in St. Bartholomew's, a church destroyed in the Great Fire, rebuilt by Wren, and finally demolished in 1840 to make room for the extension of the New Exchange.

"It is strange," as truly remarks the writer, "that the church in which Sir William Capell had been buried should have disappeared just at the same time when the church at Rayne, the steeple of which he had built, and in which lay his son Sir Giles and many of his descendants, was being destroyed, and the monuments of the Capells were being sold as old rubbish by an enlightened building committee."

Sir William had married Margaret, daughter of Sir Thomas Arundel, of Lanherne, in Cornwall, by whom he left three children, Giles and two daughters,—Elizabeth, married to the first Marquess of Winchester, and Dorothy, married to Lord Zouch of Harringworth. Sir Giles Capell appears to have been of a very different mould to his father. A soldier, and a courtier in the brilliant court of Henry VIII., his name is to be met in the records of every great tournament and mask and every warlike expedition of bluff King Hal's boisterous reign. Sir Giles would appear to have formed part of a choice body-guard, whose persons and horses are described by Stow as "appareled and trapped in cloth of gold, silver, and goldsmith's work," an institution which, though from its expense it soon ceased to exist, would seem to have been suggested by the still surviving *guardia nobile* which surrounds the Pope. To quote the numerous references to the doughty Sir Giles, gathered together from contemporary sources by the author of this interesting paper, would carry us far beyond the limits at our disposal. To the chatty chroniclers so freely quoted by the Baron de Cosson, we refer those interested in the brilliant details of the numerous jousts in Paris and in London in which Sir Giles's name figures conspicuously. On the Field of the Cloth of Gold Sir Giles is, of course, to be found among the knights who, with the kings of England and of France, held the lists for thirty days against all comers; he is foremost at the reception of the Emperor Charles at Gravelotte, and again on his visit to England; and we meet with his name in the somewhat treacherous attack by our troops on Morlaix, an event the sad memory of which still lingers in the district. With this affair Sir Giles's connexion with the making of our history would appear to cease. We learn that he was twice married, and that he largely added to the family estates in Essex, obtaining, among other neighbouring properties, the manor of Stebbing Hall, which had belonged to Henry Grey, Marquess of Dorset and father of Lady Jane Grey. Sir Giles died at a good old age in 1556. Among his descendants, Baron Capell of Hadham distinguished himself as a staunch Royalist, having been beheaded on Tower Hill, "murdered," as runs the inscription on his tomb at Hadham, "for his loyalty to King Charles I." In spite, however, of these family traditions, his son, who had been created Viscount Maldon and Earl of Essex, appears to have taken a sufficiently active share in the Rye House Plot to warrant his arrest and imprisonment in the Tower, and there a few days later he was found with his throat cut.

Such is a hurried sketch of the historic family whose tomb in the parish church of Rayne is now destroyed, leaving no trace of its existence but four interesting relics,—the helmets to which we have above alluded, and by the ruthless removal of which from the position they had occupied for three centuries, in only one respect can we be said to have been gainers, in the curious mass of information which has been gathered together by the Baron de Cosson, whose already rare collection has been enriched with two characteristic specimens of the armourer's art in the brilliant days of the Renaissance.

Removal.—Mr. F. Botting has removed from 29, Mount-street, Grosvenor-square, to 6, Baker-street, Portman-square.

ST. KATHARINE'S COLEMAN.

IN recording the proposed demolition of yet another of the City churches, we have not on this occasion to speak of one that presents any features of either architectural or historical interest. In Aldgate ward, and standing in Church-row (Pye-alley), behind the southern side of Fenchurch-street, which almost entirely hides it from view, the Church of St. Katharine occupies the site of an ancient haw-yard or garden, once known as Coleman-haw. The haw may best be identified on the old maps by its juxtaposition against the Sir John Milborne's Almshouses in Cooper's-row, Crutched Friars, built 1535 (but lately removed), and the bowling-alleys and dicing-houses which were made out of the gardens and tenements of Northumberland House. That house had been inhabited in turn by Henry Percy, second Earl of Northumberland (son of Harry Hotspur), who fell at the Battle of St. Alban's, 1455, and by his son Henry, third earl, who was slain in the van of the Lancastrians on Towton Field, barely six years afterwards. Their successors left this for the residence in Blackfriars which is described in a conveyance, 1612, by Henry Walker to William Shakespeare, as "a capital messuage which sometime was in the tenure of William Blackwell, esquire, deceased, and since that in the tenure or occupation of the Right Honourable Henry, now Earl of Northumberland." He was the ninth earl, a knight of the Garter, and was sentenced to a fine of 30,000*l.*, and suffered several years' imprisonment in the Tower for what his accusers endeavoured to establish as his participation in the Gunpowder Plot. Upon the Percys' removal their property in this part of the town was put to the baser uses of which we speak.

Dedicated to St. Katharine and All Saints,—St. Katharine, the beautiful and virtuous daughter of a king of Cyprus, descendant of the Emperor Constantius, and strangled, after torture on the wheel, by Maximian's command, 310 A.D.,—this church was originally founded at a date of which nothing certain can be said. Newcourt, it is true, speaks of a rector in the year 1346; and Sir William White, citizen and draper, during his mayoralty in 1489, built the southern aisle; on one of the former pews the date 1582 was carved. The church was enlarged some forty years later, and a vestry added in 1634. This building, having attained to no very uniform proportions, could boast of some distinction as a survivor of the Great Fire. It appears in R. West's view, engraved by W. H. Toms, of 1736, very soon after which time the earlier church was taken down, having, in fact, become nearly lost in the soil that had gradually accumulated around, and was replaced by the existing hideous structure of brick: a sorry exponent of the taste of that day. Though not without the charm that lies in obcurity, its details are meagre indeed,—so much so, that little or nothing remains to be chronicled when we have mentioned the epitaph on the monument of Mrs. Barners, of which some lines rise above the ordinary level in such compositions; and the singular custom that once obtained here of digging graves in the vault for the reception of the dead instead of merely laying their remains there in the ordinary manner.

DISCOVERY OF A LOST PICTURE BY RAFFAELLE.

SOME eighty years ago the Düsseldorf picture-gallery lost, during the troubled period then being traversed, a work attributed to Raffaele, representing John the Baptist in the desert. From details given in the *Elberfelder Zeitung* it seems that the picture became the property of the owner of the Blankenheim estate (not far from the railway between Cologne and Treves), which had formerly belonged to the Counts of Manderscheid. A short time ago there was accidentally found, behind a wainscot in the castle, a rolled-up oil painting, which, on being sent to Düsseldorf for examination, was found to be the missing work alluded to. Its claim to be by Raffaele has still to be decided.

Ventilators.—We have received a circular from Messrs. Boyle & Son notifying a reduction in the cost of their ventilators, with the view of extending their use to smaller and less expensive buildings than they have hitherto been available for.

* "I ask not the store of Cosmus or Capell," writes Barclay in his fourth Eclogue.

LECTURES ON ARCHITECTURE AT
UNIVERSITY COLLEGE.

The following is the main outline of the course of lectures to students which Professor T. Roger Smith is giving at University College during the session just commenced:—

A. Architecture as a Fine Art.

Ancient Art.—Description and review of the several distinctive features and details of Greek, Egyptian, West Asiatic, Etruscan, and Roman architecture, and of the changes which took place in the forms of the public and other buildings among different nations and at various dates; describing the chief characteristics of plan, elevation, and section of the different buildings, forms of mouldings, ornamentation, and other details, and the circumstances under which changes took place; so as to explain the formation of the various styles found in ancient art. Saracenic architecture.

Christian Art.—The change from Pagan to Christian forms of art, Roman basilicas, architecture of the Byzantines, and of the Romanesque period in Italy, Germany, and France; of the Normans in France and Britain. The Pointed style through its several varieties in Britain, France, Germany, Italy, &c., to the Renaissance in Italy, France, and England; the various changes in the main outlines and in the details being noted as with ancient architecture.

As illustrated by numerous drawings of the finest examples. These drawings will be lent to the students to be copied by them if wished.

B. Architecture as a Science.

Materials used in construction; the various descriptions of timber employed in building, and their properties. The way in which timbers, deals, &c., are prepared for the market. Carpentry, or the use of timber in roofs, floors, &c. Dry rot. Joinery. The manufacture and use of the various building materials made out of clay, &c., for walls, drainage, pavements, &c., with explanations of the methods adopted in ancient times and of those now used, any recent improvements being noted.

Composition of mortars, cements and concrete, their several properties, the best means of using them, and the way of calculating their cost.

Foundations. Excavation in different soils, &c. Drainage of sites and buildings. Concrete buildings. Brickwork. The quality of bricks. Bond. The thickness of walls.

Stonework—description of the several kinds of stone; the method of quarrying them. Construction of stone walls, piers, columns, arches, and other masonry in ancient, Mediaeval, and modern times, both in Britain and in other countries.

Archives of bricks, tiles, stone, &c. Groining, construction of domes. Qualities of cast iron, wrought iron, steel, &c. Wrought-iron girders, iron roofs, ornamental ironwork, &c. Fireproof construction; and, should time permit, joinery, plumbers' and plasterers' work, and the finishings and fittings of buildings. Illustrated by drawings, specimens, &c.

C. The Modern Practice of Architecture.

The course of lectures on modern practice will include the following subjects:—

The laws regulating buildings. The Metropolitan Building Act, the Metropolitan Local Management Act, and the By-laws of the Metropolitan Board of Works; the Public Health Act, and the Model By-laws, &c.

Rights of light and air, and the duties of an architect in connexion with them.

The tenure of land. Building contracts. The conditions of contract sanctioned by the Institute of Architects. Litigation with respect to buildings. Professional evidence. Arbitrations.

The professional conduct and superintendence of works, and the charges of architects.

Surveys, reports, valuations, dilapidations. Dealing with dangerous and ruinous structures, shoring, needling, and underpinning.

The design of buildings for special purposes, including their adaptation for transmitting sound.

DISCOVERY OF A WORK BY POUSSIN.

According to the *Vossische Zeitung*, Abbé Malbec, a priest at Tauxac (Charente-Inférieure), has discovered an original work of Poussin, hitherto unknown. It is an allegorical picture representing "The Triumph of Christianity over Paganism." The three principal figures are allegorical types of Innocence, Justice, and Peace. An opinion had been expressed that the picture was a study for the artist's "Sacrament of Penance"; but it is remarked that his *suite* of pictures illustrating the seven sacraments of the Catholic Church was painted between 1630 and 1640, while this work dates from the years 1612-1615, during which time he resided in Poitou.

THE GERMAN REICHSTAG BUILDING.

The *Neue Preussische Zeitung* states that amongst various modifications of the original project, is the enlargement of the foyer. Various technical journals had urged this point, in the carrying out of which the execution of a much more important proposal has been rendered possible. This is the placing of the cupola over the foyer instead of over the session-hall. It is remarked that, although open to criticism from an æsthetic point of view, this arrangement improves the acoustic properties of the session-hall, and is of advantage in the grouping of the work. Professor Thierach (as well as Scott in the previous competition) had adopted this manner of placing the cupola.

LEWISHAM CONGREGATIONAL SUNDAY
SCHOOLS.

We illustrate this week a perspective view of the Sunday Schools erected from the designs of Mr. George Sherrin, 2, Broad-street Buildings, for the Congregational Church of Lewisham, the minister of which is the Rev. J. Morlais Jones. The original drawing was exhibited in the Royal Academy of 1881.

The form of the building is well worthy of attention, it having been planned to meet the known requirements of a good Sunday School, with its general hall and side class-rooms. This has been accomplished by allowing all the class-rooms to open into the central hall and to be divided from each other by stout curtains and wooden dado. Thus when required for general use at services, or lectures, or concerts, the curtains slide back, leaving the whole room open to the platform.

The floor of the gallery is made level, and can thus be utilised for class teaching, the divisions being again obtained by stout curtains hung between each class. The building in all its appointments is very perfect and complete, and adapted to the modern requirements of Sunday School work.

The interior is well fitted up with panelling, the walls are distempered, and the roof is semi-polygonal and panelled out in squares, with an enriched cornice. The platform is contained in an apse with shaped roof. The wing to the right in the view contains an infants' room on the ground-floor, and a club or small lecture room above. There are two stone staircases to the gallery, and the building contains four means of egress. The ventilation, heating, and general arrangements received great attention from the superintendent and building committee of the schools. The walls are faced externally with Kentish rag arranged in courses, and the dressed stonework is of Bath stone. At the time these buildings were being erected, a ladies' room, new deacon's vestry, and various additions were made to the church. The exterior of the new buildings was made to harmonise with the old work. Internally, the architect has felt at liberty to adopt a more domestic kind of work, and has introduced shaped wood columns. The internal woodwork is painted ivory white, thus giving to the building a light and cheerful effect. The cost of the works amounted to between 5,000l. and 6,000l. The general contractors were Messrs. Staines & Son, Great Eastern-street. Messrs. Ewart, of Euston-road, supplied the ventilating arrangements; Messrs. Kennel, of Banskide, the heating; Messrs. James & Co., of Kentish-town, the glazing; and Messrs. Jones & Willis, of Kentish Town, the wrought-iron work.

SION COLLEGE, LONDON-WALL, E.C.

The Gatehouse (see sketch), together with the Library and Hall, and a portion of the almshouses below the Library, are all the buildings of the College which are now left standing. The President's House, as well as other buildings, have been pulled down, and large warehouses have been erected on what once were the College Gardens. The College was founded by Letters Patent of Charles I. in 1630, and Charles II. in 1664, in conformity with the will of the Rev. Thomas White, D.D., Canon of Christ Church, Oxford, and Rector of St. Dunstan's-in-the-West, who died in 1623, to be a corporation of all the ministers, vicars, lecturers, and curates within London and the suburbs, and for an almshouse for twenty persons. The College is governed by a president, two deans, and four assistants, who are elected annually by the Fellows from their own body. The almshouse, who, according to the will of the founder, were to live in the almshouse, are now out-pensioners. I am indebted to the Rev. E. Hoskins for the above description. W. A.

OLD WESTMINSTER.

This view is taken from the Westminster School yard. The passage through the archway leads to the cloisters, and in the distance is the south transept of the Abbey. Above the passage there is a quaint jumble of roofs, chimneys, and dormers. The materials are stock brick, plaster, cement, and red tiles. The Portland stone doorway in the foreground might be Inigo Jones's work. W. A.

SCREEN, LUDHAM CHURCH, NORFOLK.

This screen, as the inscription denotes, was made in the year of our Lord God 1490. You are also instructed to "pray for the sowle of John . . . and also his wife that," &c. Near the screen and let into the floor is a brass plate, in which John Salaman is mentioned, the year being the same. The surname has been defaced on the screen, and much of the many beauties of the work destroyed. I was told, while in the village, that the rood-loft had been broken up and used for firewood, and I should not be at all surprised to hear of the remaining portion sharing the same fate.

The northern portion is in decent preservation; the figures almost as perfect as when left by the original painter. Not so the other side, which has been fearfully tampered with. Every portion of the screen shows the remains of gilding, painting, and disrepair. The figures are alternately on green and red grounds, the robes red and green for contrast.

The faces, hands, and drapery are wonderfully good, and very effective. I send a full size of one of the figures, St. Augustine, coloured after the original: in gold and purple, silk and jewels, he must have been an imposing figure.

As in nearly all these old screens, infinite pains were taken with the carving, which no doubt was a labour of love.

I have suggested a rood-loft, but as no remains of the old one exist, it is purely imaginary.

I must say that these beautiful old works are sadly neglected, and are allowed to rot without an attempt to preserve them from damp and dirt and the destructive efforts of boys and their darling knives; and yet as works of art alone no modern productions are superior.

M. UNDERWOOD.

ARTISANS' DWELLINGS, OXFORD
STREET, WHITECHAPEL.

This building has been erected on a vacant site of land, being a portion of surplus land belonging to the East London Railway Company, and offered for sale by Messrs. Farebrother, Ellis, Clark, & Co., July, 1876.

The site is bounded on the east by the deep cutting of the East London Railway, and great care was therefore necessary to provide against oscillation caused by the constant traffic through the tunnel and cutting. As will be seen, the whole of the site has been covered, light and ventilation being adequately obtained across the line and the gardens of the premises on the west. By this arrangement the whole of the rooms are practically front rooms.

The building is of stock bricks, with quoins and bands of red bricks. The wash-house is situated in the roof, which is covered with lead, and the drying-ground on the flat on the same level.

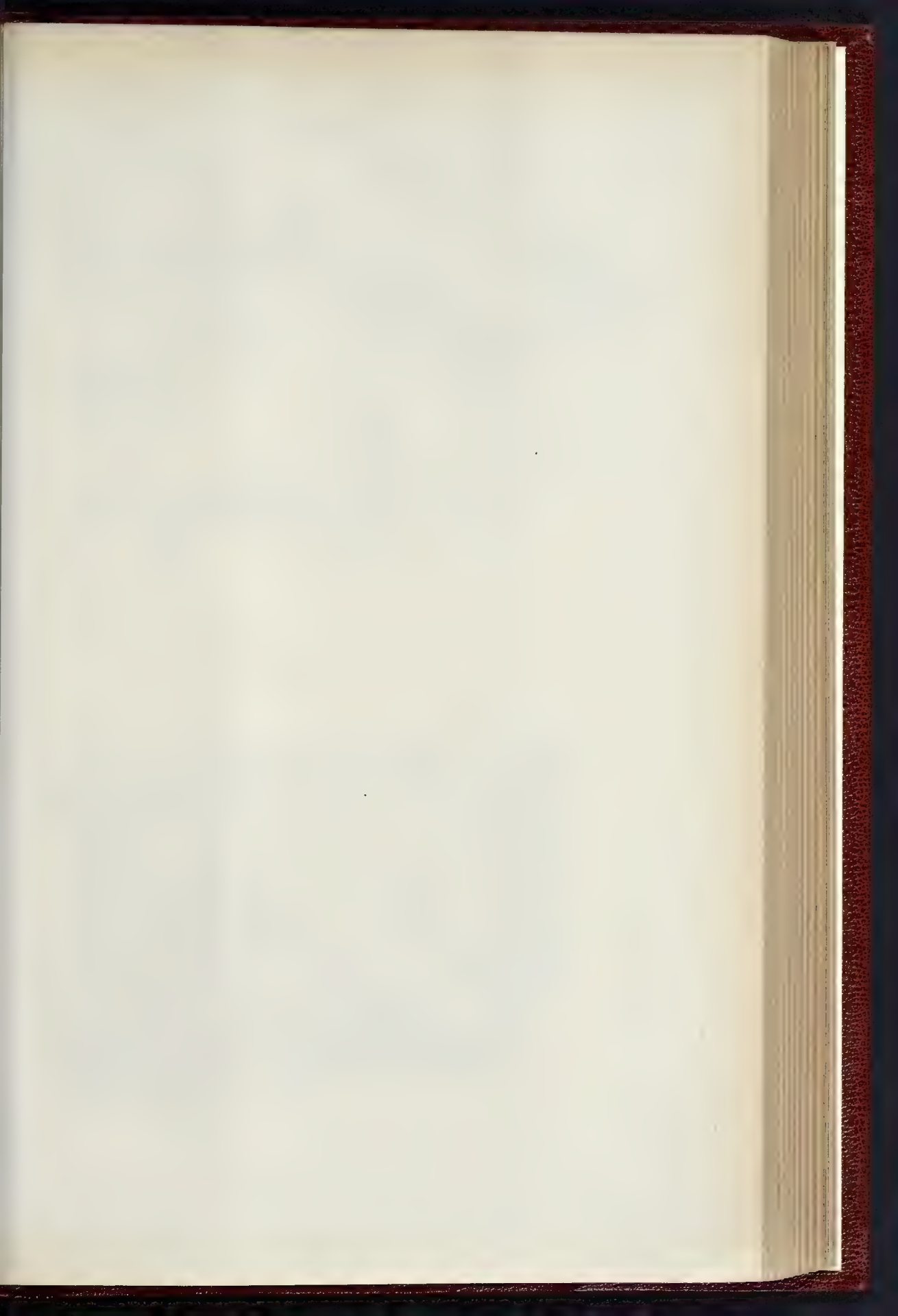
The internal arrangements have been studied to meet the requirements of tenants desiring two or three rooms. Each suite of rooms is fitted with dresser and cupboards, and a water-closet and sink and dust-shoot are fitted up on each floor. The whole of the plastering is in selenitic cement. The whole of the woodwork internally is very finely combed and varnished, and the living-rooms are papered with oak-coloured paper with figured patterns.

The whole of the materials and workmanship are of the very best description, the repairs being by this means kept at a minimum rate, which is of great financial importance in buildings of this class.

The wash-house-floor, with the flat adjoining, is fire-proof, being formed of rolled-iron joists and filled in with concrete.

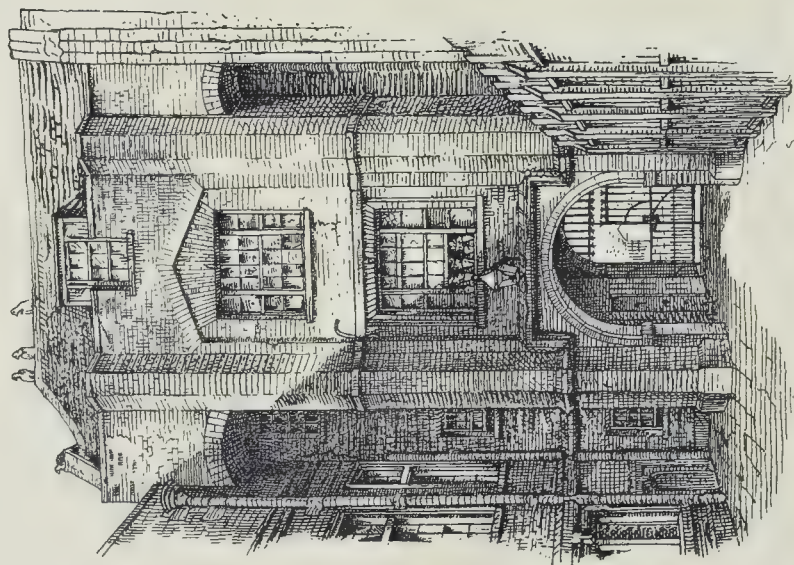
The building was designed and carried out by Mr. James Webster, architect, of Doughty-street, Mecklenburgh-square, for Mr. A. L. Dussek, the proprietor.

Calcutta Exhibition.—We are asked to mention that the Commissioners have commanded that the colours, paints, enamels, &c., used in the Exhibition are to be exclusively of J. B. Orr's (The Silicate Paint Company) Manufacture. Messrs. Orr & Co. have built on their own premises at Charlton a show-case for the Calcutta Exhibition. It is prepared from the bare wood, and represents their Charlton White, Duresco, Enamels, &c.

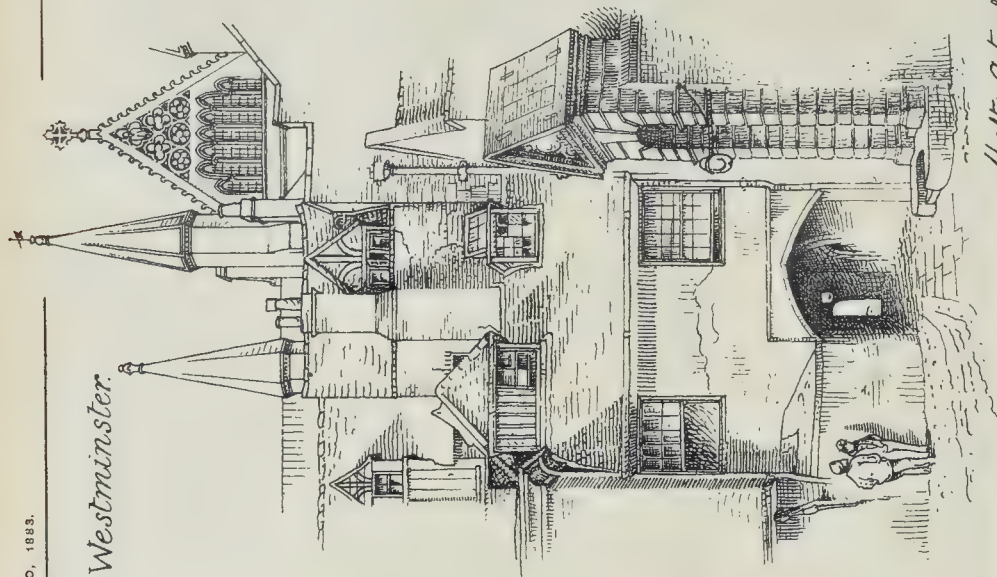


THE BUILDER, OCTOBER 20, 1883.

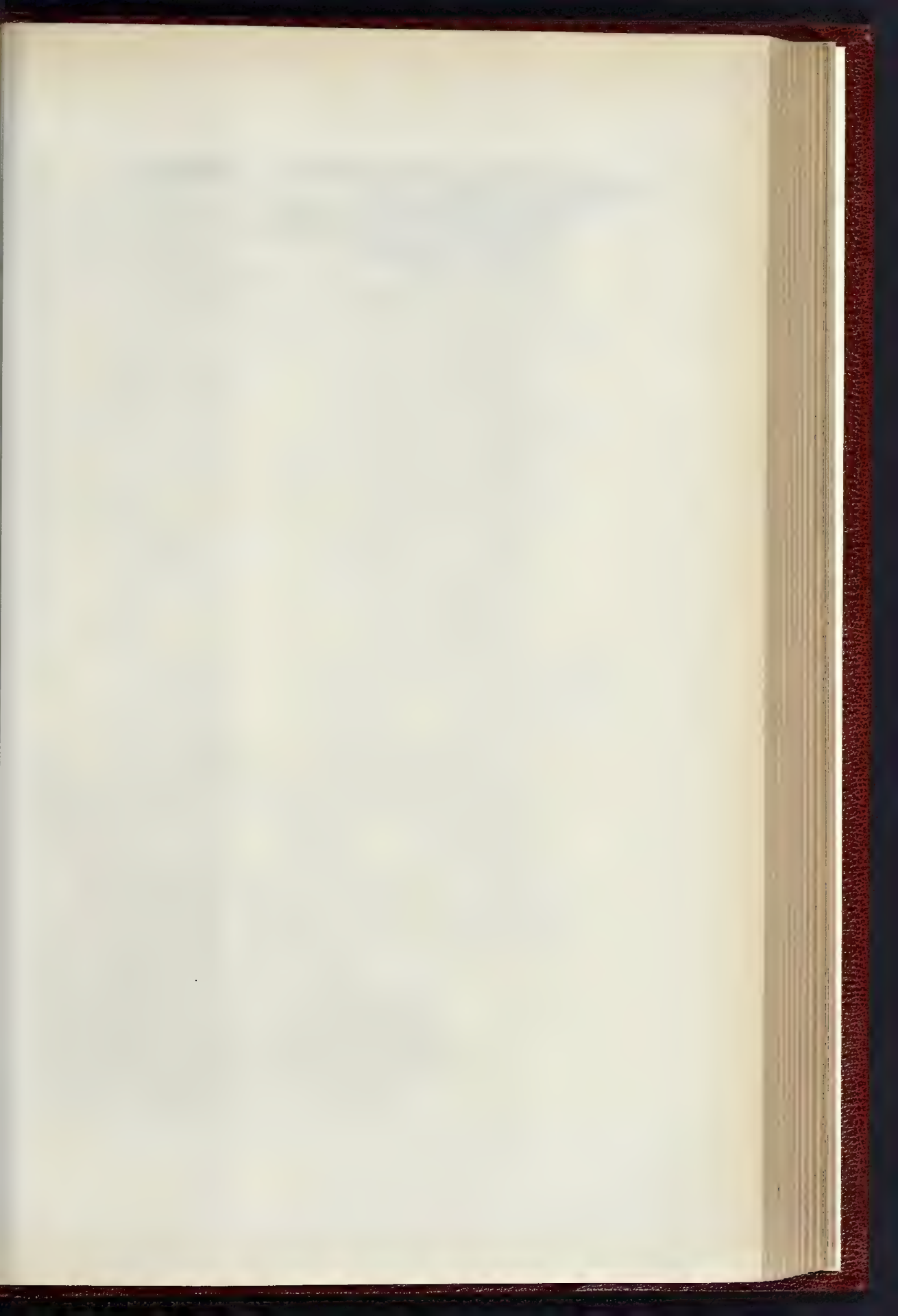
Sion College. Founded A.D. 1631.



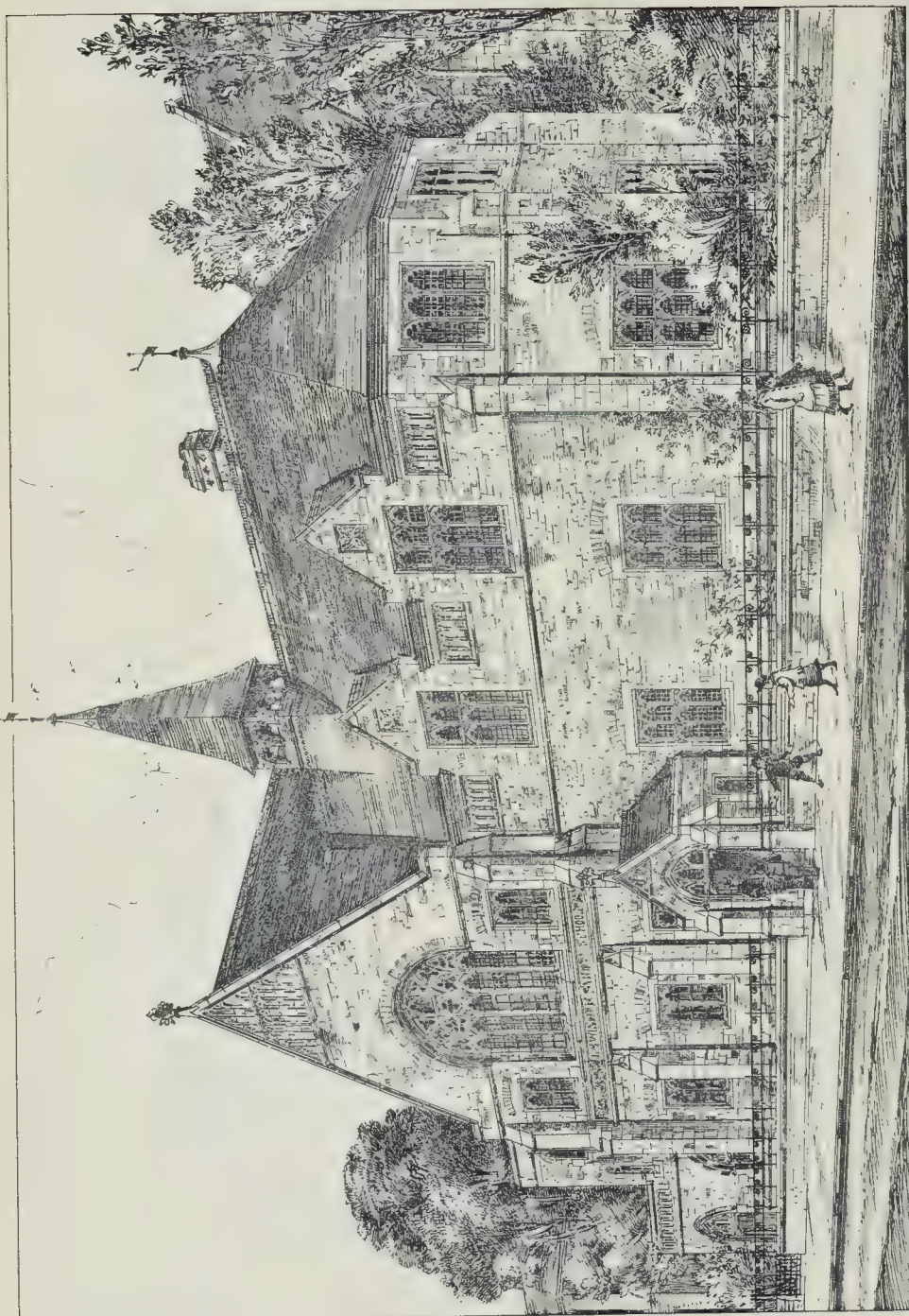
Old Westminster.

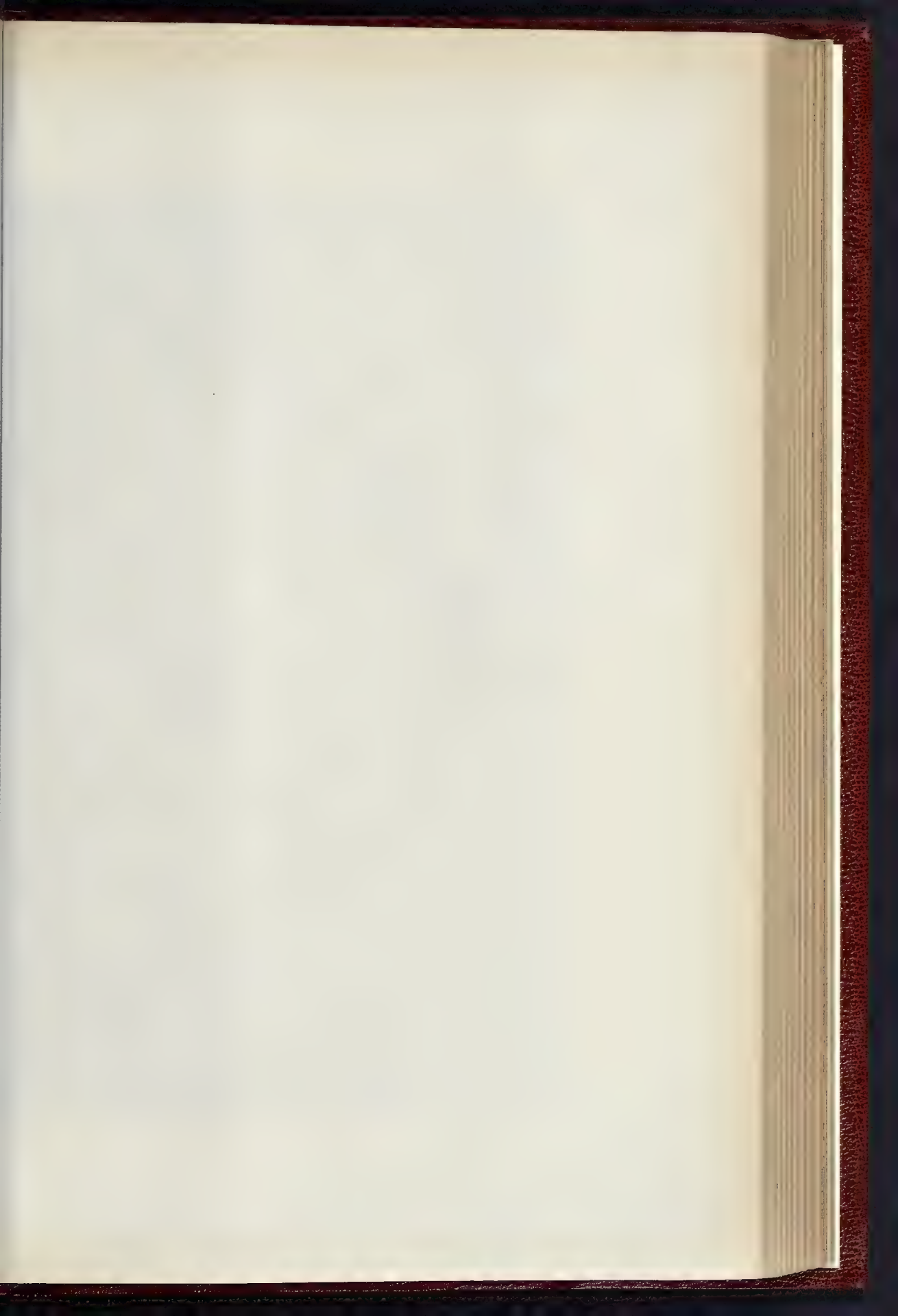


Walter Aston July 1882

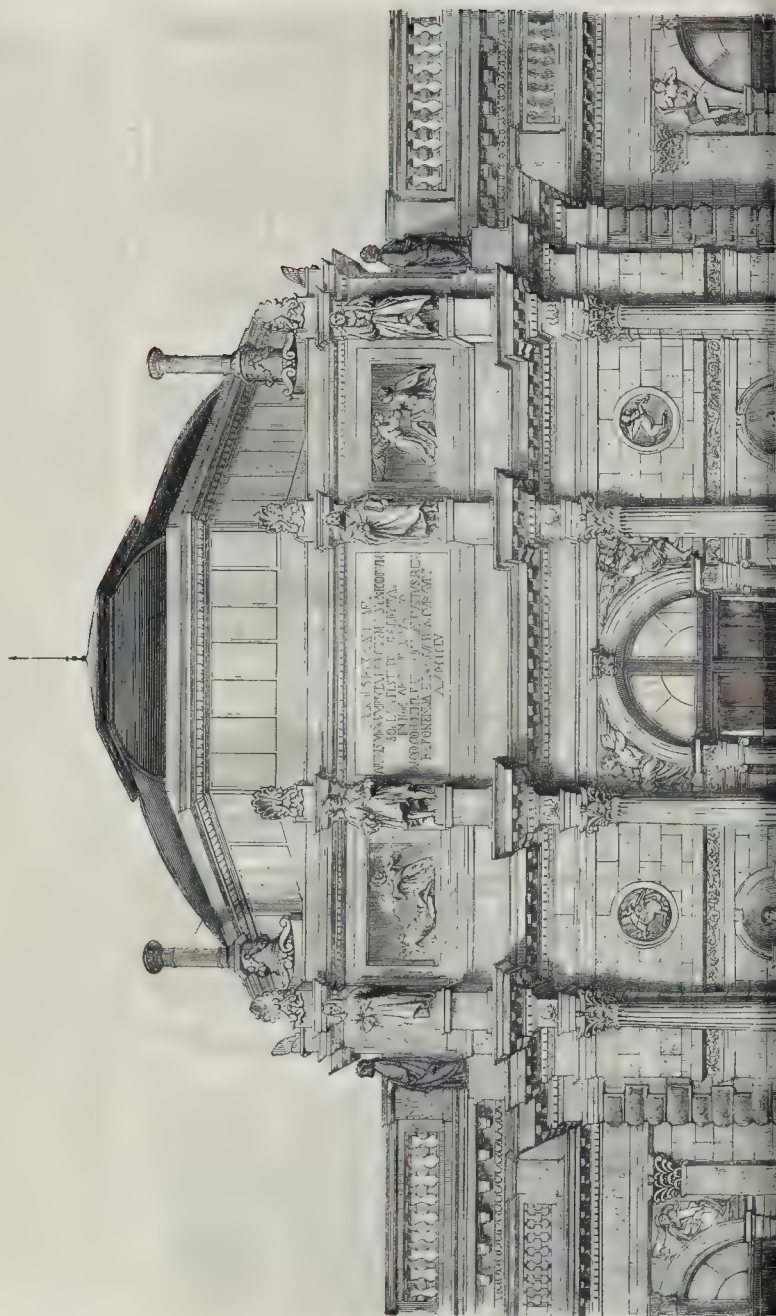


THE BUILDER, OCTOBER 20, 1883.



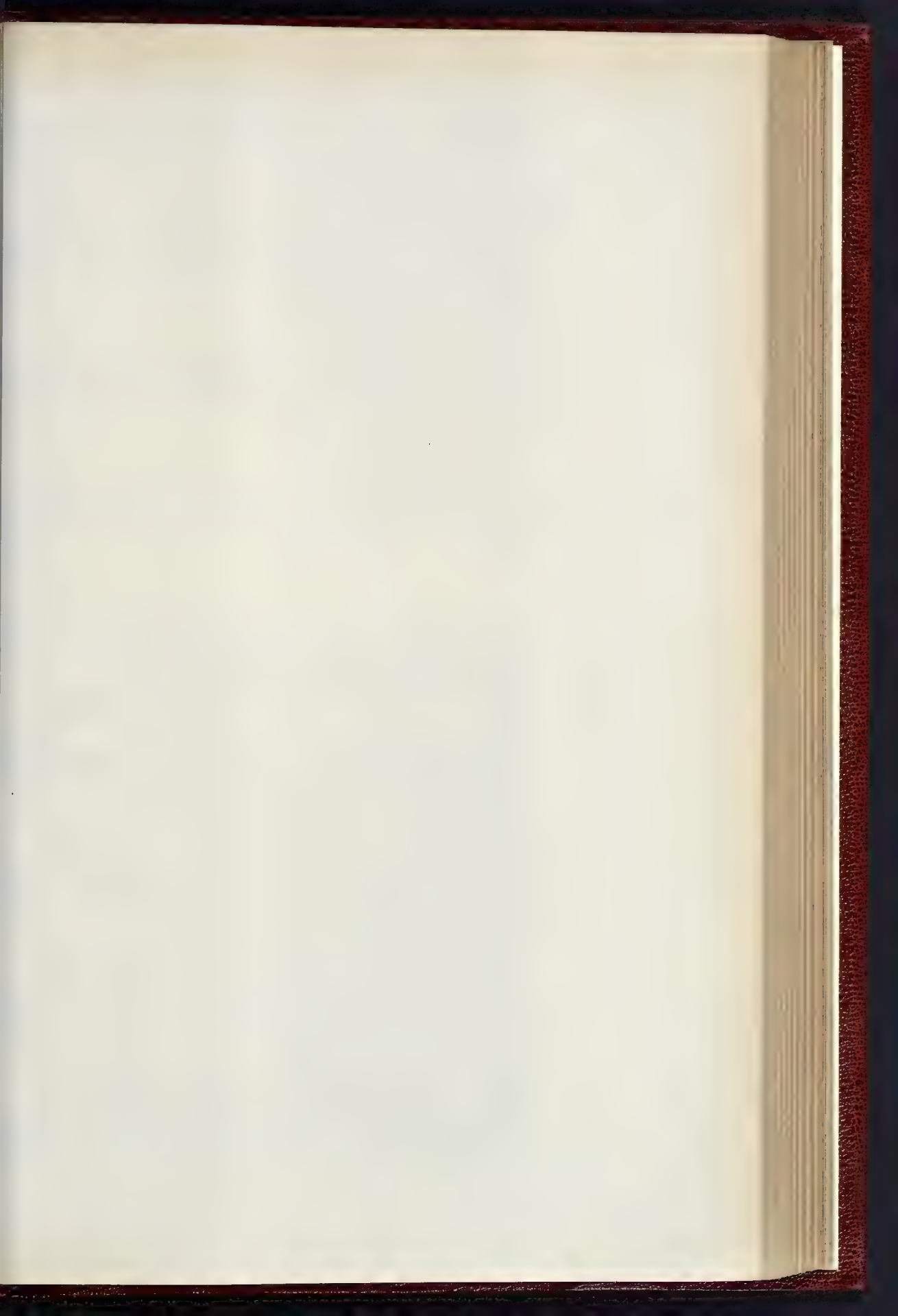


THE BUILDER, OCTOBER 20, 1883.





PORTAL OF THE DRESDEN MUSEUM : FROM THE SOUTH.—THE LATE PROFESSOR SEMPER, ARCHITECT.

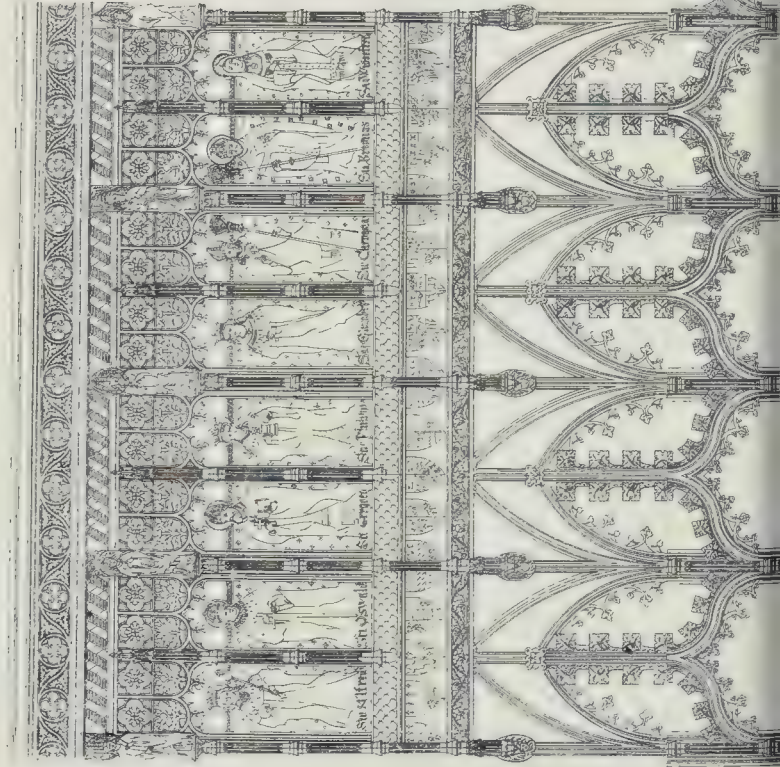


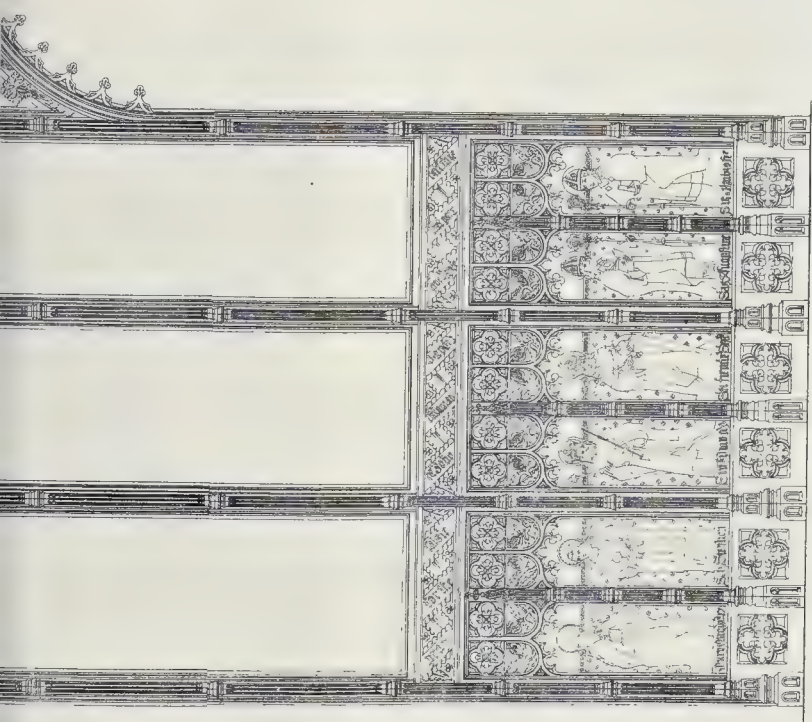
THE BUILDER, OCTOBER 20, 1883.

Screen: Ludham Church, Norfolk.

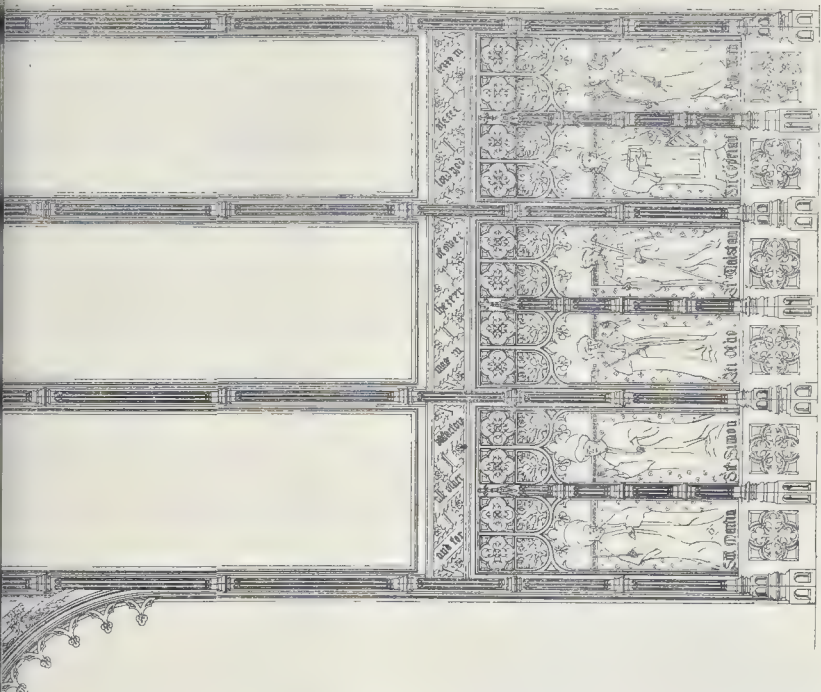
DRAWN AND PARTIALLY RESTORED BY

MR. M. UNDERWOOD.





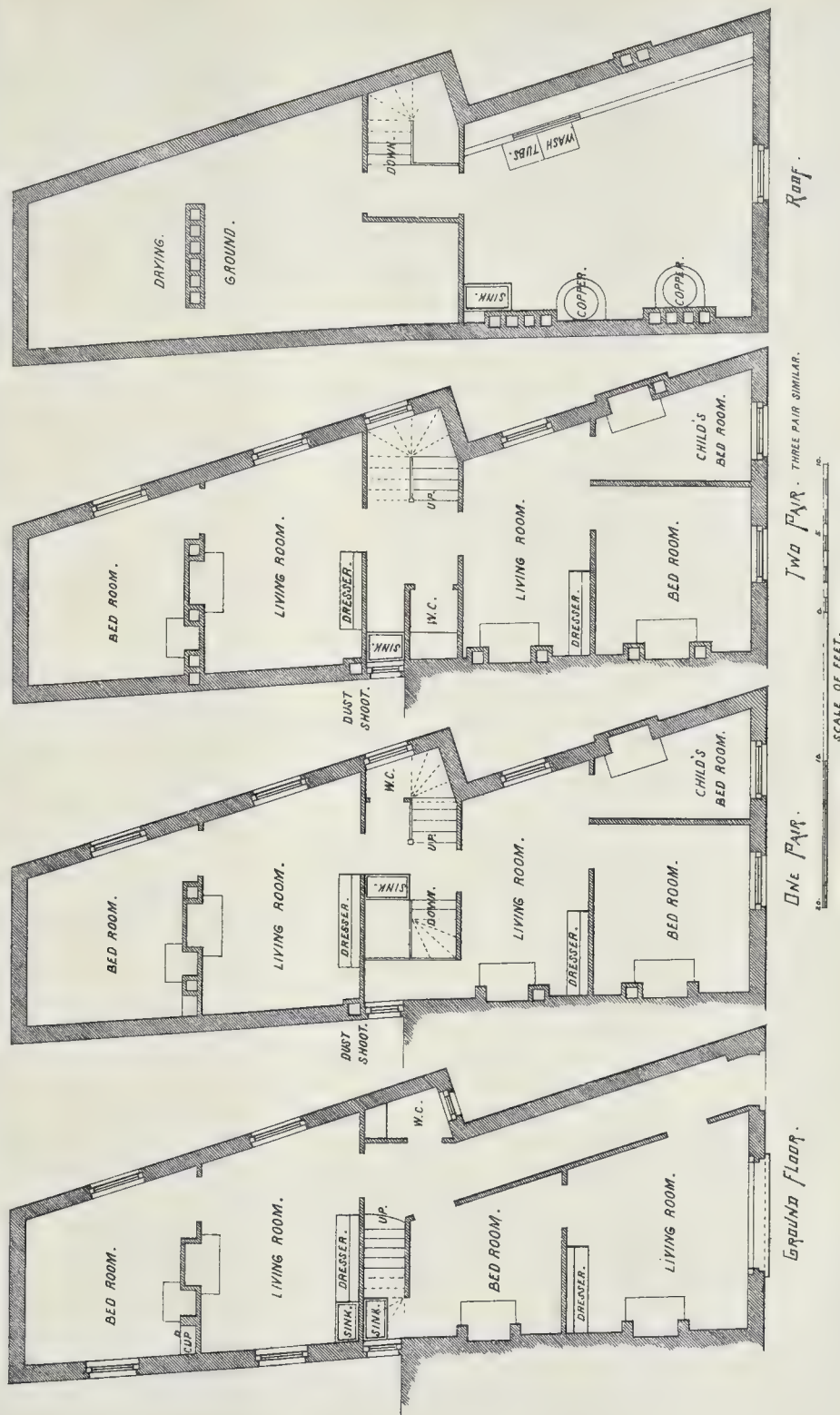
Westminster Abbey. Choir. Photo. L. 10. 238. High. 10. 10.



Westminster Abbey. Choir. Photo. L. 10. 238. High. 10. 10.



ARTIZAN'S DWELLINGS WHITECHAPEL FOR M. DUSSEK ESQ. JAMES WERSTER A.R.C.B. ARCHT.



Whitman & Bass Photo-Engrs 236 High Holborn

Whitman & Bass Photo-Engrs 236 High Holborn

ARTISAN'S DWELLINGS, WHITECHAPEL.—Plan.

THE DRESDEN MUSEUM.

DRESDEN has grown to be what it is simply by its art-treasures. Without them it would be a second-rate city, like Brunswick or Hanover. But exceptional circumstances impose special duties. For a long time it was felt, and strongly felt, that better accommodation ought to be provided, more especially for the picture-gallery and Mengs' Museum of Sculptural Casts. The works of art accumulated in those two collections were placed at a disadvantage through want of light. But they suffered still more, and in a very serious manner, from damp, coal dust, and sudden changes of temperature. Great thanks, therefore, were due to the Estates of Saxony when they placed at the disposal of the Government the means required for thoroughly remedying the existing evils, by building a new Museum worthy of its name and contents. As early as 1845, to Semper, then Professor of Architecture at the Academy of Fine Arts of Dresden, was confided the task of designing and superintending the construction of the edifice. And it must be admitted that Semper has produced a work of architecture in keeping with the works of art which it was destined to receive and to contain.

It appears to be a strange fatality, and the present instance proved no exception, that the architect and artist should be dependent upon the site chosen for works entrusted to them. In the case of the new museum, this dependence was all the greater as the surrounding buildings bore a strongly marked structural physiognomy. After much deliberation, and a discussion that might be termed almost a dispute, as to the most suitable site for the edifice, the well-known Zwingerplatz was selected. As the so-called "Zwinger" (prison) was to be originally only the outer building of an intended large royal palace, the erection of which had to be abandoned owing to unfavourable times, so the new museum, on its part, was intended to carry to its conclusion, in the manner originally designed, but more strongly marked, that unfinished edifice. But this intention threw the most varied difficulties into the way of the architect. The Zwinger is built in the exuberant Rococo style prevailing in Germany during the seventeenth and eighteenth centuries; in fact, it is one of its most striking examples. The new edifice, consequently, had to retain, once for all, and to perpetuate, the chord struck; yet the taste of the modern German classical school, of which Semper was so brilliant an ornament, is so much at variance with this Rococo style as to render it almost impossible to him to content himself with mere mechanical imitation. But these difficulties, insurmountable for artists of lesser gifts, became in Semper's case a stimulus for the highest exertion he was capable of. He has conformed very closely to the fundamental conditions of the original style, but has ennobled and purified it.

Our view represents the portal of the south front, facing the Zwinger. Semper's refined taste led him to avoid any approach to that showy pseudo-architecture which offends and tries to captivate the eye elsewhere in Germany, more especially in some of the buildings of Berlin; we meet here everywhere that close adhesion to the nature of the material which shows the true architect. His edifice displays a high monumental character also in so far as there the sister art of sculpture finds a worthy place by the side of architecture. In all great periods of art the latter has been the mother of the two other fine arts—sculpture and painting. Architecture by itself is comparatively speechless; it leaves what it cannot express and individualise by itself to be explained by the language of sculpture. The building tells us that it is devoted to great, public, ideal purposes, but it is only sculpture which shows us that those ideal aims are a worthy celebration of art, just as the forms expressed in the entablature groups of the Greek temple explain to us to what individual god the edifice may have been dedicated.

Rietschel and Hähnel, the two eminent sculptors of Dresden, were such excellent masters of their art that they were most fitted for suitably decorating and perfecting on their part the great work of Semper. We have here introduced to us a history of art, the richer and more expensive southern façade being exclusively apportioned to the Christian Romanesque, the quiet and more massive northern front as exclusively to antique Roman art. The design of the series of sculpture

represented on the southern side originates with Hähnel. The two colossal figures of Raffaele and Michelangelo are placed in two niches of the great portal. They form the theme for the whole. They stand here not merely as the most accomplished masters of the development of Italian art of the Middle Ages, but also as the most eminent supporters and representatives of two tendencies opposed to each other, but which mutually supplement each other; on the one side the element of grace, on the other of sublimity. All the subordinate sculptures carry out this leading idea.

On the portal itself, to the left of the beholder, and on the side where Raffaele has been placed, we find Sibyls joyous and charming, as the revealers of love; next the Goddess of Victory with the palm of peace; above them geni, at play in the studio of the painter. Above them, again, are the three Graces, Pegasus rising buoyantly, the gentle archangel Raphael, and, finally, the beautiful dream of Jacob, who sees the angels descending the heavenly ladder. Above all, in the attic there have been placed the statues of Dante, Giotto, and Hans Holbein. In keeping with the generally gentle character of these sculptures, the reliefs which adorn the spandrels of the round-headed windows of this side of the façade portray the most prominent personages of the New Testament and the Christian Church. The right-hand portion of the portal, containing the niche with Michelangelo, includes the figures in relief of the Northern Siegfried and of Samson, the Sibyls as the exponents of law, the Goddess of Victory with a laurel wreath; the boy geni, representing the activity of the sculptor and architect; next the personification of the three arts, in all of which Michelangelo proved a master; finally, the Archangel Michael and the wrestling of Jacob with God. Upon the attic are placed the statues of Albrecht Dürer, Peter Cornelius, and Goethe. In the same sense, the reliefs of the spandrels of the round-headed windows on this side of the southern façade are derived from Old Testament history. The statues of Giotto, Holbein, and Goethe, as well as the reliefs representing scenes from Christian history, are by Rietschel; those of Dante, Dürer, and Cornelius, as well as the reliefs derived from Old Testament history, are the work of Hähnel. The statuary and reliefs of the northern front are closely related to those of the southern façade. The design is by Rietschel.

The portal of the northern front is, in its essential particulars, membered like that of the south façade, but it has in its upper story, instead of niches containing statuary, simple semicircular windows. The Christian heroes of the lower bases of the south side are here replaced by combats of Greek heroes. On the side corresponding to that of Michelangelo on the south front have been placed Hercules with the Hydra, and Perseus frightening the dragon with Medusa's head; on the other side, Jason with the Golden Fleece, and Theseus with Minotauros. In the spandrels of the smaller entrances, corresponding to the Sibyls of the other side, are shown the four elements, represented by youthful figures; over them, as a frieze, the Olympian games played by charming boys, corresponding to the groups of painting, sculpturing, and building boys. Next follow the two medallions, that on the side of Michelangelo representing Prometheus moulding man under the guidance of Athena; that on Raffaele's side Pygmalion animating his statue with the assistance of Venus. The spandrels of the great portal, which, on the south side, show the Goddess of Victory, display here the power of art upon animals and even stone. On the side of Raffaele we find Amphion erecting walls by means of his sounds; on the side of Michelangelo, Orpheus, at whose feet crouches a lion tamed. The upper story has in the spandrels of the centre window, which on the south side contain the Archangels, corresponding to the Archangel Raphael, Homer, and corresponding to Michael, Hesiod, who, as Herodotus says, created their gods for the Greeks. Upon the columns rise, to the left, the free-standing figures of Pericles and Phidias; to the right, Lysippus and Alexander; that is to say, the principal artists and patrons of art of the two prominent periods of Greek art. And as in the window spandrels of the south front we have found the sacred men of the Old and New Covenants, so here the sacred figures of the Greeks, to the right the Olympian gods, to the

left their most renowned heroes, have been placed. Over these windows the wall forms, not, as on the other side, a projecting balustrade, but a solid mass. It is animated by ten medallions with the nine Muses and their leader, Apollo. The statues of Pericles and Phidias and the reliefs of the Greek heroes are by Rietschel; the statues of Lysippus and Alexander and the reliefs of the Olympian gods, by Hähnel; the medallions with the Muses, by Rietschel and Hähnel together.

The southern façade, with its glorification of Christian art, and the northern front with its illustration of the art of the Greeks, are ingeniously united by the representations on the shorter eastern and western fronts. On the eastern side the spandrels contain the figures of Faust and Helena, allegorising, after the well-known type of Goethe's, the bleeding of the two worlds and ages; over them, in medallions, Italia and Germania. On the western side, the significant myth of Amor and Psyche is treated, the form of Amor being illustrative of classic art, that of Psyche of Christian Romantic art. Over Amor, a medallion shows Pallas Athena as the tutelary goddess of Greece; over Psyche, Christian Roma.

A few words, finally, on the interior of the edifice. The latter up to the first story is divided into two by the great portal. The western half of the ground-story contains the staircase, the copper-plate cabinet, the collection of Canaletto, and the crayon drawings; the eastern half, the rooms for the collection of gypsum casts. The upper story, which is reached by a splendid staircase, is reserved entirely for the great picture gallery. Its centre is occupied by the cupola; the latter is immediately over the portal, and is consequently a few steps higher. On both sides, along the longitudinal axis, there is a series of five rooms, spacious and high, not too narrow and not too wide, with a good upper light. The walls are either plain reddish brown or dark green, as most suitable for rooms which by themselves have no significance, and which are merely intended to serve as a base and background for works of art. The frescos of the ceilings are executed by Rolle, Kirchbach, and Schurig, and are, in sympathy with the style and history of the paintings exhibited, simply grey in grey upon dull green or yellow ground. Twenty-three smaller side cabinets in an uninterrupted series separated by brownish-red partitions join on to the principal rooms. To these rooms must be added a third story, containing sixteen cabinets of medium size, and lighted from above. There is thus plenty of room to house the splendid works of art conveniently and to the purpose.

EDUCATION AND HEALTH.

MR. T. PRIDGIN TEALE, M.A., F.R.C.S., devoted the whole of his address as President of the Health Science Department of the Social Science Congress at Huddersfield to the subject of "the tendency of modern education to influence health and physical growth and development." He said that the impression that something was wrong was indicated by questions and discussions in Parliament, by pamphlets, and by correspondence in newspapers, and though there had been no polling of the medical profession, there had been plain-speaking by its members, and the unanimous opinion of all with whom he had conversed was that education, from the highest to the lowest, was doing injury to the health and the nervous system of many of the rising generation. His own observations had chiefly been made upon pupil-teachers, who sought advice from failure of health, strength, or eyesight, and he had been horrified at the refinement of human slavery and torture that had been invented. The nation can hardly realise what is the life of these pupil-teachers. Apprenticed to their calling at the age of thirteen or fourteen, they spend five hours and a half a day in the fatiguing work of drilling little children in their lessons, and in trying to maintain their attention. They then have to spend the rest of a day, commencing at eight o'clock in the morning, until eight, nine, ten, and, before examinations, even eleven o'clock at night, "ay, and even twelve, many a one," as said a schoolmaster, with scanty time for meals, and almost none for recreation, grinding away at their miserable treadmill, in order, not to improve their minds, not to develop their faculties, but to meet the demands of an inexorable examination. This,

bad in the case of boys, is more acutely wrong in the case of girls, coinciding with that critical period of their physical development which intervenes between girlhood and womanhood, when the *physique* is most sensitive to conditions affecting health and growth, and when the foundation of a healthy or a weakly womanhood is laid. It was clear that the working of the Education Acts in their effect on health ought to be inquired into, and that several questions ought to be answered. Have not our schemes been planned too much on the assumption that whatever the intellect can be driven to do, it can accomplish with impunity, and without inquiring how much intellectual food can be digested and appropriated? Are we not ignoring the old maxim, *mens sana in corpore sano*? Can the nation deem it a matter of slight moment that a few children should suffer in their brains from over-pressure, seeing that their parents have no choice but to send them to school, and often to a particular school, under pain of penalties? Are we not ignoring the enormous accumulation of forces which through the education grant concentrate their pressure on the elementary scholar? Do we not place the children's health in direct competition with the schoolmaster's living? Do we not induce schoolmasters to press a weakly or sickly child to remain at school in order not to lose the grant? Do we induce school managers to refuse to close a school just before an examination when contagious disease has declared itself? Do we not compel teachers, pupil-teachers, and pupils to work with perpetual tension and perpetual worry, and so destroy all happiness and brightness in school life? Are we not wastefully wearing out, not only the feeble and less competent, but the older, the competent, the experienced, the most valuable of our elementary teachers? Are we not in danger of producing for the work of education a class of exhausted, dispirited teachers? Are we not making the mistake of attempting to examine into and to assay every detail of State-aided education with a doctrinaire minuteness? Are we not repressing in our teachers all originality and taste in teaching, and rolling them down to a dead level of uniformity?

With regard to the "higher education" of the country, Mr. Peale graphically described and forcibly condemned the system of "cram" and competitive examination now so general, concluding by saying,—Let it not be supposed that I am depreciating true education, or advocating idleness, or undervaluing hard work. Industry and hard work I value and sympathise with, both in educational and in active life. Nay, more; it is my belief that hard work and long hours of work do not of themselves constitute over-pressure in education or over-work in life. It is the work which is done under perpetual worry and anxiety, and under compulsion of want of time, that tries the health of young and old. Work, even hard work, which is done with pleasure and buoyancy, with wisdom and unselfishness, under a strong sense of duty, with a consciousness that its effect will be abiding, surely is not the work that injures health or exhausts the brain. But it is because we are importing into modern education, hurry, worry, and anxiety, selfishness, competition, and feverish desire for success, prize-winning, place-winning, and mark-winning, all tending year by year to grow in intensity, and to become more powerful agents, that I see and foresee injury to health, degradation of intellect, and a departure from a true ideal of education.

New Coffee Tavern, Luton.—A new coffee tavern was opened at Luton on Monday last by Lord C. Russell. It is the second erected in this town by the Bedfordshire Coffee Tavern Company. It occupies a very commanding site in Park-street, and has three frontages. The entrance is at one corner into a spacious coffee-room and bar, 28 ft. by 24 ft., well lighted by wide mullioned windows, glazed with clear lead glazing. Adjoining is a kitchen and larder. Above, reached by a stone staircase from the coffee-room, is a billiard-room for two tables, having an open-timbered queen-post roof, with recessed square bay windows, fitted with seats. Adjoining is a bagatelle-room. The style is Old English, of red brick, with gabled and tile roofs. The builder is Mr. Brown, of Luton, whose estimate was 1,300l., and the architect is Mr. Chas. Bell, of Dashwood House, 9, New Broad-street.

GLASGOW INSTITUTE OF ARCHITECTS.

The sixteenth annual general meeting of the Glasgow Institute of Architects was held on the 16th inst. in the Religious Institution Rooms, Buchanan-street. Mr. John Honeyman presided.

Mr. William MacLean, the secretary, read the annual report by the Council. The Council, after stating that the number of members on the register was one less than that of last year, went on to speak in detail of the action taken by them in reference to the proposed new Glasgow Police Bill. A deputation from the Institute had waited on the Lord Advocate on the subject of the Burgh Police and Health (Scotland) Bill, and urged upon him their unanimous opinion that it was advisable to eliminate all clauses relating to buildings from the Police Bill and embody them in a separate measure, based upon the model of the Metropolitan Building Act, and applicable to the whole of Scotland. The Council had, on the invitation of the Royal Institute of British Architects, agreed to co-operate with that body in conducting an examination in architecture in Glasgow during the month of February, 1884, for the convenience of those resident in Scotland and the North of England who may desire to qualify themselves for admission to the Institute as Associates. This is the first local examination of the kind, and will only take place if a sufficient number of candidates intimate their wish to be examined before the last day of December, 1883. Believing that the establishment of such examinations will prove eminently beneficial to the profession, the Council trust that a large number of the younger members of the profession will come forward on this occasion. The Council had received a communication from the hon. secretary of the Architects' Benevolent Society proposing that they should give their increased support to that excellent institution, and asking the Council to nominate one of their number whom the Council of the society may appoint honorary secretary in this locality. The Council had cordially acceded to this request, and desired to bring before the Institute the strong claims which the Benevolent Society had upon the support of every member of the profession. The revision of the rules and regulations for the measurement of masons' work, referred to in last annual report, had again been before the Council, a recent communication from the Institute of Measurers on the subject being at present under consideration. The subject of masons' fees was also at present under the consideration of the Council. The most important architectural event in the immediate future was the great competition for the War Office and Admiralty Buildings in London. The Council had had the conditions of this competition under their consideration, and were of opinion that it was exceedingly desirable that certain of them should be amended, more especially those relating to the constitution and duties of the tribunal which was to judge the designs. The Council were not without hope that the few obvious defects in these otherwise excellent conditions would be remedied if the views of the profession were properly presented to the Government. They had been in communication with the Council of the Royal Institute of British Architects on this subject, and had laid before that body a statement of the alterations which they thought desirable; and, knowing that the Institute had already taken the matter up, they left it in their hands with every confidence.

The Chairman, in moving the adoption of the report, said the Government Offices competition was certainly a very important event, and he trusted that many members of the Institute would think it worth while to enter heartily into the contest. They would remember that on the occasion of the last competition of this kind a Glasgow architect, the late Mr. Rochhead, was neck and neck with Sir Gilbert Scott, who ultimately carried out the work. There were many reasons for dissatisfaction with the action of the Government in the conduct of that competition, but he believed there was a fair prospect that such meddling would not be repeated on this occasion. He trusted that the Glasgow architects would not only put in a good appearance, but carry off the palm. There was nothing whatever on earth to prevent them from doing it. After advocating the claims of the Benevolent Society

on members of the Institute, Mr. Honeyman alluded to the proposal to inaugurate an examination in architecture in the city. They were bound to recognise the fact that at present their profession was in a very disorganised condition. In all parts of the country men took upon themselves to call themselves architects who had no claim whatever to the distinction, and who, unconnected with any association, were perfectly unscrupulous in their conduct. The result of that was that the character of the whole profession was blackened in public estimation. A remarkable instance of this was afforded in a leading article in the last number of a certain "society" journal. Commenting on professional speculations, the writer went on to say that whereas there were among lawyers and accountants certain black sheep,—some men who did dishonourable deeds,—among architects the practice to act dishonourably was invariable,—there were no exceptions whatever. This was repeated two or three times in the most offensive as well as the falsest possible manner. What he would like to say to the writer of that article was this, that if he would name a single member of the Glasgow Institute of Architects, or bring forward such evidence as would lead to the conviction of a single member of the Institute of such conduct as he said was practised by all architects in the country,—he should undertake that that man would be expelled from their ranks. He would be very willing to speak for his brethren in England,—he was proud to say that he could speak for them,—but he would content himself with saying that in Scotland, at all events, such conduct as this man attributed to all architects was almost unknown in the profession.* One object of such associations as theirs was simply to prevent anything of that kind, as every one who was admitted into their ranks had to give certain guarantees for his conduct in this respect. He thought also that this was an argument why many in Glasgow who had not yet joined their association should do so. They should identify themselves with some recognised body. It was also a strong reason why they and every one interested in the profession should encourage every step that was taken in the direction of making admission to their ranks a matter of examination. There must be some test applied to every one who was to be recognised by the public as an architect, and in that way men who were utterly unworthy to adopt the title would ultimately be excluded from practice.

Mr. Campbell Douglas seconded.

The motion was agreed to unanimously.

Mr. John James Burnet moved that the following gentlemen be elected to the Council of the Institute, namely:—Messrs. James Sellars, jun.; William Landless, Hugh Barclay, John Gordon, John Murdoch, Robert Turnbull, T. L. Watson, David Thomson, James Thomson, Wm. Leiper, and Alex. Skirving.

The motion was adopted.

The Council afterwards met in private, when the following gentlemen were elected officers:—bearers, namely:—Mr. James Thomson, 88, Bath-street, president; Mr. David Thomson, vice-president; Mr. William Landless, hon. treasurer; Mr. John Burnet, auditor; and Mr. William MacLean, secretary.

EVOLUTION IN ART: THE DISCUSSION.

SIR,—The president of the Art Section of the Social Science Congress, at Huddersfield regretted [see p. 501, ante], that I was not present to take part in the discussion which succeeded the reading of my paper; but I have since thought that it was, perhaps, as well that I was unavoidably absent, for there is more collateral matter bearing upon the subject which forms the heading of this letter than could have been effectively handled in an off-hand debate. Evolution in art is no haphazard speculation: it is one of the results of thinking out things on a mathematical basis, and all my work in this direction, as was shown in my book, "The Science of Moderation," tends to a clearer conception of the unity of nature. I have thus been enabled to crown the complex problem of progressive development with a great generalisation, defining the very end and purpose of evolution as the *becoming of the proportioned*. I could by no means, there-

* The respected President of the Glasgow Institute has given rather more notice to such a libel than it deserves.

ore, avail myself of the president's suggestion to substitute the word "beauty" for that of "proportion," for the becoming of the beautiful included in the broader generalisation. All that is proportioned, or right and perfect in its kind, is not necessarily beautiful, and in this low the late Sir John Herschel concurred. "Proportion is, of course, relative; all relativity is proportional; but there is such an expression as "definite proportional relation," and I have conquered for this hypothesis a domain in art: consequently in my outlook all excellence in the fine arts inheres in right, definite proportional relation. In using the words "proportion" and "disproportion" antithetically, it is scarcely necessary to state that the *proportioned* stands in my paper* connoted as the *rightly proportioned*.

Mr. Horsfall denied, in face of all the numerous proofs to the contrary existing in our galleries and museums, that art is an index of a nation's intellectual status; he might as well have denied that the *fauna* of different periods of the world's history were not indicative of their environments. But denial is not argument, and in the same breath, out of his own mouth, he virtually contradicted himself, when he regretted that "domestic art had been forced out of the lives of the larger part of the English people." Now, if this were wrong, and to be regretted, it would seem to me to be clearly indicative of a decay of intelligence; and, on the contrary, if it be right, as clearly indicative of an improved intelligence, though the word intelligence was Mr. Horsfall's, not mine. Moreover, I firmly believe that a book would very well be written, showing that within the last thirty or forty years people have lost their intellectual grip of things, as is manifested in public taste, in the tendencies of both dramatic and pictorial art.

In conclusion, I need only affirm that I did not say that caricature preceded decadence in literature and art. What I did say was that a tendency to caricature was a sign of decadence. My paper does not, of course, refer to the oddities of fugitive art and literature, but to the main current of a nation's work. The errors both of early and of declining art are indicated by disproportion of some kind,—the first, it would appear to me, by poverty in style and treatment, and the second by redundancies, by florid excesses, caricaturing the style and treatment of the better period of the great masters.

W. CAVE THOMAS.

PREVENTION OF FIRES IN THEATRES.

ACCORDING to the *Hamburger Nachrichten*, a patent has been granted in Germany for a system devised in the above intention, which consists in a number of cords made of wool being placed in all parts of the theatre. These are in connexion with a mechanical arrangement below, and the presumption is that no fire of any extent could take place without one of these cords being burned. This would at once release weights which they support and set in motion certain mechanical contrivances for giving a fire-alarm, opening panels in the roof to allow of smoke escaping, letting down the iron curtain, and opening special exit doors. The question is raised, by the journal alluded to, whether such a complicated mechanism would remain in working order for a number of years.

EDINBURGH PHILOSOPHICAL INSTITUTION.

The list of lectures at this important Institution for the coming winter session, includes a certain proportion of scientific and literary subjects. Among the former are to be two lectures by Dr. Ball, the Astronomer Royal for Ireland, a scientific lecturer who possesses a remarkable faculty for giving interest to such subjects without reducing his lectures to what, in the wrong sense of the word, is called "popular," a process which, to the truly and seriously scientific mind, is and ought to be abhorrent. Dr. Ball proposes to sound the deeps of "the stars," while Mr. John Murray will take the opposite direction of investigation, and discourse about the depths of the sea. Professor Butler is to lecture on "Ancient Theories of Art," and Mr. Hubert Herkomer, R.S.A., will give a discourse on "Conventionality and Proportion in Art," which may,

we suppose, include some modern theories of art. It may be interesting to see how the subject of "Proportion," so much discussed at present, will be treated in Mr. Herkomer's hands. The word is capable of application in so many different senses in relation to art, that the mere announcement of a lecture "On Proportion" scarcely gives a more definite idea as to the real subject intended to be treated than Sterne's proposed text for a sermon, "Phrygia and Pamphilia, Pontus and Cappadocia," &c.; and one might have suggested that the subject was in itself enough for a lecture (or for several), without the addition of the equally large subject of "Conventionality"; but there is no doubt that Mr. Herkomer will have something pointed and original to say on both topics.

OBITUARY.

Mr. Robert Gavin, R.S.A., died on the 5th inst., at his residence, Cherry Bank, Newhaven, N.B. For the past three years he had been in delicate health. The second son of the late Mr. Peter Gavin, merchant, Leith, the late Academician was born in that town in 1827, and early manifested a taste for art. When about twenty-one years of age he entered the School of Design under the late Mr. Thomas Duncan, and had as his fellow students Sir William Fettes Douglas, Mr. Thomas Foad, Mr. Alexander Fraser, and other artists who have risen to eminence. For some years past he had chiefly devoted himself to the painting of Moorish subjects. He was unmarried.

Sig. Caspar Fossati.—A letter from Milan announces the death some days ago, at his birth-place, Morcote, in the canton of the Ticino, of the distinguished Italian architect, Caspar Fossati, at the age of seventy-four. According to the *Times*, he studied his profession at Milan, Venice, and Rome, and while yet very young he betook himself to St. Petersburg, where he planned and carried out several important buildings. In the year 1836 the Russian Government sent him to Constantinople to build the new palace of the Russian Embassy at the Porte. He thus became known to Sultan Mahmoud, who charged him with the restoration of St. Sophia. A detailed account of this work, with polychrome illustrations, was published in London, in 1852. Fossati continued to be engaged for several years in the erection of various public buildings at Constantinople. Some account of what Fossati did at St. Sophia may be found in the *Builder*, vol. xli. (1881), p. 443.

NEW POST OFFICE AND TELEGRAPH BUILDINGS.

THE Government are at present erecting an extensive block of new post-office and telegraph buildings on a site on the west side of Bedford-street, Covent-garden, opposite Henrietta-street. The site has a frontage of 70 ft. to Bedford-street, and is 140 ft. in depth, extending to the rear of the artisans' dwellings in Bedfordbury recently erected by the Peabody Trustees, and covering a ground area of about 10,000 superficial feet. The building contains a deep basement and three lofty floors, with surmounting pedimented dormers. The Bedford-street elevation is entirely in Portland stone, portions of the frontage of the several floors being carved. The whole of the front portion of the ground-floor is intended to be devoted to general post-office business, and to the rear is the sorting-office, a spacious apartment 80 ft. in depth, top-lighted. The telegraph department will also be on a portion of this floor, as well as various offices. The first floor will contain offices for the "Surveyor" and other officials. The basement, amongst other apartments, will contain the battery-room, the clerk's, letter-carriers, sorters', and boy-messengers' retiring-rooms; and kitchen and store rooms.

Mr. James Williams, of H. M. Office of Works, is the architect, and Messrs. Higgs & Hill are the contractors. The estimated cost of the building is upwards of 80,000l.

New Cemetery at Oxford.—The Oxford Local Board have resolved to purchase twenty-six acres of land at Rose Hill for a new cemetery.

LONDON AND COUNTY BANK, KING'S CROSS.

THE London and County Banking Company have just erected at King's-cross, a new branch establishment, which is now being internally finished, and is expected to be opened for business in the course of a month. The building, which is situated nearly opposite the Metropolitan Railway Station, has a frontage of 30 ft., and contains three lofty floors and a basement, the upper floors in the centre having large three-light mullioned windows, with single-light windows on each side. The main entrance to the bank is by a large semicircular-headed doorway. The greater part of the ground-floor, 48 ft. by 30 ft., will consist of the banking-room, the manager's office and other rooms being at the rear of this floor. The first floor contains committee-room, dining-room, library, and other apartments, which, with those on the upper floors, will be used as the manager's residence.

Messrs. Glover & Salter, of the Poultry, are the architects; and Messrs. Rider & Sons, of Union-street, are the contractors. Mr. Simpson is the foreman of works.

ROYAL EXCHANGE ROOF.

SIR,—I would request you to make a correction in the account of the above which appeared in your last week's number, with reference to Mr. John Robinson, who should not have been styled "clerk of works." Mr. Robinson is a Member of the Institution of Civil Engineers, and has been good enough to assist me with the engineering construction of the roof.

CHARLES BARRY.

LICENSING PLUMBERS.

SIR,—Referring to the restrictions of registration and governmental supervision under which plumbing work is executed in New York, as reported by Mr. A. J. Gale, and quoted in your article on "Buildings and Fittings in the United States" [p. 407, ante], allow me to call your attention to what has recently been reported from Bradford. The following appeared in the *Daily Chronicle*, August 18th:—"The Licensing of Plumbers by Municipalities.—The Bradford Town Council has just adopted by-laws for securing the laying, fixing, and fitting of pipes for the distribution and supply of gas and water at houses and other buildings and places within the borough in a proper and efficient manner. In addition to laying down regulations as to the method of doing work of this nature, the by-laws provide that no person should act as plumber within the borough who is not duly licensed by the Corporation for the purpose. It was strongly urged that it was not desirable to adopt a system of licensing any body of tradesmen; but if they licensed plumbers they might as well license masons, joiners, and slaters, for it was just as important that the work of all these should be efficient; and there ought to be free trade in the matter of labour, but the by-laws were adopted by a large majority."

It is curious to see this report of the old country following the steps of the new in what some would term a return to the bondage of protection.

The questions naturally arise, Under what terms are the licenses granted? and how can a municipal body decide who are, and who are not, fit persons to be licensed? Some such restrictions, not only in plumbing, but in other trades, seem necessary in the interests of the general public. Trade guilds, that at one time made such restrictions, have in so many cases drifted away from their original purpose and constitution that no resuscitation of their ability in this respect seems possible. Mr. J. G. Crace, an Master of the Painters' Company, some time ago* endeavoured, by the creation of a body of Associates of the Company, to give to competent workmen an aid in obtaining employment; but, as reported by you at the time, prejudice was too strong to admit of this being accepted. It will be interesting to learn what results are obtained by the action of the Bradford municipality. Perhaps some of your readers in that district will be good enough to send you their experience.

A. B.

* See p. 455, ante.

* *Builder* for 1880,—vol. xxxviii, pp. 127, 205

AN ARCHITECT'S CLAIM FOR PROFESSIONAL SERVICES.

THIS was an action brought by Mr. William Hall, an architect and surveyor, of St. John's Wood Studios, to recover the several sums of twelve guineas, five guineas, and twenty-five guineas, for work done at the request of the defendant, residing at 89, Charlotte-street, Fitzroy-square. The case was heard on the 12th inst. in the Westminster County Court, before Mr. Judge Bayley. Mr. Nicholl appeared as counsel for the plaintiff, and Mr. Attenborough, barrister, for the defence. The item of twelve guineas was admitted, and 2*l*. was paid into court in full satisfaction of the claim.

The plaintiff (called) said that the item of five guineas was for a report made for survey of premises in course of erection, in order to ascertain whether the buildings in question would interfere with the light of the defendant's present premises. He subsequently reported on the case, and was referred by the defendant to his solicitor. In cross-examination, plaintiff said he had entered the charge of five guineas, but, by an error of his clerk, the defendant's account was only charged two guineas, which sum the defendant had paid into Court. The plaintiff in continuation, said the charge of twenty-five guineas was for surveying some premises and advising the defendant as to their value, which was 1,800*l*., and his charge for doing so would be, according to Wright's scale, 22*l*. The defendant further required him to obtain an advance for him, which was done, and for which he charged 2½ per cent., which formed the item in dispute.

This being the plaintiff's case, it was urged by the counsel on the part of the defence that the money paid into court was amply sufficient.

The defendant, called and examined, said in 1881 he employed the plaintiff to do some work for him, for which he was paid twelve guineas, and in consequence of his giving the plaintiff a case against the School Board, the plaintiff promised to do any little work he might require without fee. As to the charge of five guineas, the plaintiff never surveyed the work at all, and on the 1st of January last he sent the defendant a charge for 14*l*. in full satisfaction of all claims against him. The charge of 25*l*. was merely a conditional one in the event of the negotiation being carried through, but as it fell through, the plaintiff was wrong in making any charge whatever.

The jury, without retiring, returned a verdict in favour of the plaintiff for 17*l*.

BUILDING BY-LAWS: MORTAR.

GEORGE HENRY WICKS, a builder, of Salisbury-road, Kilburn, was summoned at the Marylebone Police Court at the instance of the Willesden Local Board for having on the 14th of September erected a building in Salisbury-road, the walls of which were not properly and solidly put together with mortar composed of one part lime and three parts sharp sand, cement, or some other suitable material.

It was proved that the defendant had used mortar containing 90 per cent. of mould, which destroyed the virtue of the lime, and made the so-called mortar perfectly useless for its purpose.

Mr. Mansfield imposed a fine of 5*l*., and a further penalty of 40*s*. a day for three days, with 2*s*. costs, making a penalty of 11*l*. 2*s*.

BUILDING PATENT RECORD.*

APPLICATIONS FOR LETTERS PATENT.

4,773. E. Robbins, London. Manufacture of cements, concrete, &c., for the construction of houses, &c. Oct. 8, 1883.

4,808. A. J. Boulé, London. Venetian blinds. (Com. by J. B. Querre, Toulouse.) Oct. 9, 1883.

4,825. G. W. Davis, Birmingham. Attaching door-knobs to their spindles. Oct. 10, 1883.

NOTICES TO PROCEED

have been given by the following applicants on the dates named:—

October 9, 1883.

2,828. G. Wedgwood, C. F. Wedgwood, L. Wedgwood, and G. A. Marsden, Etruria. Ornamenting of tiles, bricks, &c. June 7, 1883.

2,886. S. C. Davidson, Belfast. Stoves or air-heating apparatus. June 9, 1883.

2,943. W. P. Thompson, Liverpool. Clamping apparatus for builders' scaffolding. (Com. by C. Mansion, Paris.) June 13, 1883.

October 12, 1883.

3,396. D. Timings and S. Timings, Birmingham. Construction of door-springs. July 9, 1883.

* Compiled by Hart & Co., Patent Agents, 186, Fleet-street.

ABRIDGMENTS OF SPECIFICATIONS,

Published during the week ending September 29, 1883.

122. A. B. Wren, Bideford. Joints of sanitary pipes. Jan. 9, 1883. Price 2*d*.

These joints are made rectangular instead of round. (Protection not allowed.)

656. W. H. Hobson, Birmingham. Construction of tessellated encaustic and other tiles. Feb. 6, 1883. Price 2*d*.

A metal frame is made of the required shape, and the interior thereof is divided into spaces in which the tiles are placed. (*Pro. Pro.*)

714. S. Deards, Glasgow. Apparatus for warming houses. Feb. 9, 1883. Price 6*d*.

The bars of the fire-grate are hollow, and form part of an endless pipe by which other rooms can be warmed, and behind the grate is a firebox in which more of this pipe is coiled, and into which the heat from the fire passes.

826. W. Blakely, Bournemouth. Preventing the transmission or radiation of heat through roofs of houses, &c., and excluding rain. Feb. 14, 1883. Price 2*d*.

An internal lining is fitted to the roof, and the intervening space is filled with sawdust, &c. (*Pro. Pro.*)

900. W. Carrington, Openshaw. Water heater used in connexion with circulating hot-water pipes for greenhouses, &c. Feb. 19, 1883. Price 6*d*.

This is an annular vertical boiler in which the heat from the fire is made to ascend inside the water space, and then descend outside the same on its way to the flue.

920. H. W. Davidson and J. Spier, London. Assisting the combustion of fuel in grates and promoting the draught therein. Feb. 20, 1883. Price 10*d*.

This consists of a blower formed of asbestos or other material, which is placed across the front of the grate above the bars.

923. T. J. Mallings, London. Sash-fasteners. Feb. 20, 1883. Price 2*d*.

A counter-weighted tumbler is pivoted on the upper sash and when the lower sash is closed it catches this tumbler and forces it down into a recess in the meeting bar. (*Pro. Pro.*)

933. W. Lee and D. F. Beale, Maidstone. Construction or arrangement of blocks or frames by a moulding process suitable for walls. Feb. 20, 1883. Price 4*d*.

Right-angled facing blocks are made, in the upper and lower edges of which are grooves. These blocks are placed in position, and the mortar fills the grooves and binds them together, when the interior can be filled as may be desired.

984. F. Hammond, London. Chimneytops or apparatus for facilitating draught in chimneys. Feb. 23, 1883. Price 6*d*.

A cap is placed round the upper end of the chimneytop and the annular space between the cap and the pot draws a current of air upwards.

DRAINAGE AND SEWERAGE ITEMS.

Maldon.—On the 15th ult. Mr. S. J. Smith, C.E., one of the inspectors of the Local Government Board, held an inquiry at Tillingham, respecting an application from the Maldon Rural Sanitary Authority, for sanction to carry out an amended scheme of sewerage for Tillingham, at a cost of 825*l*., prepared by Mr. Alfred B. Brady, C.E., Surveyor to the Authority. The proposed scheme was in place of one sanctioned by the Local Government Board some years ago, the estimated cost of which was 1,500*l*. The inspector, while approving of the amended plan as far as it went, said he could not recommend his Board to give their sanction to the scheme unless two or three acres of land were purchased at the outfall, upon which to construct a small straining tank, and to irrigate land with the sewage before discharging it into the Tillingham Brook. Mr. Smith also held an inquiry at Steeple on the same day, with regard to an application from the same Authority for sanction to borrow 250*l*. for sewerage a portion of the village, from plans also prepared by Mr. Brady. After hearing the evidence, Mr. Smith made an inspection of the village and the proposed outfall. He, however, could not sanction the scheme, for the same reason expressed with regard to the Tillingham scheme, it being proposed to discharge the sewage into a water-course. The inspector recommended that Mr. Brady prepare another plan embracing the entire village, and that the outfall be at such a level that the sewage might be used for the irrigation of a small area of land.

Acton.—An adjourned inquiry was held in the Acton Local Board Room last week by Major Tulloch, Inspector of the Local Government Board, in reference to an application by the local board for sanction to borrow 75,000*l*. for the construction of a main drainage system for the parish. The inquiry had also reference to

a memorial to the Local Government Board asking that the Acton Local Board might be declared a defaulting Authority, inasmuch as it had failed to provide means of disposal of the sewage from the property of the memorialists. Evidence was given as to the details of a scheme which had been prepared by Mr. Lailey, the Surveyor to the Board. Mr. Bailey Denton also gave evidence, expressing his concurrence with the main features of the scheme, which he said would cost about 80,000*l*. The area to be drained is proposed to be divided into a high and a low level; in the former the sewage would be conveyed to the concentrating point by means of gravitation, and in the latter it would be pumped up to the same point, where the sewage would be treated at precipitation works, from which the effluent would flow in a conduit to the Thames. Mr. Denton urged that as the Acton authorities were, by a recent judgment of Mr. Justice Fry, prevented from allowing sewage from new houses to flow into the Stamford Brook, which had been from time immemorial the sewage outlet of the parish, but which had been made a part of the Metropolitan drainage system, and as the Metropolitan Board of Works had refused to come to any arrangement by which Acton would withdraw the storm-water on condition that the sewage of Acton was allowed to flow into Stamford Brook, the Acton authorities should apply to Parliament for an Act of Parliament giving them power to use, on terms, the old outlet. The inquiry was adjourned in order that the surveyor might produce a more detailed plan; and, meantime, a deputation of the leading ratepayers is to wait on the Metropolitan Board on the subject.

FROM SCOTLAND.

New Public Halls, Stirling.—The new public halls in Albert-place, Stirling, are now completed, and were formally opened on the 5th inst. The buildings have been erected by a company on the limited liability principle, the capital being 8,000*l*. A suitable site, extending to nearly an acre, was obtained in the lands of Spittal's Hospital, the Town Council giving the ground at a moderate feuduty, and in May, 1881, the work was begun, the plans having been prepared by Mr. W. Simpson, jun., architect, Stirling. The building is Classic in design. In front is a large open space which has been laid out as ornamental ground, and the proportions of the edifice are well seen from every side. The building contains two halls, a large hall and a lesser one, which have independent entrances, and can be used simultaneously without in any way interfering with the proceedings in either. The large hall is seated for about 1,300 persons, and the small one for about 300. Both are well lighted, and the floors have been specially laid with polished pitch pine for dancing. The back of the platform has been specially constructed for the reception of an organ, now being built by Mr. Willis, of London, and the front has been kept as open as possible so as to allow the sound free entrance into the area of the hall,—a requirement too often ignored.

Aberdeen.—Mr. John Gray, a member of a local firm of ironworkers, has intimated his desire to erect and present to the city of Aberdeen a building to be used as a school of art, at a cost of 5,000*l*.—On the 27th ult. H.R.H. the Princess Beatrice opened the new public park, which is pleasantly situated in the south-west of the city. It is about 44 acres in extent, and has cost the generous donor (Miss Duthie) over 50,000*l*.

Proposed New Lock on the Thames.—At a meeting of barge-owners and watermen held at Richmond on Monday, it was unanimously resolved "That it is the desire of this meeting of practical watermen and lightermen of the Thames to cordially support the proposed construction of a half-tidal lock and weir below Richmond Bridge, and this meeting is of opinion that it is essential to the public interest that such scheme should receive the support of the Thames Conservancy, and also the local authorities on both banks of the river." Of the desirability of such a weir there can be no doubt among those who are familiar with the state of the river at low-water between Richmond and Teddington. Navigation, even for rowing-boats, at such times requires some little strategy.

PROVINCIAL NEWS.

Carlisle.—The foundation-stone of the Carlisle Public Baths has been laid by Mr. R. S. Ferguson, M.A., F.S.A., mayor of Carlisle. The cost of these baths is being defrayed out of the profits derived from the gasworks, and the plans have been prepared by Mr. J. Hepworth, A.M.I.C.E., engineer and manager to the Gas and Water Committee of the city of Carlisle. The entire area to be occupied by the baths is 1,378 square yards. The outer dimensions of the building are 126 ft. by 100 ft., the latter measurement being the frontage to James-street, and the former the frontage to Wood-street. The walls are of red brick, relieved with red-stone dressings and terra-cotta panels. The principal entrance to the building is from James-street. The first-class swimming-bath is 60 ft. long, 30 ft. wide, and 3 ft. 6 in. deep at one end, falling to 7 ft. at the other; there are seventeen dressing-boxes; foot and shower baths; four first-class private or slipper baths; and a Roman bath, with shower, spray, and vapour baths. A second group includes six second-class private or slipper baths; shower and vapour baths; swimming-bath, 65 ft. by 30 ft., 3 ft. 6 in. deep at shallow end, falling to 7 ft. at the other extreme, with twenty-nine dressing-boxes; above which is a balcony with palustrade (approached by stairs), for use when swimming competitions are being held. In a third group accommodation is provided for ladies. This includes a swimming-bath, 29 ft. by 16 ft., 3 ft. deep at the shallow end, falling to 5 ft. at the other, with six dressing-boxes and a waiting-room. There are also four private baths and a Roman bath, fitted with shower and spray baths. The swimming-baths are to be lined with white-glazed tiles, and the private baths are to be of porcelain. The following are the several contractors for the work, together with the amounts of their respective contracts:—Jesty Bros, masons and bricklayers, 1,580*l.*; Jesty & Forster, carpenters, 1,070*l.*; R. M. Farmer, plasterer, 59*l.*; R. L. Lowe, concrete work, 749*l.*; C. J. Nanson, slater, 69*l.*; Kirk & Robley, painters, 192*l.*; D. W. Tanfield & Son, ironwork, 207*l.*. The total amount of the whole of the contracts is 4,666*l.*, and in addition there will be an expenditure of about 2,000*l.* for plumbing, engineering, and fitting work. The work is now being rapidly proceeded with under the supervision of Mr. H. Higginson (assistant to Mr. Hepworth), and is expected to be finished in April next.

Exmouth.—The new post-office here has been opened. It has been erected on the site of a residence known as Apsley House, from plans prepared for the owner (Miss Stephenson) by Mr. Jas. Carter, architect. The building, which has been erected by Messrs. Perry & Son, is of red and white brick. There is a porch supported by three handsome columns.

CHURCH-BUILDING NEWS.

Aston (Birmingham).—On the 8th ult. the bishop of Worcester preached to a crowded congregation in Aston Parish Church, in connection with the opening of the new chancel and other additions to the edifice. Until a few years ago the church had only accommodation for about 500 persons, and the parish had grown in population and wealth to such an extent as to render an enlargement absolutely necessary. The restorations have left little of the original fabric internally or externally. Mr. J. A. Chawlin, the architect from whose plans and under whose superintendence the work has been carried out, Mr. B. N. Smith being the builder. The present works embrace the entire eastern portion of the church. The chancel is an extension of the nave, only a portion of which has yet been restored, but the remainder is in process of restoration. The monuments in the Erdington chapel are placed in a prominent position under the canopies of tracery behind the stalls, and they form a feature of great interest in the archaeology of the church. Accommodation has now been provided for 1,200 persons, or nearly treble its original sitting capacity. The cost of the restoration of the church is 2,300*l.*, of which amount 800*l.* has yet to be raised; but the eastern end of the church has been erected at a cost of 10,000*l.* by an anonymous donor.

Drumell.—The chancel of the parish church of Ely, in the diocese of Ely, has been re-opened, after restoration under the direction

of Mr. William White, F.S.A. The work was undertaken in consequence of a report of the Diocesan Surveyor, Mr. R. Reynolds Rowe, to the Bishop, in November, 1881, and the rector and churchwardens decided to restore the chancel with the help of funds derived from the sale of coprolites on the glebe, which, with the consent of the bishop and the patrons (Trinity College), were applied to this purpose. In addition to the work upon the chancel, it was found necessary also to restore the south aisle and clearstory wall, to rebuild the porch, to strengthen the foundations, and to provide for the drainage of the building. The work was commenced about twelve months ago by Mr. Foster, of Bedford, whose foreman, Mr. W. Wise, has had charge of the work under the direction of the architect. The chancel is of noble proportions, of early fifteenth-century date. Through age and decay it had become much dilapidated, the walls having spread from each other about 11 in. at the top, and the roof itself from 6 in. to 8 in. more, partly, perhaps, from the removal of the original tie-beams. In the renovations which have been carried out it was hoped that the old oak roof might be saved. This, however, proved to be impossible, and nearly all the material timbers have been renewed. It had been ceiled under the braced rafters and collars with very thin oak boarding, painted in distemper with some crude colouring, principally of yellow and black. This was found to have superseded earlier planking of oak, which had gone to decay. Very many of the ribs with traceried intersections had disappeared, together with some of the shields which covered the intersections. Some of the latter remained *in situ* with their emblazoned coats of arms. Their devices and positions had been carefully noted in a manuscript history of Cambridgeshire, still existing in the library of Wimpole Hall. By the aid of this book they have been restored to their original form and place, together with the deficient ribs and traceried intersections. The new roof has been secured with iron ties, which relieve the lateral pressure upon the walls. The decayed portions of the windows have been cut out and renewed, and the glazing rearranged. The north-west pier of the chancel arch, which was in a sinking condition from want of foundations, has been entirely rebuilt. The exterior plastering of the walls has been removed and the walls repaired and painted. The local church, of which the dressed stonework was composed, is usually liable to decay, and the new stone for the dressed work has been brought from Yeovil and Grimsill. It was found necessary to rebuild the walls of the ancient vestry. The floor of the chancel has been repaved with Godwin's tiles, with the old monumental ledgers introduced. The old stalls have been replaced, but new altar rails, table, and cover have been provided.

Llanelydwen (Pembrokeshire).—The church here has been re-opened, after restoration and enlargement. The fabric consists of the nave, 36 ft. 6 in. long by 17 ft. 6 in. wide; chancel, 18 ft. long by 13 ft. 6 in. wide, to which have now been added a porch and vestry on the south side, the former measuring 5 ft. 6 in. square, and the latter 11 ft. by 8 ft. The ground has been lowered in places round the building. New windows of Douling stone frames and tracery have been inserted, two single lights in each of the north and south nave walls, and two-light ones in the west and east ends, the latter being filled with stained glass by Messrs. Clayton & Bell. Red terra-cotta crosses, manufactured by Doel, of Bridgend, have been placed on the eastern gables of the nave and chancel, and a stone one on the western bell-gable. The western entrance has been blocked up, its flight of internal steps removed, and a new Douling stone arched doorway provided within the south porch. The doorways are fitted with wrought-iron work made by Messrs. Brawn, of Birmingham. The whole of the open seats, chancel-stalls, communion-table, altar-rail, pulpit, and lectern are in varnished pitch-pine, from the architect's designs. The best of the old slate pavement is laid down the centre of the passages and bordered with an encaustic-tile zig-zag, provided by Messrs. Webb, of Worcester, who also supplied the tile floor in the porch, chancel, and sacristy. The old Norman font bowl and stem have been carefully cleaned and set on a new base. The fireplace that used to be in the Dol-wylim high-backed pew has, like the pew itself, been cleared away. The

builders were Messrs. Evans & Blithyn, of Penclipin, and the architect was Mr. E. H. Lingen Barker, of London and Hereford.

Knapton.—A special service was held in Knapton Church, Norfolk, on the 14th ult., on the occasion of the re-opening of the church after restoration under the direction of Mr. G. Gilbert Scott, M.A. From the report which Mr. Scott made to Mr. H. C. Robinson, of Knapton Hall, one of the churchwardens, it would appear that the building had suffered sadly from neglect, from clumsy repairs, and from damp, the latter being the result both of the bad state of the leading of the roof, and the defective drainage of the churchyard. The interior was further disfigured by high pews of deal, the flooring of many of which had been destroyed by decay, and by two hideous stages rising in tiers, put up for the accommodation of the school children. The necessary works have been carried out by Messrs. Cornish & Gaymer, the contractors. The high pews have been replaced by oak benches, the floor has been re-laid, and the roof has been preserved from further decay. All this has been done at an expenditure of about 2,000*l.*, and about 400*l.* more is required in order to complete the work. An interesting feature in the church is the roof, on each side of which are three rows of cherubins with expanded wings, some holding shields, and some musical instruments. The architect, in his report on the church, says:—"It is at any rate clear that when the present roof was put up, the fourteenth-century gable walls were lowered to the new pitch, retaining, however, the kneelers and saddle-stones of the earlier date, and at the same time a new window was inserted in the west gable of the nave designed to fit in with the form of the new roof. This roof is the especial glory of the church, and is a particularly fine example of the double hammer-beam construction, while its interest and beauty is enhanced by the admirable coloured decoration, of which the greater portion remains intact. The scientific skill displayed in its design is well illustrated by the fact that, although its pitch is little higher than 100 degrees (at the apex), and it has no cross-tie below the collar, which is placed unusually high, it does not appear to have spread, nor to have thrust out the walls, though these in proportion to their height are far from massive. One truss, indeed, forms an exception to the rest in having a tie-beam; it is that which terminates the roof eastward. The designer appears to have been apprehensive of the combined thrust of roof and chancel arch, and has in this instance continued the lower hammer-beam across the nave, thus forming a tie-beam which cuts, a little awkwardly perhaps, across the apex of the chancel arch. There is, however, no sort of doubt that this beam is a feature of the original design, and it is moulded and decorated in colour in the same style precisely as the hammer-beams of the other trusses to which it answers in position. There is a proof that the walls of the church were erected before, and quite independently of the design of the roof which they now support, in the fact that its trusses do not in any way correspond with the setting out of the side windows."

Donyatt.—Donyatt Church, near Ilminster, was re-opened on the 13th ult., after restoration. The church is an interesting structure of the fifteenth century, in the Perpendicular style. It has many distinctive and peculiar features of that period, noteworthy among which are the reservoir for water on the outside, the curious old font, and the pulpit. The fabric was partially restored in 1860 by the late Mr. R. T. Combe, of Earnhill, the Rev. W. Hyde then being rector. In the old church were some fine carvings of armorial bearings, crests, and monograms of different families. These have been placed in new frames, and are utilised in the present fittings. The whole expense of the repairs was borne by Mr. Reece, and the work was executed by Mr. Preston, of Ilminster.

Fulham.—The new Church of St. Peter, on the Salisbury Estate, Fulham, has been consecrated. The church is built almost entirely of stock bricks with red brick facings both inside and out, stone and white brick strings and moulded bands being placed at intervals. In plan it consists of nave and north and south aisles, with small morning chapel upon north side of chancel and choir and clergy vestries. A transept is placed on the north side, and there is an open vestibule or porch at the west end, and three other entrances. One of these, at

the east end of the south aisle, forms the lower part of an intended tower. All the doors are made to open outwards. The style of architecture adopted is that of the Transition from the twelfth to the thirteenth century, but the smallness of the funds available has precluded any elaboration of detail. The total cost of the building is about 5,500*l.*, and 600*l.* yet remains to be raised. Externally, the building is simple in character, depending for its effect on proportion and mass of light and shade. The nave is divided from the aisles by a lofty arcade of five bays, above which is a clearstory, formed with cusped lancets, in triplets, with stone shafts. For the chancel the principal architectural effect has been reserved; it has one bay of quadripartite vaulting, and an apsidal groined termination. The ribs of groining, enriched with dog-tooth carving, have at their junction at the crown two fine sculptured bosses, representing Christ's charge to Peter, and Christ delivering the keys to Peter. On the south side of the chancel is the organ-chamber, which also occupies one stage of the tower, and on the north an arcade of two bays separates it from the morning chapel. A carved pulpit from an old city church—St. Matthew's, Friday-street,—has been temporarily fixed. The total accommodation is for 750 adults. The work has been carried out from the designs and under the superintendence of Mr. Arthur Billing, of Tooley-street, London Bridge. The builders of the church were Messrs. Gibbs & Flew, Limited, who have carried out extensive building operations in the district. The carving has been executed by Messrs. Seale & Sons, Walworth.

Leeds.—Holy Trinity Church, Leeds, has just been re-opened, after restoration. The church, which is Classic in style, was erected about 150 years ago, and in the work of restoration no attempt has been made to alter its character. At the time of its erection, and during a considerable portion of its history, the church was surrounded by a large and influential residential population. This is now entirely changed, and owing to the enhanced value of the surrounding property for business premises, and other alterations which have been made in the vicinity for many years past, it is now situated in one of the busiest and most important thoroughfares, in the very centre of the town. Originally the church had only two rows of pews, with one central passage and two others close to the north and south walls of the church, with a gallery at the west end. At an early period, however, north and south galleries were erected. The restoration now practically completed has made a thorough transformation of the interior of the building. The whole of the old pews, galleries, choir stalls, flooring, and every part of the interior fittings, have been taken out. The floor area of the church has been concreted, and new timber floor laid to pews and stalls. The east end of the church has been raised, and enclosed with iron railings, forming a choir or chancel. The seating, consisting of four rows of open pews, has been re-arranged, the side passages being now by the sides of the Corinthian stone columns, which support the enriched entablature and cornice, from which the centre part of the arched ceiling springs. Side pews are placed next to the north and south walls of the church. The whole of the new seating has been reframed and remade entirely out of the old oak pew and gallery framings. One of the chief features of the restoration has been the alteration of the Corinthian stone columns, five on each side of the nave, which support the cornice under the ceiling and the roof over the church. The great height of the stone pedestals, 3 ft. square, upon which the moulded bases and columns stood, excluded nearly one-half of the congregation from a view of the pulpit or any principal part of the east end. This obstruction was so objectionable that although great reluctance was felt by the architect, the vicar, churchwarden, and restoration committee, on account of structural difficulties and other reasons, some alteration and improvement was an absolute necessity. On account of the bases being built in several courses, filled in with loose lime fillings, the old stonework has had to be cut out and new wrought circular stone shafts and moulded bases inserted, which has been most successfully done. The whole of the work has been carried out from the designs and under the superintendence of Mr. Thomas Winn, architect, Park-lane, Leeds. The contractors for the works are—Bricklayers, masons, plasterers, and concreters;

Messrs. Franks & Evans; joiners and carpenters, Messrs. Craven & Umphey; hot-water apparatus and ornamental railing, Messrs. Nelson & Son; painter and decorator, Mr. J. T. Pollard; new sunlights and plumbing, Mr. Joseph Lindley; lead-glazed cathedral glass windows, Mr. George Wilson; tiling, Mr. Robert Leason,—all of Leeds. A brass lectern, supplied by Messrs. Jones & Willis, of London and Birmingham, has been presented by the widow of the late Rev. J. H. McCheane, in memory of her husband, who was incumbent of the parish for nineteen years. Independently of the organ, the works were let for 1,200*l.*, which sum has been very slightly exceeded.

Stoke Rivers (Devon).—The tower of the parish church of Stoke Rivers, near Barnstaple, has just been restored, and its bells re-hung. The last named part of the work has been done by Mr. H. Stokes, of Woodbury, and Mr. Harding, of Kentisbury, has restored the tower. The west window and door of the tower were restored by Messrs. Bryant & Sons, of Barnstaple. The cost of the bell work was about 70*l.*, and that of the tower between 300*l.* and 400*l.* It is in contemplation to restore the remainder of the church when funds permit.

Matlock.—A new church is being provided at Matlock Bank, from the designs of Mr. Healey, architect, of Bradford, which will supersede the mission-room in which divine service has been held for a lengthened period. The cost of erection will be 4,000*l.*

Loanhead (N.B.).—A new Established Church has been opened for this populous district of the parish of Lasswade. It is designed in Gothic of Early Decorated detail. The plan, which is cruciform, has shallow transepts, which admit of extension if required. Accommodation is provided for 500, and a hall for about 200 is built behind the church, with vestry and offices at a total cost of 2,300*l.* The architects are Messrs. Hardy & Wight, Edinburgh.

Penryn.—The parish church of St. Gluvias, Penryn, Cornwall, which has just undergone restoration, was on the 27th ult. re-opened by the Bishop of Truro. The church, which has an ancient history, was dedicated in July, 1318, to St. Gluvias, martyr, but the ecclesiastical history of the parish dates back much earlier. Some time ago the church was in such a dilapidated condition that it was found to be absolutely necessary to thoroughly restore the building. The structure had been so long neglected that it had to be almost entirely rebuilt. Mr. J. P. St. Aubyn was selected as the architect to carry out the work, and Mr. S. Searle, builder, of Wadebridge, was entrusted with the contract. The work was commenced about fourteen months ago, and has cost about 3,300*l.*

Hessenford.—St. Ann's Church, Hessenford, was built from the designs of Mr. James Piers St. Aubyn some years ago, upon the site of a former church, and at the expense of the vicar, the Rev. John Turner Fisher, M.A. On the 23rd ult. an addition, in the shape of a reredos, was unveiled. The work, which is the gift of the vicar, consists of a sculptured stone altar-piece. This is made, in the main, of Beer stone, but polished Devonshire marbles and alabasters are also introduced with good effect. The sculptured statues are all in Cazen stone. There are three groups, in recessed panels. The central one represents the Crucifixion. The panel on the left-hand side of the Crucifixion shows our Lord led by a soldier to Mount Calvary, and bearing His cross, whilst worshipping and distressed women kneel around Him. On the right hand the Resurrection is illustrated. These sculptures, which have a background of gold mosaic, all rest upon a retable of polished Ippelen marble, and over them are traceried and bracketed gables, divided by bold buttresses, which become octagonal in turn, and, after rising as pinnacles to some altitude, terminate with sculptured statuettes in the round of full-length angels in adoration and prayer. The wings connecting the reredos proper with the north and south walls in the main consist of diapered and polished alabaster panels, divided by traceried jambs of the same rich material. A bratticing of pierced tracery-work surmounts the whole. The work has been carefully carried out by Mr. Harry Hems, of Exeter.

Whitehaven.—The new Church of St. Nicholas, Whitehaven, has been consecrated by the Bishop of Carlisle. The work of pulling the old church down was commenced on the 22nd of March, 1881, and that work and the putting-in of the foundations occupied up to about the middle of

June. The contracts for the edifice were let on the 27th of June, Mr. George M'Adam, of Carlisle, taking the masonry, and Mr. Hatch, of Lancaster, the joiner's work. A portion of the old tower was at first arranged to be left, but it was decided afterwards to take it down and rearrange the proportions of the tower, and rebuild it entirely. The extreme length of the church is 208 ft., breadth 66 ft., and height from floor to ceiling of nave 44 ft. The chancel itself (included in the 208 ft.) is of grand proportions, being 36 ft. in length, 24 ft. in breadth, and 42 ft. in height. The ceiling of the chancel is a panelled ceiling, with very handsome carved cornices. In the centres of the panels are carved paterae. There are three exits and entrances as before,—the main entrance from Lowther-street, one from Queen-street, and one from Church-street. From the exterior, the front presented to Lowther-street has a fine porch, over which springs a square tower to the height of 30 ft., with four small spires at the corners of the tower. The church will seat 1,000 persons, and the cost of its re-erection (about 9,000*l.*) has been borne by Miss Gibson, who has also defrayed the cost of the re-erection of the tower. The work has been carried out under the direction of the architect. The mason's work has been executed by Mr. M'Adam, Whitehaven, and carpenter and joiner's work, including all the carving except the pulpit and a few smaller pieces of furniture, have been executed by Mr. Hatch, of Lancaster; the plumber's work by Mr. Alderson, of Glasgow and Carlisle; the slater's work by Mr. Nanson, of Carlisle; the plasterer's work by Mr. Ormerod, of Carlisle; the glazing and gas-fittings by Mr. Burns, of Whitehaven; the stone carving by Mr. Nelson, of Carlisle; the heating by Messrs. Seaward, of Lancaster.

Lewisham.—A mission church in Brookdale-road, Springfield, Catford, in connexion with St. Mary's Parish Church, was opened on the 20th of September. The church is of stock brick, with red brick arches and dressings externally, with plain lancet and circular windows throughout. A porch runs the whole width of the west front, with a large circular window in the gable, and bell-cote over it. A ventilating flèche is placed in the centre of the roof. The church will accommodate 300 persons on chairs, and the contract price, including special-made gasfittings, stoves, drains, fencing, and gates, was under 950*l.* The work has been carried out by Mr. S. J. Jerrard, contractor, Lewisham; the gasfittings by Messrs. Sandland, of Mansell-street, Aldgate, under the superintendence of the architect, Mr. Horace T. Bonner, of High-street, Lewisham.

DISSENTING CHURCH-BUILDING NEWS.

Campbell.—On the 29th ult. the copestone of the new spire of Campbell United Presbyterian Church, Glasgow, was laid. The spire is about 200 ft. high, and was included in the original plans when the church was built in 1875-76, but for various reasons has not been erected till now. Besides the church and spire, the plans, as now carried out in their entirety, include a large hall, and the total cost of the building has been a little over 17,500*l.* The church is seated for about 1,000 persons. Messrs. Morrison & Mason are the contractors, and Mr. Wm. Leiper is the architect.

Newhaven (N.B.).—The Free Church at Newhaven is at present in process of reconstruction, and on the 22nd ult. a memorial stone in connexion with the work was laid by Mr. Andrew Grant, M.P. By the alterations which are being made, the number of sittings will be increased from 700 to 900. The plans also provide for the erection of a spire, 120 ft. high, with a clock and bell. The reconstruction, which is estimated to cost fully 3,000*l.*, is being carried out by Mr. Smellie, builder, Glasgow. The architects are Messrs. Wallace & Flockhart, London.

Stranraer (N.B.).—On the 22nd ult. the foundation-stone of a new Free Church for the district and parish of Stranraer was laid at Stranraer. The old church, which is situated in Park-lane, has been used for upwards of thirty years, but the congregation has increased to such an extent that a new erection has been rendered necessary. The new church is being built in King-street, from designs by Mr. McLachlan, architect, Edinburgh, and will cost upwards of 2,000*l.*

West Hartlepool.—The new church and schools just completed for the English Presbyterian body at West Hartlepool were opened on the 25th ult. The buildings have been erected from the designs and under the supervision of Mr. Banks, of 23, Finsbury-circus, London, and Whitehaven (now Messrs. T. L. Banks & Townsend). The peculiarities of the site, which is a dissected quarry, and which falls several feet from front to back, suggested the utilising of the already excavated portion. Thus, while the schools are arranged beneath the church, the latter is entered from the level of Brougham-street. The building is designed in a free treatment of Late Gothic, with a certain amount of Flemish treatment to which the carved and moulded brickwork lend themselves. The church seats on the ground-floor 540, and in the west gallery, 103,—a total of 643 worshippers. The tender amounted to £4,644. The contractor was Mr. Johnston, of West Hartlepool; Mr. Robert Watts was the clerk of works.

Sevenoaks.—On Monday last, the 15th, the memorial-stones of the New Bible Christian Chapel at Sevenoaks were laid in the presence of a number of ministers and friends. The style of the building is Gothic, of the Early English period; the materials are brick, with stone dressings, the principal front being of a rich red from Lord Stanhope's fields, and, by the introduction of moulded and ornamental bricks, a cheap but effective elevation is produced. The architect is Mr. J. Kingwell Cole, of London, and the builder Mr. John Boase, of Sevenoaks.

Birmingham.—The church erected by the Swedenborgian congregation in Wretham-road, has just received several important gifts, amongst others a handsome reredos presented by an anonymous benefactor. The body of the work is of alabaster, standing upon a base of polished green marble from the Connemara quarries. The central part of the design is occupied by a group, 10 ft. in length, representing the Lord's Supper; the apostles being seated in a richly-canopied chamber, the background of which is brought out with inlaid marble and pale gold. On the right and left sides canopied niches rise to the height of 15 ft. These are filled with statues. The whole of the sculpture has been executed in white alabaster, so as to contrast well with the deeply-voined material used in the structural parts, and these have been relieved by the introduction of green marble shafts and inlaid work. The general design is Gothic of the Early French type, and the work has been executed by Mr. Roddis, of Birmingham.

ROMAN CATHOLIC CHURCH-BUILDING NEWS.

Birmingham.—On the 17th ult. Dr. Halsey, Bishop Auxiliary of the R.C. Diocese of Birmingham, laid the foundation-stone of a new church to be dedicated to St. Anna. The church, the site of which is in Alcester-street, is to be erected from designs prepared by Mr. Albert Vicars, 151, Strand, London, in the Early English style of architecture, and will be in length 105 ft., by 48 ft. in width, and 50 ft. high, consisting of nave and two aisles, with chapels at the extremities of the latter. When finished the building will seat 600 persons. The church is to have a tower and spire. The contractors are Messrs. Barker & Son, of Sandsworth, Birmingham.

Norwich.—A new Roman Catholic Church is being built in Norwich by the Duke of Norfolk. Mr. G. G. Scott, F.S.A., is the architect. A correspondent says the style of architecture is Early English. The site is a fine one,—that of the old city gaol,—and is nearly two acres in extent, and in the highest part of Norwich, at the top of St. Giles's-gate. The stone selected to be used externally is Ancaster (weather bed) or all weathering projections, and the remainder of the stone used externally is Beer stone from the Devonshire quarries. The stone internally for the principal parts of the works will be Aubigny, from the Aubigny quarries in Normandy, a few miles from William the Conqueror's birthplace. This stone is likely to become better known in England than has hitherto been the case. It is now employed at the new Stock Exchange, London. The company's office is 16, Stoney-street, Borough. The remainder of the stone used internally is Beer stone. Messrs. Rattee & Kett, of Cambridge,

are the contractors, and the clerk of works is Mr. Thos. Burton.

Tudhoe.—The R.C. church at Tudhoe, Durham, has been re-opened, after enlargement by the addition of a gallery, a baptistery, and a tower. The gallery is supported by four Bath stone pillars, carrying pitch-pine beams. In front of the gallery are carved figures of St. Joseph and the Blessed Virgin, as well as grapes and flowers. Outside the principal entrance are carved figures of angels, and at the side of the circular window the figures of St. Cuthbert and the Venerable Bede. The tower is of octagonal shape, 80 ft. in height from the surface. The bell, which is the gift of Mr. Marmaduke Salvin, of Burn Hall, is from the factory of Messrs. Lewis & Son, of London. The mason's and joiner's work has been done by Mr. W. Foster, Croxdale, and the heating apparatus was supplied by Messrs. Walker & Emley, of Newcastle.

STAINED GLASS.

Alnwick.—A window has just been erected in the parish church, Alnwick, to the memory of the late Mr. T. Robertson, of that town. The window, which consists of three openings, is filled with one large group of the Resurrection. The figure of Our Lord, who has just stepped forth from the sepulchre, is robed in shining white raiment, which sheds a glow of light on the sombre garments of the centurion soldiers, who shrink back from the heavenly vision. In the background, against a sky in which the dawn is breaking, are the three Marys. In the tracery above the window are angels bearing scrolls inscribed with texts. The work has been executed by Mr. W. H. Atkinson, of Newcastle-on-Tyne.

Stretton.—The east window of the chancel of St. Nicholas Church, Stretton, has been filled with stained glass, at the cost of Mrs. Benjamin Souby Simpson, of Leamington, in memory of her husband, who was buried in Stretton churchyard, in June, 1882, by the side of his brother, the Rev. William Hirst Simpson, formerly rector of the parish. The window is a three-light one, of the later portion of the Decorated style, and would date to somewhere about the year 1330. It had once been filled with stained glass, of which a few fragments were discovered during the restoration of the church two years ago. This restoration was completed at a cost of nearly 1,700l.,—exclusive of numerous gifts,—under the care of Mr. James Fowler, of Louth, who has arranged the design for this new window. As in the case of the other four memorial windows in Stretton Church, it was entrusted to Mr. Daniel Bell, of London, who has carried out the work in a way that does him great credit. The subject of the window is the Ascension.

Ealing.—A stained-glass window given to Christ Church, Ealing, by Mr. J. Goodchild, formerly of Heathfield House, has been dedicated. It is situated at the western end of the church, over the gallery. The subject illustrated is the Feast of Pentecost. In the top opening of the tracery is the Holy Dove, surrounded by rays of glory and Cherubim and Seraphim in the quatrefoils. In the four lower compartments are groups of figures of the Apostles and others who are described in the Acts of the Apostles, 1st and 2nd chapters, as having been present; the "tongues as of fire," resting on the heads of the Apostles. In the bases are figures of the four prophets,—Isaiah, Ezekiel, Malachi, and Joel. The setting is of canopy work, of a style which is consistent with the date of architecture in which the church is built, viz., the fourteenth century. The work has been designed and executed by Messrs. Lavers, Westlake, & Co., of Endell-street, Bloomsbury.

Ulverston.—In the Church of "Holy Trinity," Ulverston, a stained-glass window of fair proportion and in thirteenth-century style of art, has just been unveiled. The inscription at base is:—"Erected in memory of Myles Kennedy, P.M. and P.Z. 995, and P.G.S.W., West Lancashire, by his brother Freemasons, A.D. 1883." The two subjects mainly illustrated are the Judgment of Solomon, and Solomon building the Temple. The respective subjunct texts are:—"The Lord gave Solomon wisdom," and "So Solomon built the House." These subjects, with suitable adjuncts, are effectively treated after standard art examples. Above each is an enriched canopy with light grisaille background, whilst above all is the glorified "All-seeing Eye." Duplex interlaced triangles,

an ancient symbol of Tri-unity, are incorporated into the bordure ornamentation. In the space between subjects and base are two Masonic emblem trophies, each within a quatrefoil. The emblems so grouped are:—1, Square and Compasses; 2, Plumb-rule; 3, Level; 4, 24-in. Gauge; 5, Maul or Mallet; 6, Chisel. The window is from the studio of Messrs. Powell Bros., of Leeds.—Mr. J. W. Grundy, of Ulverston, being the supervising architect.

SCHOOL-BUILDING NEWS.

Bristol.—On the 29th ult., the corner-stone of a new school for infants, in connexion with St. Michael and All Angels' Church, Bishopston, was laid. The building is to accommodate 200 children. The site faces Horfield-road, and the new school, designed by Mr. C. F. Hanson, architect, and being built by Messrs. King & Son, of Bitton, has a frontage of 55 ft. The style adopted is Gothic, and the school will consist of one large room, 45 ft. by 22 ft., and a class-room of 15 ft. square.

Sheffield.—The memorial stones of new schools in connexion with Ebenezer Wesleyan Chapel, Sheffield, were laid a few days ago. The plans have been prepared by Mr. Clement Gibson, architect, St. Philip's-road. The largest school, to accommodate 500 children, will have a frontage to Green-lane, and the wings of the new building will abut upon Acorn-street and Ebenezer-place. There will be no fewer than ten class-rooms; the infants' gallery will accommodate 100 children, and above it will be a room for the use of senior scholars, and available for quarterly meetings and other gatherings of the kind. A large room on the first story will be set apart as a workroom for the ladies of the congregation, and there are other rooms intended for societies' meetings. The fabric of the old chapel will not be interfered with beyond piercing the walls at the Green-lane end, in order to afford communication between the new building and the gallery and ground-floor of the chapel. The contracts for the work have been secured by Mr. J. White, of Penistone-road, and Mr. J. H. Wheen, of Porter-street. It is intended to remove the existing old-fashioned pews, and replace them by modern ones of pitch-pine, and the chapel is to be cleaned, painted, and decorated throughout. Mr. Loxley, of Corporation-street, has been entrusted with this portion of the work. The total outlay is estimated to reach 3,300l.

Bethnal Green.—On the 8th inst., at Haguenet-street, Bethnal-green, large schools, erected by the School Board for London, were opened by public meeting, Mrs. Fenwick Miller presiding. The new school, which will give places to about 1,200 children, is planted in the midst of what used to be the centre of the Spitalfields weavers, most of the houses in the neighbourhood being of the character used by those who carried on what was the staple trade of the ancient Huguenot colony. The cost of the site was 7,021l., and the cost of building was 11,410l., making altogether the sum of 18,431l. The schools have ample playgrounds. The buildings have been erected from the plans and under the superintendence of Mr. E. R. Robson, F.S.A., the Architect to the Board.

VARIORUM.

UNDER heading "A Despoiled Church" Mr. F. Parry, in a letter to the *Times* (16th ult.) describes his search in Putney Church for old brasses mentioned in Lysons's "Environs of London," but not found at present where they should be. The following paragraph from his letter speaks for itself:—"A re-arrangement of the chancel floor of recent date had removed the ancient pavement, and with it what I sought for. However, on being told that some bits of brass had been set aside by the stonemasons, and following up this clue, three portions of the fine brass to the memory of John Welbeck, 1477, and his wife Agnes, who died in 1478, came into my possession. They consist of a figure of a man in armour, the entire inscription in black letter. The woman, 'habited in a long robe,' is wanting, and it is in order to the recovery of this remainder that I venture to ask for a notice in the *Times*. I shall be happy to return the brasses to the church, their proper *habita*, and to the custody of the clergy and wardens, who seem to have been unacquainted with the history of the district and its antiquarian relics. Probably those in question had

been under a cover of matting, out of sight and forgotten."—The "Handbook of Railway Stations," compiled by Messrs. Oliver and Airey, of the Railway Clearing-House at Euston, gives tables especially valuable for those concerned in goods traffic, in regard to accommodation for the treatment of such traffic at every station in the United Kingdom, the joint responsibility of various companies working over the same routes or using the same stations, &c. This is the sixth edition.—Children ought to be very happy nowadays, if pretty books can make them so. Messrs. Hildesheim & Faulkner send us a beautiful specimen of a child's book of poetry, "Told in the Twilight," the verses by F. A. Weatherly, with copious coloured illustrations and marginal lithographs, designed by M. E. Edwards and J. C. Staples. In every respect it is one of the prettiest children's books we have seen. The production of really refined illustrated books for children is a very important matter, for much of the foundation of taste, good or bad, may be laid to what children learn to like in early years. No vulgar or ill-drawn picture, however "amusing," should be put before children. Let them learn to like to be amused by what is pretty and refined at an early age,—they cannot begin too soon. In two other smaller books sent by the same firm, "The Men of Ware," and "The Ladies of Lee" (verses also by Mr. Weatherly), Mr. W. J. Hodgson, as illustrated, follows cleverly in the wake of Mr. Walter Crane. Some of his drawings are very clever and humorous.—We hear that the whole of the impression of 400 copies of Mr. Henry Taylor's "Old Halls of Lancashire and Cheshire" was subscribed for within a week of the issue of the prospectus.

Miscellanea.

The Life System of Leasehold Tenure in Cornwall.—A West Country paper says that the protest which Devonport has entered against the system on which property is held in that town will command wide sympathy in West Cornwall, and adds that "this life system may to a certain extent be regarded as a flesh-and-blood lottery. It is uncertain in its operation, because its fundamental principle is the great uncertainty of life. A plot of land is leased to a man as the site for a building. He does not obtain the land for a specific period. He builds his house, but he holds it only so long as the three lives set up against it continue in the flesh. The insecurity of such a tenure is palpable. Lives 'drop off,'—often unexpectedly,—the property reverts to the landlord, and so the builders of the house, or their successors, lose the property which their own means and enterprise, or thrift, had been instrumental in providing. And not only has it been customary to lease houses in this way; farms have been similarly leased, and one can sincerely appreciate the grievances of some of the farmers who have fallen unexpected victims to the vicissitudes of the system. On one estate in West Cornwall five farm leases on sets of lives fell 'in hand' within the space of ten years."

A Rate-Supported School of Music.—The first provincial school of music connected with the Royal College of Music is that at Watford, and it is both interesting and in a measure important to note that this local school of music is an offshoot of local action taken under the Public Libraries Act. This Act, revised as it has been in 1866, 1867, 1871, and 1877, so far as it concerns England, does not provide for the "management, regulation, and control" of schools of music in so specific a manner as does the Public Libraries Act, amended in 1877, for Ireland. Nevertheless, by a liberal interpretation of the term "schools for science and art," the local authorities and ratepayers of Watford have concluded in favour of recognising music as an art or a science or both. A public basis and some guarantee of permanency are thus secured.

Strike of Masons at Lancaster.—A number of working masons went out on strike on the 12th, in consequence of their employers refusing to adopt the fifty-four hours system. It is stated, however, that they have no fund to which they can appeal, and the strike is not regarded as serious.

Mr. Hodder Westropp will publish shortly, through Mr. Elliot Stock, a volume of Promenade Lectures on Roman Archaeology, treating of the city and its buildings in pre-historic and Imperial times.

The Westminster Old Vestry Hall and the Free Library.—The erection of the new Westminster Town-hall in Chapter-street, off Victoria-street, for the use of the joint Vestries of St. Margaret and St. John and the Westminster District Board of Works, has resulted in the Commissioners of the Westminster Free Library having obtained the full control and management of the old Vestry-hall in Great Smith-street. For many years past the Westminster Free Library (which has been in existence twenty-six years, and was the first established under the Free Libraries Act) has been located in a portion of the Vestry-hall; and now that the Commissioners are in full possession of the building it has been internally altered and re-arranged, so as to greatly increase the accommodation for readers and for the storage of books. The reading-room now contains, with galleries, ample room for casual readers. The increased amount of room now acquired has enabled the Commissioners to set apart a reading-room for the use of ladies only, and a new board-room for the use of the Commissioners has been provided. We are told that the library contains a great number of valuable books which have from time to time been contributed by authors and others, and that it includes the extensive private library, rich with literary treasures,—of the late Dean Stanley, together with contributions from the late Dr. Milman, the late Lord Hatherley, and many other distinguished men.

New Reredos, St. Michael's, Aber-gavenny.—Mr F. Baker Gabb, Private Chamberlain of his Holiness Leo XIII, has generously presented this work of art to the church. The reredos has been executed from the designs of Mr. Edmund Kirby, of Liverpool. The work includes a considerable number of sculptured figures. The church being dedicated to St. Michael, the central figure is that of the great Archangel, all in armour, and striking the dragon, rising above all, and standing against the central mullion of the east window. On either side of this figure, and in front of the other mullions, are the six other archangels, with their symbols,—St. Raphael, with staff, bears a fish in one hand; St. Gabriel carries a lily; St. Uriel is holding a scroll and book; St. Chamael, resting on a staff, carries a chalice; St. Zadkiel (held to be the angel that appeared to Abraham on the Mount) holds aloft a sacrificing knife; while the seventh, St. Josephiel, brandishes a flaming sword. The lower portion of the design consists of arcading, filled in with adoring angels, the columns carrying the arcading being of polished marble. The tabernacle and throne form an important feature in the design, the foot of the throne being supported by angels, while the throne itself is richly decorated with carving and tracery. The style of the reredos is of the Late Decorated period, and is of the character which received its best and fullest development in the West of England. The execution has been entrusted to Mr. A. B. Wall, North-place, Cheltenham.

Barrow-in-Furness.—We have received from Mr. W. H. Fox, Borough Engineer and Surveyor to the Corporation of Barrow-in-Furness, his annual report, showing the nature and extent of the work carried out during the year ending August 31st, 1883. The report, which is most admirably and systematically made out and got up, gives evidence of the carrying out of a great deal of valuable practical and sanitary improvement and extension during the year. Much attention has been given to drainage works, and to the cleansing and flushing of sewers, and their ventilation, in regard to which important matters the Borough Engineer seems to be fully equal to the occasion, and we hope his enlightened views will be cordially supported by the corporation authorities.

The Salt Deposits at Middlesbrough.—The Newcastle Chemical Company (Messrs. Allbush & Co.) have now got down 1,027 ft. with their first bore hole at Haverton-hill, opposite Middlesbrough, and expect, as they have reached salt shale, that on boring another dozen feet they will obtain a core of salt. The company have gone down with their second bore hole nearly 600 ft. It is their intention to put down other four bore holes.

The Architectural Association will commence its session for 1883-84 by holding a *conversazione* in the galleries of the Royal Institute of Water-Colour Painters, Piccadilly, on Friday evening, October 26, at eight p.m.

A Year's Building Work in Glasgow.—Lord Dean of Guild Stephen, whose term of office has now expired, took the opportunity, at his Court in Glasgow, on the 4th inst., of reviewing the building trade in the city during the past year. Twelve months ago, he said, he had occasion to point out that from 1878 there had been an unbroken decline in the amount of work sanctioned by the Court, until in 1881 the report showed only a total valuation of 307,640l., but that 1882 had seen the turn of the tide, the aggregate that year being 378,690l. He was glad now to be able to say that the rise had been continued, the amount in the year just closed being 594,943l.; and if the municipal building plans (which had been considered by the liners, and came before the Court that day for final decision) had been included, their valuation being 250,000l., the total for the year would have been swelled to 844,943l. While the unoccupied houses twelve months ago amounted to 11,804l., equal to 9.86 per cent. of the whole number then in existence in the city, it was now reduced to 9,421, or 7.84 per cent. of the present dwellings. The greatest advance in the year's linings was under the head of warehouses, stores, and workshops, the valuation of these being 291,832l. compared with 154,755l. in the previous year, showing an increase of 137,077l.

The Hudson River Tunnel.—The Hudson River Tunnel, which is being bored by the compressed air system, is progressing better now than at first, and a good part of the work has already been accomplished. There are to be two tunnels under the river, each 17 ft. high and 17 ft. wide, and one of these has been completed for a distance of 1,600 ft. from the New Jersey side, and the other for 540 ft. The single tunnel on the New York side has been advanced 170 ft., and is now fairly under the river. The distance between bulkheads at the place of crossing the river is a little over one mile, so that one tunnel has been completed for about one-fourth of the distance, and the total length constructed is nearly half the span of the river. In the boring compressed air is used to prevent the leakage of water through the sand and dirt from the top and sides of the tunnel, until an iron lining can be put in place, and this is then supported by heavy brickwork forming the walls and arched ceiling of the completed tunnel. Several accidents have occurred from the blowing out of the earth walls, but there appears to be less difficulty now from such accidents than in the early stages of the work.

Proposed Zoological Gardens for Liverpool.—Messrs. W. Sugden & Son, of Leek, the architects to the Liverpool Zoological Gardens Company, have submitted to the directors a report (illustrated by plans, photographs, &c.) on the principal foreign Zoological gardens on the Continent, which they have visited on behalf of the company. They conclude by saying that the area of the Liverpool Zoological Gardens, as at present laid out, will be nearly thirty acres, which it is believed will be ample for a considerable time to come. The increasing tendency in this country to adopt Continental ideas in regard to the minor graces of life, and in harmless amusements, runs in favour of such public provisions as zoological gardens.

A Japanese Theatre Disaster.—Reports received from Yokohama announce that a fire, resulting in serious loss of life, occurred about the end of August in the theatre at Katamotomura, Kamada Gori Sameki. The building was filled with people during a performance, and being of a highly inflammable construction, the flames spread with awful rapidity, and enveloped the theatre in a few minutes. In an instant after the alarm there was panic, and desperate, though in many cases vain, attempts were made to get out of the theatre. Fifteen adults and sixty children were killed, and over one hundred persons seriously injured.

Devonport.—In connexion with the parish of St. Paul, a new mission-room has just been opened, built from the plans, &c., of Mr. J. P. St. Aubyn, architect, London, by Mr. Martin, George-street, Devonport. The room is 50 ft. by 30 ft., and capable of seating about 300 persons. The ventilation has been carefully provided for, there being five Colthouse & Symons's ventilators fixed in the roof. At each end of the room there is a large open fireplace, fitted with Leamington bars and Milner backs. The cost has been about 500l., and the clerk of works is Mr. Luff.

Leeds Town-hall.—During the last few weeks the Mayor's suite of rooms has been undergoing a thorough renovation. The ceilings of the dining-room, ante-room, and parlour, have been covered with a geometrical design in raised flock, and painted in light shades of colour. The large ornamental centre flowers and cornices have been painted in various tints and richly relieved with gold. The frieze under the cornices and reveals to recesses are very effective, being in bas-relief in several colours, with portions gilded. The walls have been hung with a handsome paper in olives and gold. The woodwork has been repainted in harmonising shades of colour, and relieved with gold. The drawing-room has been treated throughout in a corresponding manner, but in much lighter colours, cream and fawn tints prevailing, the walls being covered with a fine floral design on gold ground. The woodwork is highly finished in enamel shades, with the mouldings gilded. The window cornices, console-table, and carved chairs have been entirely regilded. New door furniture has been fixed throughout, in designs of *répoussé* polished brasswork, with excellent effect. The work has been carried out by Messrs. Frederick Jackson & Co., of Wellington-street, Leeds.

The New Palace of Justice, Brussels.—On Monday last the new Palace of Justice at Brussels, one of the largest and most remarkable constructions of modern times, was opened with much pomp. The palace, placed in a commanding situation in the most elevated part of the town, was commenced in 1866. The architect, M. J. Poelaert, who had made the plans and directed the work, has unfortunately not seen its completion. Since his death, in 1879, the works have been directed by M. Wellens, engineer in the service of the Government. The cost of the building has been 45,000,000 francs. The central hall (*Salle des Pas Perdues*) measures 3,000 square metres, and is 85 metres high, while its roof opens into a gilt crown terminating in a cupola at a height of 97½ metres. The palace contains, besides, 27 large and 245 smaller halls for the different services, and eight courtyards. The outside height up to the crown on the cupola is 118 metres. We gave a large exterior view of the building in our number for August 14, 1880.

The Late Clerk of Works at Truro Cathedral.—It is pleasing to find that the Building Committee of Truro Cathedral have justified their respect for the late Mr. J. Bubb's memory by erecting over his grave, in the cemetery near to that city, a fine coped body stone, in grey Cornish granite. It is surmounted by a well-proportioned cross of ancient outline, with polished faces. At the head and under the monogram of "I. H. C.," runs the record, in raised letters:—"James Bubb, born April 10, 1841. Died May 17, 1882." And around the sides, in similar lettering, "First Clerk of Works to the Cathedral. Buried on the second anniversary of the foundation. Labour that proceedeth of love." The cost of the memorial has been about 100*l.*, and the work has been most carefully executed.

Where the Fault Lies.—What is it that makes a city dirty? The careless habits of its thousands of people. What or who does the gross expect is going to "clean the city?" The Health Department, with a paltry appropriation, and a few men, horses, and wagons? It cannot be done in that manner. Instead of a little cry of "Clean the City," let there be loud admonitions as "Man, wash thyself"; "Clean your yards"; "Burn your refuse," and, "Co-operate with the health authorities." Individual sanitation is what is needed to avert cholera.—*Chicago Sanitary News.*

The Turners' Company.—The exhibition of this Company will be held at the Mansion House on Tuesday, Wednesday, Thursday, and Friday, 23rd, 24th, 25th, and 26th inst. The prizes will be distributed on the latter day by the Lord Mayor. The Baroness and Mr. Burt-Coutts, and others, have contributed prizes. Tickets for the exhibition can be obtained of P. Pigott, hon. secretary, 36, Southampton-street, Strand.—*City Press.*

Mr. and Mrs. German Reed's Entertainment.—The management will produce on Monday next, October 22, an entirely New Musical Etch, by Mr. Corney Grain, entitled "On the Thames;" and a new after piece, by mold Felix, music by George Gear, entitled "A Water Cure." "Treasure Trove" will still retain its place in the programme.

The Abbey Gatehouse, Bristol.—The Dean of Bristol has made an appeal to his fellow-citizens for means to preserve the old Gatehouse in College Green. Like many other things ancient, this relic of Norman architecture is showing manifest signs of decay. "In the course of last month" (says the Dean in his letter to the Mayor), "it was notified to me that portions of the south face of the archway had fallen, and that other portions were so ready to fall that it had become necessary, for the sake of safety of those passing through the gateway, that they should be removed. This was accordingly done." The niches are now nearly all empty. The shrines are there, but the saints are turned to dust. Bristol certainly ought not to let its graceful Abbey Gatehouse disappear, of which, according to Mr. Christian, architect to the Ecclesiastical Commissioners, there is imminent danger unless something is done, and done soon. "Portions of the surface [he writes] are so loose and disintegrated as to be a source of considerable risk to passengers underneath; and it is quite certain that, if something be not shortly done, every trace of the original design will be obliterated." This passage occurs in Mr. Christian's report to his employers, and we wish we could add that the Commissioners had given him prompt orders to restore the work to its original state, seeing the Commissioners are the owners of the property. But the Commissioners, as the *Bristol Times* observes, are not a sentimental body:—

"Their veneration for antiquity and architectural monuments never leads them to any gushing acts of expenditure; and in this case all they are willing to contribute to the restoration is the sum estimated to be sufficient to break down the old carved wall on the south side, and provide a plain surface wall in its stead. In other words, they cannot help spending 250*l.* to prevent a verdict of manslaughter being returned against them for some crumbling St. Augustine in stone cracking the skull of a passer-by; but they leave to the citizens at large the business of finding the further funds necessary to restore to its primitive beauty the grand old gateway which has been, 'tyme out of mynde,' the admiration of strangers."

Canals for Transport of Heavy Goods. The *Mining Journal* lends the weight of its authority to views which have been more than once fully set forth in our own columns. The battle of the gauges having long since been set at rest, it needs (says our contemporary) no very keen perceptive faculty to predict that before very many years have elapsed, the battle of railways v. canals for the carriage of minerals and heavy goods will have to be fought with almost equal tenacity. The commerce of the country has grown to such enormous proportions, and the railway freights are so excessive, that trade is considerably hampered by the want of greater and cheaper facilities of carriage. If the various railway companies would only read the signs of the times they would, wherever possible, lay down a separate or special goods line, thereby securing greater safety, quicker despatch, and reduced fares, and at the same time, it would prove one of the most powerful arguments that they are willing and able to provide for every possible contingency. Some of the great trunk railways have already adopted this course, but there must be a general movement in this direction if the ever-growing demands of the great manufacturers and of commerce generally are to be satisfactorily responded to. The opinion is gaining strength every day that, for the carriage of heavy goods, canals possess advantages over railways besides that of mere cost of transit. The fact that boats are able to stop almost anywhere gives canals a decided advantage over railways. These facts seem to be far more generally recognised in commercial cities now than a few years ago; and we may expect to find the growth of canals far more rapid than hitherto.

Ceramic Art Exhibition at Brighton.—On Saturday, the 6th inst., an exhibition of paintings on china and terra-cotta was opened at the Brighton Aquarium. The collection includes upwards of 600 specimens, 402 of which are for competition, and sent in by professional and amateur artists, and the remainder lent by Messrs. Howell & James, of Regent-street.

The Fitzwilliam Museum, Cambridge.—Professor Sidney Colvin, who has for some time held the office of curator to this important Museum, has resigned. The duty of selecting a successor in the office is understood to rest between the Syndicate of the Fitzwilliam Museum and Professors Colvin and Gardner.

Moral Influence of the Habitation.

We extract the following from the annual report of the Howard Association:—"That accomplished sanitary and medical authority, Dr. Alfred Carpenter, of Croydon, publicly remarked, in August, 1883, on a social injustice outside prison walls, tending to further grave crime, by gross neglect of the evils of overcrowding and intemperance. He said that even the authorities are not free from blame and responsibility. He specially referred to a recent horrible murder at Croydon, and showed that the small house where it occurred was crowded with two families. 'They had not a single stick of furniture in the house, a door laid upon a few bricks being used as a kind of bedstead. The accused really lived as a wild beast, and was a wild beast, and he was not the only one in the parish of Croydon by a great many.' If convicts are thus produced, the punishment should at least recognise the partial responsibility of others."

The Alhambra Theatre.—The gas arrangements for lighting the New Alhambra Theatre, Leicester-square, are now in progress, from special designs made by the architects, Messrs. Perry & Reed, including a new improved flash-lighting arrangement for the front verandah. The stage lighting will also be fitted with their patent flash-light system for lighting and extinguishing the whole of the stage lights instantaneously. The work is in the hands of Messrs. Vaughan & Brown, who are also supplying their improved stage gas-water joints, and large gas-holder tanks for their new lime-light arrangements, which they believe will be a great improvement and precaution against fire.

The Tuileries.—The last stone of the Tuileries has now been removed, leaving an uninterrupted view from the Place du Carrousel to the Arc de Triomphe.

TENDERS.

For the superstructure of Fitzalan Chambers, Arundel-street, Strand, for the Law Land Company, Limited, Mr. J. Dunn, architect. Quantities supplied by Messrs. Nixon & Raven:—

Patman & Fotheringham	£8,575 0 0
Boye	8,247 0 0
Asby & Horner	8,220 0 0
McLachlan	8,140 0 0
Brewster	7,968 0 0
Colls & Fen	7,979 0 0
Patrick & Son	7,900 0 0
Morter	7,793 0 0
Chappell	7,468 0 0

For decorations and alterations to 31, Orington-square, Messrs. Glaser & Sons, surrey, 41, Charing-cross, Howard Bros. £79 10 0
Clarke & Mannooch (accepted) 171 0 0 |

For the erection of a new factory at Diana-park, Euston-road, N.W., for Messrs. George Rowney & Co., Messrs. Ebbetts & Cobb, architects, Savoy House, 115, Strand.—H. Baylis. £4,357 4 1

For rolled joints, &c. A. D. Dawbney £415 0 0 |

For cast concrete slabs, &c. Eureka Concrete Co. (Limited) £257 1 0 |

For alterations, &c., to shop, 61, London-wall, for Mr. F. W. Warrington. Messrs. Ebbetts & Cobb, architects, Savoy House, 115, Strand:—

W. Holl	£350 0 0
J. Hunt	301 0 0
Richardson Bros.	300 0 0
H. Baylis	275 8 6
Steel Bros. (accepted) ..	218 0 0

For the erection of detached villa residence in Park-road, Hounsey, for Mr. E. Warner. Mr. John Farrer, architect, Finsbury-pavement:—J. Harper, Hackney (accepted).

For the erection of manufactories and offices at Marsh-hill, Hounston, for Dr. Gildersleeves. Mr. G. Elyton, architect, The Hawthorns, Church End, Finchley:—

J. Crabbe, Kingsland	£1,900 0 0
Brightmore, North Woolwich	4,325 0 0
J. Hubbard, Poplar	4,342 0 0
J. Lewis, Hackney	4,282 0 0
J. A. Olley, Forest-hill	4,194 0 0
B. T. Wood, Hackney	4,091 0 0
Larter & Son, Dalston	4,042 0 0
S. Harworth, Kingsland	3,997 0 0
J. Wall, Kentish Town	3,990 0 0
Perry & Co., Bow	3,975 0 0
Wright, Hackney	3,929 0 0
Forster & Dicksee, Rugby	3,883 0 0
Shur-ur, Clapton	3,879 0 0
J. Hall, Poplar	3,834 0 0
Killingbeck, Camden Town	3,793 0 0
W. Baugs, Bow	3,685 0 0
J. Harper, Hackney	3,572 0 0
Knox Bros.	3,480 0 0
Aldridge & Jenvey, Peckham	3,361 0 0
O. T. Gibbons, Ipswich	3,000 0 0

For additions and alterations to Glen Island, Maidenhead, for General Sir R. Palmer, Bart. Messrs. Oldham, Chambers, & Willins, architects, Norwich:—J. Tyerman, Walworth (accepted).

For a fisherman's village at Overstrand, Cromer, Norfolk, for Lord Suffield, Messrs. Oldham, Chambers, & Willins, architects.—Contract No. 1.—W. Guymer (accepted).

For the erection of stables, &c. Tufnell Park, for Mr. Alfred Edean, Park-road, Holloway. Mr. Geo. Blizard, architect. Quantities supplied.—

Knight	4270 11 0 1
Castle	425 0 0
Addis	400 0 0
Bray & Pops	395 0 0
W. G. Baker, Battersea	390 0 0
Dean	390 0 0
Pratt & Smith	350 0 0
Stevens	350 0 0
Cooper	348 0 0
Salz	345 0 0
Ridout	337 10 0
Hawkins	320 0 0
Hack	320 0 0
Stanyer	319 0 0
Taylor	299 0 0
Myring	295 0 0
Warr, Croydon	285 0 0
Pyle (accepted)	285 0 0
Thompson & Co.	280 0 0 1

For stabling for 140 horses, and other buildings in Edgware-road, Paddington, for Mr. Henry Ward. Mr. Gundry, architect. Quantities by Mr. Scrymgeour.—

Langridge	£11,970 0 0
Downs	11,580 0 0
Tyerman	11,529 0 0
Woodbridge	10,990 0 0
Lovatt	10,980 0 0
Drew	10,705 0 0
B. N. Smith & Son	10,677 0 0
Fish, Prestige, & Co.	10,580 0 0
Anley	10,525 0 0
Manley	10,377 0 0
Kraus	10,239 0 0
Allen & Sons	10,133 0 0
W. Brass	10,063 0 0
Turtle & Appleton	9,899 0 0
Bolding	9,870 0 0
Watson	9,800 0 0
Matthews	9,654 0 0
Hobbs	9,600 0 0
Foster & Dicksee	9,548 0 0
Smith	9,500 0 0

For two semi-detached villas, West Cliff, Whitley, for Mrs. Atlay. Mr. J. Walker, architect, Whitley. Quantities by the architect.—

Langdale & Sons, Whitley	£23,891 0 0
J. White, Whitley	3,510 0 0
Petch & Fox, Scarborough	3,403 0 0
R. Brown, Whitley	3,376 0 0
J. Gladstone, Whitley	3,117 0 0

Accepted Tenders.

J. White (excavator, drainer, mason, bricklayer, joiner, and slater)	£2,917 2 6
B. Brown (plumber and glazier)	247 14 0
J. Bolton (plasterer)	235 8 3
G. Freeman (painter)	87 17 8

For works at the City of York, York-road, King's Cross, for Mr. Patrick. Messrs. Bird & Walters, architects.—

Fatman & Fotheringham	£1,583 0 0
N. Schlatter	1,030 0 0
Williams & Son	945 0 0
F. Mark	900 0 0
J. Anley	890 0 0
C. Goad	880 0 0
Jackson & Todd	845 0 0

For erection of detached residence, boundary-walls, laying out garden, &c., at Bromley. Mr. F. Stocker, architect, Lewisham.—

Fayne	£1,643 0 0
Crossley	1,493 0 0
Kenard Bros.	1,470 0 0
Bolding	1,380 0 0
Allen	1,212 0 0
Harryman	970 0 0

For the erection of dwelling-house and offices, Randall-street, Battersea, for Mr. Thos. J. Holland. Mr. Thos. J. Holland, architect.—

Holland	£279 0 0
Plumbridge	275 0 0
W. G. Baker	232 0 0
Moore	175 10 0

For the erection of new farmhouse and offices for Rev. Hugh A. Stowell, Mr. E. W. H. Mason, architect, Derby. Quantities supplied.—

W. Walkerdine	£1,800 0 0
T. Bakewell	1,713 0 0
J. Walker & Sons	1,640 0 0
Neon & Sons	1,639 10 3
F. Slater	1,605 0 0
I. Porter, Derby (accepted)	1,534 0 0

For the second section of the alterations and additions to the Eastern Counties Aquarium for Idm. Colchester.—

Mason & Son, Haverhill	£9,733 0 0
W. Sindall, Cambridge	9,350 0 0
A. Dias, West Hampton	8,290 0 0
C. H. Oldridge, Colchester	8,238 0 0
W. H. Eade, Lexden, Colchester	8,201 0 0
G. Lee, Colchester	8,201 0 0
J. Greenood, Mansfield, Notts.	7,910 0 0
Everett & Son, Colchester	7,816 10 0
Foster & Dicksee, Rugby	7,666 0 0
G. Dobson, Colchester	7,578 0 0
J. & A. Brown, Braintree	7,525 0 0
A. Chambers, Colchester	7,500 0 0
R. S. Smith, Ipswich	7,494 17 0
W. Wood, Chelmsford	7,436 0 0
F. Dupont, Colchester	7,375 0 0
O. T. Gibbons, Ipswich	7,230 0 0
Grimwood & Sons, Salisbury	6,999 0 0

For alterations at the Elephant and Castle Theatre, New Kent-road, in accordance with the requirements of the Metropolitan Board of Works, for Mr. William Horsford. Mr. Frank Matcham, architect. Quantities by Mr. Frederick Thomson.—

Patrick & Son	£1,223 0 0
Patman & Fotheringham	1,073 0 0
Wall Bros.	890 0 0
E. Toms (accepted)	809 0 0

† If the theatre is closed for a fortnight.

† If the theatre remains open.

For alterations and refitting the Virginia Plant, Great Dover-street, Southwark, for Mr. Charles Deakin. Messrs. J. Saville & Son, architects.—

W. Royal (accepted).

To Contributors and Correspondents.

ALL LETTERS AND COMMUNICATIONS referring to LITERARY AND ARTISTIC MATTERS must be addressed—

"To the Editor of THE BUILDER,
43, Catherine-street,
Covent Garden, W.C."

And not to any individual by name.

V. W. R. & F. R. S. (under consideration)—J. T. R. T. C. M.—E. G. O. W. R. C. H. W. B. M. J. B. (will attend to)—B. & Co. (thanks, not desired)—E. K. W. H. J. C. T. W. H. (Burlington)—I. H. (thanks)—N. E. W. B. S. (thanks)—we were wondering what had become of it.—T. W. A. B. N. W. C. W. S. (next week)—A. B. C. (next week)—Constant Reader (next week)—G. E. R. (next week)—J. H. J. O. S. (not equal to what we want).

Correspondents should address the Editor, and not the Publisher, except in cases of business.

All statements of facts to lists of tenders, &c. must be accompanied by the name and address of the sender, not necessarily for publication.

We are compelled to decline pointing out books and giving addresses.

NOTE.—The responsibility of signed articles, and papers read at public meetings, rests, of course, with the authors.

CHARGES FOR ADVERTISEMENTS.

SITUATIONS VACANT, PARTNERSHIPS, APPRENTICESHIPS, TRADE, AND GENERAL ADVERTISEMENTS.

Six lines (about fifty words) or under..... 4s. 6d.

Each additional line (about ten words)..... 6s. 6d.

Terms for Series of Trade Advertisements also for Special Advertisements on fruit, &c. Complete sets, 4s. 6d. Sales by Auction, &c. may be obtained on application to the Publisher.

SITUATIONS WANTED.

FOUR Lines (about thirty words) or under..... 2s. 6d.

Each additional line (about ten words)..... 6s. 6d.

PREPAYMENT IS ABSOLUTELY NECESSARY.

* Stamps must not be sent, but all small sums should be remitted by Cash in Registered Letter or by Money Order, payable at the Post-office, Covent-garden, W.C. to

DOUGLAS FOURDRINER, Publisher.

Advertisements for the current week's issue must reach the Office before THREE o'clock p.m. on THURSDAY.

The Publisher cannot be responsible for DRAWINGS, TESTIMONIALS, &c. left at the Office in reply to Advertisements, and strongly recommends that of the latter COPIES ONLY should be sent.

TERMS OF SUBSCRIPTION.

"THE BUILDER" is supplied gratis from the Office to residents in any part of the United Kingdom at the rate of 19s. per annum, FORTHWITH. Remittance payable to DOUGLAS FOURDRINER, Publisher, 43, Catherine-street, W.C.

NOTICE TO ADVERTISERS.

Persons advertising in the *Builder* may have REPLIES ADDRESSED TO THE OFFICE, 43, Catherine-street, Covent-garden, W.C., FREE OF CHARGE.

Letters will be forwarded if addressed envelopes are sent, together with sufficient stamps to cover the postage.

Best Bath Stone.
WESTWOOD GROUND,
Box Ground, Combe Down,
Corsham Down,
And Farleigh Down.
RANDELL, SAUNDERS, & CO., Limited,
Corsham, Wilts. [Adv.]

Bath Stone.
Facilities for selection and quality unequalled, having upwards of

350,000 Feet Cube
In Stock of all known descriptions.
PICTOR & SONS, Box, Wilts. [Adv.]

Doubling Freestone and Ham Hill Stone of best quality, in blocks, or prepared ready for fixing. An inspection of the Doubling Quarries is respectfully solicited; and Architects and others are CAUTIONED against inferior stone. Prices, delivered to any part of the United Kingdom, given on application to **CHARLES THASE,** Norton-sub-Hamdon, Dorset. Somerset.—Agent, Mr. E. WILLIAMS, 76, Charlotte-street, Portland-place, W. [Adv.]

Doubling Freestone, Of best quality, supplied from their own Quarries and Kilns by **STAPLA & HANBY,** Stoke, Shropshire. Agent, Mr. H. MITCHELL, 6, Augustus-road, Hammersmith, London, W. [Adv.]

Asphalte.
Seysse, Patent Metallic Lava, and White Asphalte.
M. STODART & CO.
Office:
No. 90, Cannon-street, E.C. [Adv.]

Asphalte.—The Seysse and Metallic Lava Asphalte Company (Mr. H. Glenn), Office, 83, Poultry, E.C.—The best and cheapest materials for damp courses, railway arches, warehouse floors, flat roofs, stables, cow-sheds and milk-room granaries, tun-rooms, and terraces. [Adv.]

Immense quantities of
DRY WAINSCOT,
DRY MAHOGANY,
DRY WALNUT,
in all thicknesses.

B. J. HUDSON & SONS,
Whitfield-st., W., and Great Peter-st., S.W. [Adv.]

MICHELMORE & REAP
Manufacturers of

CHARLES COLLINGE'S PATENT.

COLLINGE'S PATENT HINGES
LEVER, SCREW, & BARREL BOLTS
Self-acting "FALL-DOWN" GATE STOPS,
and IMPROVED GATE FITTINGS of every Description.
36A, BOROUGH ROAD,
LONDON, S.E.

DISCOUNT TO BUILDERS.

ZINC ROOFING.

F. BRABY & CO.,

LONDON, LIVERPOOL, GLASGOW

VIEILLE MONTAGNE BRAND.

NO SOLDER.

NO EXTERNAL FASTENINGS

PARTICULARS ON APPLICATION. CHIEF OFFICE: 360, FUSTON ROAD, LONDON.

The Builder.

VOL. XLV. No. 2125.

SATURDAY, OCTOBER 27, 1933.

ILLUSTRATIONS.

The Church of Cross-St. Martin, Cologne (Double-page Engraving)	551
The Osmington Coffee Tavern, Paradise-street, Marylebone.—Mr. Charles Fowler, Architect.....	556
Street Architecture: 39, 31, and 33, Fleet-street and Falcon-court (Double-page Photo-Lithograph).....	558
St. John's Church, St. Leonard's-on-Sea, Chancel Screen (Double-page Photo-Lithograph)	560-561
Chimneys at Hampton Court	563

CONTENTS.

The Lessons in Perspective of Leonardo da Vinci	543	The late Professor Jordan, St. Petersburg	551	Building Patent Record	672
The Latest Discoveries in Palestine	544	Competitions	552	Science and Art Museum, Dublin, Competition	572
Proposed Harbours of Refuge, and the Principles on which their Sites should be Determined	545	Church of Cross-St. Martin, Cologne	552	Historical Chairs	572
Queer Clients	546	The Osmington Coffee Tavern, Marylebone	552	The Burlington House Chronicle	572
A Question of Figures and a Question of Art	547	Chancel Screen, St. John's Church, Upper St. Leonard's	552	Trees in Kensington Gardens	572
Continental Gatherings	548	London Street Architecture: Nos. 39, 31, and 33, Fleet-street, and Falcon-court	552	Chapel of St. John	572
Old Paris	549	St. John's Church, St. Leonard's-on-Sea, Chancel Screen	552	Southport: Damage to the Sea-wall	572
Retirement of Mr. Godwin from the Builder	549	Chimneys at Hampton Court	552	Provincial News	573
Notes from Birmingham	549	The Hollins Restaurant	553	Church Building News	574
The Late Mr. James A. Fyfe	550	Route Art	559	Drawing Church Building News	574
"Two Funnel" at the Victoria Coffee Hall	550	A Year's Building Work in Oxford	560	Stained Glass	574
The Rhind Lectures in Archaeology: The Roman Occupation of Britain	551	Architectural Association: Papers, &c., for Session 1933-34	561	Shells in Metal	574
		National Architectural Association	561	Lectures at the Parkes Museum of Hygiene	574
		British and Continental Architectural Society	561	Miscellaneous	574

The Lessons in Perspective of Leonardo da Vinci.

THE recent magnificent edition of a selection from the literary works of Leonardo da Vinci, edited by J. P. Richter, has numerous points of interest for students and lovers of the arts, and even especially for architects. In the present paper it is proposed to give an impartial appreciation of so many of the notes recovered from the difficult MSS. as relate to perspective. In the introduction to chap. ii., vol. i., by the editor, we are thus invited to the study:—

"The axioms as to the perception of the pyramid of rays are followed by explanations of its origin

and proofs of its universal application (58-69). The author recurs to the subject with endless variations; it is evidently of fundamental importance in his artistic theory and practice. It is unnecessary to discuss how far this theory has any scientific value at the present day; so much as this, at any rate, seems certain, that from the artist's point of view it may still claim to be of immense practical utility."

This is not a little bewildering; a theory of immense practical utility from any point of view whatever, must have a scientific value or a pretence to such value that demands discussion, inquiry, exposition. Utility which is immense can scarcely be a mere trick with no basis in truth and nature. It is common enough in practice, even in the superior arts, to work by rules without regard to the moment to reasons; by rules, of which the reasons are forgotten, or even were never learned. But the reasons exist all the same; they were the original authorities that established the rules and are to be found by one who takes the trouble to look them up or look into them. At least, if this is not the case, the rules are snares; the artist who employs them for help over one difficulty will pay dearly for confidence admitted too hastily on the strength of accidental advantage, by finding himself betrayed into a series of blunders, at a crisis of far more importance.

Let us look at the theory of perspective so far as propounded by Leonardo frankly in the face, and satisfy ourselves, if we may, how far in

truth it still has a claim to the attention of artists, such a claim as may make it worth their while if not to bestow time in eliciting it from the scattered notes of Da Vinci, at least to be thankful to those who will spare them the trouble.

The chapter which the editor places under the heading of Linear Perspective is made up of sixty-nine memoranda numbered 40-100, of various lengths, and occasionally illustrated by pen and ink sketches of the author.

The first nine memoranda comprise mere mathematical definitions of a point, a line, a surface, and so forth.

No. 50 deals with the theory of the pyramid of rays. Disregarding paragraphs which are mere repetitions, and as such were cancelled by the author,—and, as it appears, might have remained so, and their number, indeed, have been added to,—we have this definition as the kernel of the whole:—"By pyramidal lines I understand those which start from the superficial edges (= the outlines) of bodies, and converge from a distance to a single point in the eye, which receives all the points of the pyramids. Experience establishes that all things transmit their images to the eye by pyramidal lines, and bodies of equal size will make the angle of their pyramid larger or smaller according to the diversity of their distance, one from another."

The employment of the word "pyramid," and of the phrase "pyramidal lines" or "pyramid of rays," is confusing. The base of such a pyramid as Leonardo describes might be not only any regular geometrical figure, circle or triangle as readily as a square, but any figure whatever, however irregular, the outlines of a fragment of rock or of an oak-leaf, and these inclined at any angle whatever to the eye. The solid form bounded by such rays might as easily be a cone as a pyramid, and only rarely and exceptionally would be one or the other. There is no reason to suppose that Leonardo was confused by the awkwardness of his terminology, but it is necessary to indicate the confusion which it is likely to introduce, and especially to guard against the supposition that it so far clothes any special theory.

When the propositions as stated are freed from the ambiguity which did not trouble the author of them, we arrive at the simple and familiar principles,—that any two points whatever in the outline of an object are seen under the angles which they subtend to the eye; and that for a given dimension this angle becomes less and less as the object is removed to a greater distance. This law is set forth, demonstrated and illustrated in the notes (as 53, 55, 56) over and over again, as it would seem very unnecessarily, considering what we know of perspective as it was already in use.

The reading of the little treatise will be simplified throughout if we translate "pyramid" all but universally by "triangle."

In paragraph 52, Leonardo sets forth in effect that the sense of vision must reside in an indivisible point, as otherwise the rays by which an object becomes visible might be not convergent, but parallel, in which case no increase of remoteness would alter the angle under which it is seen, and a small object would not, by being brought nearer to the eye, conceal any more of a larger object beyond it than when in its first position.

The editor's marginal note to 55, 56,—"The relations of the distance points to the vanishing point," excites an interest and curiosity which are disappointed when we peruse the text. The distance points, which are so important in working out a perspective projection, are dependent on the distance of the eye from the plane of projection; but the author does not advert to this special distance or its application. What he sets forth, accurately enough in effect is this: the angles under which a given dimension will be seen by the eye in a fixed position, will become less and less,—will diminish, until any angle at all becomes indistinguishable,—when, as he oddly expresses it, the pyramids, or assumed triangles, will have no bases. The point in which these differences are lost, the vanishing point, he calls the point of diminution. It is, he says, directly opposite to the eye, wherever this may be placed, no otherwise than as a shadow follows the object that casts it. The sketch which is inserted in the book does not illustrate the text, and has a reduced chance of doing so when taken into account with the note supplied by the editor for the "easier understanding of it." What the text requires to be illustrated, if by any diagram at all, is stated unusually distinctly thus,—"If the eye is above an infinite number of objects all placed on the same level with the feet of the observer, one beyond another, the more remote they are the higher will be their projections on an intermediate plane, until they arrive at the level of the eye, but higher than this, never, though the series were extended to infinity."

There is clearly nothing here of the regulation of distance points by the employment of which given dimensions are measured off from lines which, as they retire to a vanishing point, are destitute of any uniform scale. Nor do we find throughout these notes any hint of a knowledge of this indispensable aid to the solution of the simplest problems of perspective; yet it is abundantly certified by the works of earlier Italian painters, that science had thoroughly been mastered up to this limit. It would be difficult to say that more knowledge was necessary for the practical solution of even the most complicated problems of perspective; but it seems pretty clear that the full value of the instrument in hand was by no means appreciated, and that certain problems were in consequence carefully kept clear of by painters from experience of the result of clumsy handling.

The fully generalised theory of the vanishing

point as competent to be seated in any part of a picture and referable to any variety of planes, is well in possession of professional practitioners, no doubt, but even yet is not to be found set forth lucidly and exhaustively, if, indeed, at all, in the usual elementary treatises. Science, it may be thought, which was not indispensable for the great Italian painters, may be assumed to be superfluous, and in any case assistance upon an emergency is to be had to order. Still, it is not to favour such conclusions that schools of art are instituted.

At the section numbered 58 we are carried off into a series of observations and speculations as to the origin and transmission of visible images which have but indirect relation to perspective. They serve, however, to explain how it was that Leonardo writes so persistently of visual pyramids where we should treat of lines and triangles. He speaks of his long pyramids as constituted by a collection of infinite rays, and (70) of direct and radiating lines sent off by objects, but does not seem to recognise this infinity as capable of being resolved into single rays. If he speaks of the relation of vision to transmissions through media of different densities, he does not exemplify it by the distortion of a ray, but of an image collectively. According to his view, all objects have the power in response to an attracting influence which resides in the circumjacent air, to throw off visible images of themselves in infinite directions, while yet they suffer no diminution of mass or energy. The case is analogous, according to

mirror, the path of such agency may be traversed at the same time in opposite directions with equal but opposed efficiency. Still it scarcely appears that the lucubrations of the artist in this instance were in any way conducive to the advance of a true scientific conception of the agency of light.

Section 83 gives a definition of perspective which only applies to practice under the more ordinary conditions:—"Perspective is nothing else than seeing a position beyond a transparent glass plane, on the surface of which all objects beyond it may be drawn; they may be prolonged by pyramids to the point of the eye so that the pyramids (that is, the convergent lines), are intersected by the glass plane."

A little further on (90) we have an attempt to define a difference between perspective as simple and as complex:—"Simple perspective is that which is constructed by art on a surface [site] which is equally distant from the eye in every part; complex perspective is that which is constructed on a surface [site] of which no parts are at an equal distance from the eye."

This definition taken literally is unintelligible; it seems as though the writer intended to define the difference of a perspective projection executed upon an irregular surface, and one upon a plane of which all the parts are at an equal distance from a parallel plane passing through the place of the eye. This latter, of course, is the perspective problem which is applicable to all pictures upon a uniform plane, whether, as is most usual, that plane is a vertical wall or a

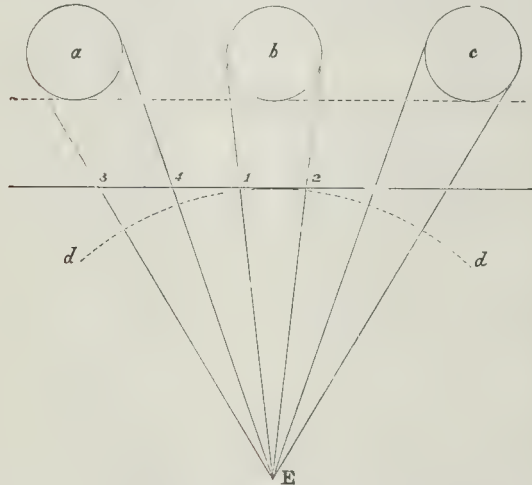
true point of view, and all the others will have to endure the seeming falsification of a nature. In consequence he is fain to renounce the adoption of a single point of view,—the principle of what it now appears that he means by complex perspective (*composta prospettiva*), and decides to hold to what he regards as comparatively simple perspective, which makes no allowance for the plane itself that carries the perspective drawing, being in perspective,—being subject to foreshortening. In this case his "plane of delineation" would be no longer a plane, but a circle, as shown by the dotted line *dd*, of which the assumed distance point is the centre, and the perspective width of the objects at different distances is determined independently of the foreshortening of the surface of the picture itself.

The right or the wrong of this view is scarcely to be tested theoretically. A better chance of discovering whether there is so much in it that an occasional compromise may be of advantage, would be given by examining the works of painters who would certainly have been led to adopt it,—theory or no theory—if it gave any true pictorial enhancement of effect. By the strict rule of linear perspective the same height should be given on the drawing to a man at the door of the Monument and a man vertically over him at the edge of the gallery above; it would be left to the foreshortening of the drawing as we look at it from the true point of view, the perspective distance, to reduce the angle under which we see the upper figure to the same reduced proportion which it bears, in fact, to a spectator on the spot from which the drawing is taken. There is considerable appearance that in some of Turner's landscapes the painter had a feeling for the value of some compromise, and indulged it by bending downwards the lines of parallel clouds towards the extreme right and left of his compositions.

But it must be enough here to have stated the problem in justice to the great Florentine, whose notes on perspective, it must be admitted, are not otherwise fraught with much more interest than must always cling to even the most insignificant or inconsequent memoranda of so great a man.

THE LATEST DISCOVERIES IN PALESTINE.

THE October Quarterly Statement of the Palestine Exploration Fund contains much matter of extreme interest, and the light which it throws on the subject of ancient epigraphy is at once unexpected and decisive. There is also a brief abstract of what has been already published on the geology of Palestine; of some recapitulation of which the story of a recently-collapsed speculative effort shows the utility. But in the interest of archaeology, of exploration, of sound learning, and of the Exploration Fund itself, we desire to put on record a formal protest against that adoption of the method known as that of "Penelope's web," which seems to be so much in favour with the editor or editors of the Quarterly Statements. When the Fund was first started, the definite knowledge attainable as to the Holy Land was small, and was principally to be gathered from certain standard, though but little consulted, works. Following lines which were first suggested in the columns of the *Builder*, the labours of the Fund have steadily pursued the great object of acquiring definite knowledge apart from theory. In the three several departments of the exhaustive examination of literary testimony, the etymological information to be obtained from the mastery of not only the Hebrew, but also the Arabic tongue, and the prosecution and completion of an admirable and exhaustive survey, the officers of the fund have been, year by year, restricting the limits of the imaginative and the doubtful, and supplying the solid basis of ascertained fact. Thus many things which, fifteen or twenty years ago, were matters of discussion, and as to which almost any attentive reader of Scripture might think that he had something to say, are now so far ascertained that any attempt to re-open them can be regarded only as a mark of ignorance. The two great quarterly journals have introduced to the English public sources of Hebrew learning, of date equal and even anterior to the New Testament; the *Quarterly Review* presenting an imaginative and fascinating picture of the Talmud, from a Jewish standpoint, and the *Edinburgh Review*



his assumption, to the ascribed power of muck to diffuse a very strong odour and yet not part with a particle of its substance. In the attractive power of the loadstone he finds a parallel to that which the air exerts, not only over the visible images of things, but over their very nature, as the heat and light of the sun.

"Just as a stone flung into the water becomes the centre and cause of many circles, and as sound diffuses itself in circles in the air, so any object placed in the luminous atmosphere diffuses itself circularly and fills the adjacent parts with an infinity of its likenesses and is apparent complete everywhere and complete in every smallest part."

This conception of the emission by a body of an infinite succession of images in infinite directions, each "conveying the quality, colour, and form, of the originating cause," is repeated in slightly different terms over and over again in these memoranda. It is possible that Leonardo was justified in dwelling upon it, as whatever may be thought of his explanatory theory, it pointed to a matter of fact of which the marvellousness may have been even less distinctly appreciated than it is at present among the unscientific. What, indeed, can be more wonderful than that coloured light reflected from a single object can produce sensitive and chemical effects in every direction at the same time; that its path is being crossed at an infinity of angles by reflections of light of all manner of colours in full exercise of the same power; nay, that as in such a case as that of mirror opposed to

picture against such a wall, or on a flat ceiling, or on a flat surface at any intermediate angle. But a surface equidistant in every part from the eye in a given position, could only be the interior of a sphere with the eye in the centre.

Dr. Richter complicates the difficulty by his version. He translates the first *sito* as "vertical plane," and the second as "ground plan."

But, as we go on, it appears that Leonardo conceived it to be possible to produce a natural effect by a perspective drawing executed upon the principle, if so it can be called, of shifting the place of the eye while preserving an equal distance from the vertical plane. He is led to this suggestion by observing what struck him as an anomaly in a projection executed from a single point of view, and which certainly merits attention. He illustrates this difficulty by a sketch which it is desirable to reproduce. Let *a*, *b*, *c*, be three bases of columns, and *E* the place of the eye. The central base *b* will be nearest to the eye, but the interval 1, 2, of the rays as projected upon the plane of delineation will be less than that of the more remote base 3, 4, which seems to contradict the law of diminution by distance. It is true that if the spectator's eye is accurately placed at *E* (*a uno spiracolo*) then the anomaly is corrected by the foreshortening of the plane of the picture itself, and the projection of the nearer base is found to be seen, as it should be, under the larger angle. But, Leonardo pursues, when many men are contemplating the same work of art at the same time, the eye of only one can be at the

showing the position which a knowledge of the Mishna must always occupy in any sound and serious criticism. "Tent-work in Palestine" has acquainted the public with the unfinishing toil of the expedition, and with much of the definite result obtained; while the Memoir and the one-inch Map have given to the student the means of acquiring a very thorough acquaintance with the topography and with the architectural remains of the Holy Land. "The Handbook to the Bible" has been the first work of a positive character produced as an aid to the study of the Scriptures, as the writers have entirely declined to enter into any subject of mere opinion. It has placed within the reach of all classes the definite outcome of positive investigation down to the date of its third edition; and the beautiful maps and plates with which the work is illustrated are of the same definite and certain authority.

In face of this great work, for which no small gratitude is due to the Exploration Fund, as the suggesters and supporters, where they have not been the controllers, of research, it is nothing short of pitiable to see the gay and light-hearted re-issue of the old, unlearned speculations, under the cover of the "Quarterly Statement." If definite advance in our knowledge has not been secured, the whole work of the Fund has been idle. If it has been secured, the committee owe it both to their own character and to the unlearned world at large, not to allow questions that are definitively settled to be treated in their columns as if they were yet open.

These attempts to invalidate the good results obtained by years of patient research may be said to come to a head in the publication, in the October Statement, of a fancy plan of ancient Jerusalem, without any scale, which reduces the area of the city to about one-fourth of the size of the well-ascertained temple inclosure itself. The ordinary size of a village in Galilee is about twenty acres; and there are many of nearly double that size. Ancient Tyre, restricted in its area as it was from its position, covered 100 acres; modern Jerusalem contains 200 acres within the walls. The book of Nehemiah is thrown overboard for the sake of this prochet with as little remorse as are Josephus and the Survey of Jerusalem; and the "thousand cubits on the wall unto the dung-gate" (iii. 13) are reduced by the "amended" plan to less than a third of that distance. It would be a sheer waste of time to discuss what the writers call the "arguments" for the hypothesis that ancient Jerusalem was considerably less in extent than Lincoln's Inn-fields, or of a size to allow only about a square yard a piece to the "whole congregation" of 42,360, exclusive of manservants and maid-servants, whom Ezra gathered as one man into the street that was before the water-gate. The rock-levels of the site, the enormous heaps of rubbish, the detection of so many portions of ancient wall, the site of Hippicus, the accounts of Tacitus and of Josephus, the discoveries of Colonel Wilson, Colonel Warren, and Captain Conder, are all contemptuously ignored; and that, moreover, in neglect of the fact that the position of a culvert, or small tunnel, recently discovered, and not yet explored, is alone enough to solve the slight literary difficulty on which this enormous mass of assumption is based. A comparison of the sketch at p. 215 of the "Quarterly Statement" with the carefully-drawn map of Ancient Jerusalem at p. 334 of the "Handbook to the Bible" is enough to show the ridiculous character of the former. That, however, is the affair of the author of the sketch. We are more concerned with the fact that, as appearing in the "Quarterly Statement," such a production is mischievous, as tending to imply that the whole work of the Exploration Fund in this part of the survey is absolutely without any valuable result. If the Council of the Fund think it right to publish every attack that may be made on the most valuable results of their work, the least that they can do with justice is to make some distinction in type between the positive and the imaginary contributions to the literature of the case.

The history of the amusing scandal of the Shapira manuscripts is to be found in this number of the Statement; not, indeed, as an original communication, but as it was published from day to day in the *Times*, the *Academy*, and the *Athenæum*. The most curious part of the whole story is the fact that so tedious, solemn, and quasi-learned an investigation should have been conducted, in a case where the mere fact of the material used, as compared with the date

ascribed to it, was conclusive with men who knew anything of paleography. The absolute and sudden collapse of the whole affair, at a time when so much further discussion was promised, or rather threatened, and the publication of so many columns of bogus Hebrew in an English journal, are among the droll points in a case of but too much rascality.

The chapter on Hebrew Inscriptions is chiefly of value as illustrating and advancing the subject so admirably treated by Dr. Taylor in his recent work on the Alphabet. The literary information given by a name on a tomb may be absolutely *nil*, while the epigraphic information,—that afforded by the form of the letters,—may be very great. Connected with the alphabetic forms interest attaches to a collection of twenty-three tribe marks, one of which, that of the Rasheideh, an old tribe now nearly extinct, in the vicinity of Engedi, is the astrological and astronomical symbol of the planet Venus, and is found in Assyria as early as B.C. 1500. There are also copies of four inscriptions on limestone slabs which are now in the Latin Patriarchate at Jerusalem.

Very conspicuous is the silence of the "Quarterly Statement" as to a subject which for a few weeks attracted much the same kind of attention as the Shapira manuscripts. On the 5th of May we referred to the suggested Jordan navigation, and pointed out in a few words why it could be nothing but loss of time to attempt the revival of a scheme which received a *quintus* nearly thirty years ago. But the eagerness of a portion of the public seems to be in direct proportion to the impracticability of any new scheme, and we have been credibly informed that enough money was collected for the starting of this impracticable project as would suffice to carry on the true work of exploration for more than a year. So unhesitating were the statements brought forward, at a time when the Survey Map of Palestine was alone enough to show the impracticability of the project, that it was not until the data of Lartet's reconnaissance of the Sinaitic Hills were brought forward, and it was shown that a single mile of the proposed canal to the south of the Dead Sea would require 150 millions of cubic yards of excavation, that the plan finally collapsed, not without some anger on the part of the promoters against the professional men, civil and military, who had brought forward the unwelcome truth.

The most valuable part of the contents of the new "Quarterly Statement" is the paper on the Hamathite inscriptions. The opportunity of examining, within a few months, the Hamath stones in the museum at Constantinople, and the very ancient wooden hieroglyphics from the tomb of Hosi which are in the Boulak Museum at Cairo, enabled Captain Conder to identify several of the symbols, as mentioned by that officer in the "Quarterly Statement" for July, p. 133. On further research he has discovered no less than sixty-one forms, which are more or less close analogues of one another, in these widely separated sets of inscriptions. A plate is given (p. 189) showing the Egyptian forms in black, and the Hamath symbols in outline. As to some of these figures doubt may exist, and the identification may be rather a question of deductive argument than of obvious truth. As to many, however, no hesitation can be felt. Of the sixty-one symbols represented some twenty are regarded as alphabetic; most of the others being ideographic. Thus the symbol of speech, which stands at the head of both Hamathite and Egyptian inscriptions, is clearly the same in each. We will not attempt to enter into further detail as to what seems to promise to afford the key to one of the most perplexed questions yet unsolved in paleography. But we must note that the invaluable aid of a bi-lingual text is not absolutely wanting. Professor Sayce has published, in vol. vii. of the *Transactions of the Society of Biblical Archaeology*, a drawing of a silver boss, which contains both a cuneiform legend, and certain symbols found on the Hamath stones. The latter, which consists only of six characters, is twice repeated. The cuneiform is read "Tarrik Timme, king of the country of Erme." Of the Hamathite symbols the first is the *tau* of Captain Conder's plate, the third a *koph*, and the second a *resh*. The other symbols are as yet *απαλ* *λεγόμενα*. The vista thus opened for the student is one of extraordinary promise. With so much that affords the starting-ground of new and fruitful investigation, with so much that has already been definitively won from the darkness of the past, it is really lamentable to see the

"Quarterly Statement" publish, with equal avidity, the results of the hard labours of experts, and the lucubrations of correspondents who (as on p. 243) naively admit their unacquaintance with the sources of information on the subjects which they attempt to discuss.

PROPOSED HARBOURS OF REFUGE, AND THE PRINCIPLES ON WHICH THEIR SITES SHOULD BE DETERMINED.

OWING to the late period of the session at which they commenced their inquiry, and the extent and importance of the subject referred to them, the Select Committee appointed to inquire into the harbour accommodation on the coasts of the United Kingdom have found it impossible to complete their investigations. They have, however, thought it desirable to call attention to certain facts which appear to them to demand immediate attention, and to make recommendations in some matters which they consider to be of an urgent character; and they further recommend that they should be re-appointed next session to complete their labours.

From evidence incidentally given to the Committee, they have become convinced that three great harbours of refuge ought to be constructed at places to be carefully selected between Beachy Head and Duncansby Head. They consider such works to be essential, alike for purposes of national defence, for the commercial development of the country, and for the safety and protection of life and property. They further suggest the formation of a fourth harbour, of a similar character, but of somewhat smaller dimensions, on the coast of Cornwall.

The Committee assume that these harbours are to be constructed by convict labour. This is a separate and independent question, the discussion of which it is every way inexpedient to mix up either with that of the necessity, or with that of the locality, of the harbours in question. Important in itself, the question of the employment of convict labour has but a vague relation to the harbour problem; and to select a spot or spots which are any but the very best for maritime purposes on the ground that convict labour can be conveniently there applied, or that local authorities will give pecuniary aid towards the accomplishment of a work declared to be of national importance, would be a striking exemplification of the policy which is known as "penny-wise and pound-foolish."

The chief part of the report of the Committee is occupied with the question of the application of 250,000*l.* towards the construction and maintenance of harbours in Ireland. On this we do not propose to offer any remarks, as the question is local rather than imperial, and industrial (as far as encouraging fishing enterprise is concerned) rather than maritime. It would be desirable, however, that on their re-appointment the Committee should ascertain and put on record the history of the application of a sum of almost the same amount, raised by the heiress of the family of Marlin of Galway, and applied for the establishment of a fishing industry on that wild coast, so exceptionally rich in the harvest of the sea. It is true that these facts are not encouraging as supporting the recommendation of the Committee. But that is only the stronger argument for the need of bringing them into the light of day.

Over the range of coast line indicated by the Committee, which extends for 8 degrees of latitude, the position of one of the future harbours appears to be indicated by a tolerably unanimous assent. This, we need hardly say, is Dover. Half the range of latitude, and more than half the length of shore line, belongs to Scotland, which can thus certainly claim one of the two remaining harbours for her own coasts. The point left open to discussion, therefore, is the best site for an English harbour, between the mouth of the Thames and the estuary of the Forth.

Rightly to determine this question requires two things. One is the appreciation of the indication which Nature herself, as interpreted by the hydrographer, affords. With this, moreover, has to be combined a competent knowledge of the maritime movement of the localities which present the best hydrographic conditions. The other requisite is a knowledge of the actual state and condition of existing harbours, a point as to which the Committee find that "there is great difficulty in obtaining authentic information of a uniform character." In an

island like our own, dependent as we now are for our daily bread on our maritime connexions, it is incredible that such a statement should be possible. A clear, accurate, and exhaustive account of every port, harbour, or sea shelter on our coasts ought to be not only readily accessible in the archives of the Admiralty, but published in so cheap and ready a form as to be readily attainable by every navigator. Something of the character of the "Guide du Batelier," which is published by the Belgian Government, and which is an admirable summary of all that the boatman or freighter needs to know of the Belgian canals, sold at an extremely low price, may well be thought to be an essential requisite as applied to our English Harbours. And if it should be necessary to resort to actual survey for the completion of such a work to date, it is a matter of national importance that such a survey should not be delayed.

Subject to any correction that may be made from such a survey when attainable, hydrography and the commercial movement of our shipping seem to concur in the indication of the locality for the third Harbour of Refuge. A line drawn to the north on the magnetic meridian of Cromer passes over the deepest part of the German Ocean, with the exception of a second and still deeper channel, which hugs the west coast of the deep sea line, the boldest promontory is that of Flamborough Head. The heel of the Dogger Bank lies at a distance of fifty miles opposite this great sea mark; and the channel between varies in depth from eighteen to twenty-eight fathoms. The mouth of the Elbe lies in the same easterly direction, and a straight course from Bridlington, a little to the south of Flamborough Head to Heligoland, clears the Dogger Bank and the White Bank to the north, and the Well Bank to the south. The entrance to the Baltic, which the Jutland Reef so defects as to throw the fair-way for southward going vessels to the west of the Dogger Bank, is thus in close relation to the same point of departure as the entrance to the Elbe. And from the Dutch coasts there is the choice either of a somewhat difficult route to the Thames, or of a fair course into the above-named marine highway from Heligoland towards Bridlington. South of Flamborough Head the access to the English seaboard is by the Humber, the physical conditions of which are by no means those requisite for a harbour of refuge.

Thus whether we regard the hydrographic position, the set of maritime traffic from Russia, Norway, Denmark, Germany, and Holland, amounting to 138,000,000l. per annum, or the fishery trade from the Dogger Bank up to the east, or the Dutch Bank, sixty miles off Kinnaird Head, to the north, the English coast affords no such beacon to the mariner, and no such facilities for a storm harbour, as are to be secured under the shelter of Flamborough Head. A white tower, 87 ft. high, on this promontory shows a white and red flashing light, at a height of 214 ft. above the sea, which is visible at a distance of twenty-one miles. No light exists on the shore, nor is there any site for the erection of one of such a wide sea range as this. On the Spurn Point, to the south, the extreme range of the high light is fifteen miles. At High Whitby, on the north, a red light from a tower over the Scar Rock has a range of twenty-three miles; but the outside of the creek from which this becomes visible at sea is comparatively out of the way of any except coasting traffic. No other light is visible at twenty miles from the coast between Cromer and Souther Point. The light-house accommodation has to be regarded not only as a fact, but as an indication. In the careful surveys that have been made of our coasts, the most available sites for lighthouses have been systematically adopted. Thus in weather when a harbour is in request, the distance from which the light on Flamborough Head can be sighted at sea is a matter almost, or quite, as important, as the accessibility of the position for the accommodation of the great maritime movement which is offered by its site.

A book, entitled "The North Sea Pilot," has been published by order of the Lords Commissioners of the Admiralty, containing the result of surveys down to 1881, and providing sailing directions for the east coast of England. This authoritative summary of nautical knowledge describes the "noble promontory of Flamborough Head" as "one of the most striking

objects on the coast." It is "the common point of arrival or departure for all vessels passing to the northward or southward along the eastern coast, as well as for those sailing between the Humber and the Baltic." It is hardly necessary to add that the shelter of an important promontory is a primary requisite for the site of a harbour of refuge; while, on the other hand, the interior part of a bay is the least suitable position for such a purpose; as in the event of vessels having to run into an open bay, and owing to thick weather or from any other cause losing their bearings, they would be exposed to the imminent peril of a lee-shore, and would be in a much worse position than if they had kept out at sea. Thus, the North Sea Pilot, in speaking of the month of the Tees, gives the following "Caution:—From the character of the entrance to the Tees it should never be resorted to for shelter in an on-shore gale, if it can by any possibility be avoided. To touch upon either of the Gares would be nearly certain destruction." The north and south Gares are the breakwaters at the mouth of the Tees.

It may thus be almost certainly assumed, on the authority of the Admiralty itself, that the harbour of refuge which the needs of the sailor requires to be formed between the Thames and the Forth must lie under the shelter of Flamborough Head. It still remains to inquire whether the north or the south side of the promontory should be selected for the purpose.

In the first place, the tidal flow which forms three successive waves from the north of Scotland towards the mouth of the Thames, passes Flamborough Head, in a southerly direction, at a speed, at the full and change of the moon, of four knots and a half per hour. The prevailing set of the winds usually accompanies that of the tidal wave, and we apprehend that the storms in the North Sea blow most frequently, and with most fury, from the north and from the east. As to this, however, it is desirable that an authoritative statement should be made for the guidance of the future labours of the Committee.

Certainly as far as the tidal movement is concerned (a matter of very great importance in thick or foggy weather), and, as well as we can ascertain, as far as the prevalence of wind is concerned, it must be the object of a vessel that sights Flamborough Head under stress of weather, if going southward to make for the shelter of the lee of that promontory, and if going northward to seek the same shelter, without passing the headland. In a gale from the south it is possible that it might be more suitable to seek shelter to the north of the promontory. But it is questionable whether, in such a gale, the course of the majority of vessels would be carried beyond the mouth of the Humber. The great balance of advantage is thus evidently in favour of the south side of the Head.

At a distance of 1½ mile S.S.W. of Flamborough Head a narrow shoal, known as the Smithie, extends for three miles in a southerly westerly direction. It is covered by only 10 ft. of water at low-water springs, and has a hard chalk or limestone bottom. Inside of this shoal is the roadstead of Bridlington Bay, with water of the same depth as that within Plymouth Breakwater, and a passage of six fathoms deep round its northern end. The holding-ground is here so good that the "Sailing Directions" state that "vessels well-found in ground tackling frequently ride out a gale from the eastward, owing to the protection afforded by the Smithie." The comparatively simple and inexpensive work of constructing a breakwater on the Smithie is all that is necessary to convert Bridlington Bay into a harbour of refuge; and, say the "Sailing Directions," "considering the eligibility of the site, the enormous number of vessels constantly passing, and the difficulty which is often experienced in making the Humber in easterly gales, the establishment of such a work would be a national boon."

Thus, as far as the authority of the Admiralty goes, the problem of the true position of our eastern harbour of refuge may be taken as determined.

At 8½ miles to the north-north-west of Flamborough Head a remarkably rocky ridge, known as Filey Brig, runs into the sea, projecting nearly half a mile to the south-east in continuation from Cape Vaze, and forming the north-easterly defence of Filey Bay. The holding ground here is good, being a stiff clay, and a natural foundation exists (as at Bridlington) for a breakwater.

But, for any winds in the quadrant from north to east, Filey is on a lee shore, and the rules before quoted from the "Sailing Directions" of the Admiralty are quite enough to decide between the value of the two sites. Filey, moreover, is in close proximity to Scarborough, where a harbour protected by a stone "cob" now exists. The improvement of these local shelters is a matter of importance chiefly for the fisheries. But the rule of selecting the spot which is most available for the protection of the 12 million tons of shipping that frequent the fair way of the North Sea does not leave room for much serious doubt as to the point indicated by Nature as most suitable for a harbour of refuge.

We have endeavoured to approach this important question on those broad principles of hydrographic fitness and mercantile convenience on which alone they should be decided. If money is to be spent,—as, no doubt, it must be,—by the State, in providing those harbours of refuge, of which the necessity is fully admitted, no doubt every seaside spot that has the ghost of a chance will move every engine at its command to obtain a preference. It will be no less than a national misfortune if the question should hereafter be decided on any considerations other than those which we have indicated, and which, as far as information is at present attainable, we have endeavoured to apply.

QUEER CLIENTS.*

THERE are many varieties of the queer client, but the most trying specimen I have met with is the suspicious inquisitive client, with a turn for sarcasm and an incurable trick of letter writing. It has been my hap to have some dealings with a pretty fully blown example of this variety,—a coarse old English gentleman with a very fine estate, a house neither new nor old, a pocket full of money, and a taste for building. He was, when in his prime, seldom without some building enterprise on hand, and in a chronic state of excitement and complaint.

It is a good many years since he invited me to run down into Norsex and advise him between the remodelling of his house and building a new one. I discovered afterwards that this was mere playfulness on his part, for he never took any one's advice on any subject. His estate lies in a somewhat low, damp, and malarious part of the country; and he lived all the year round upon his estate, like an ideal landlord. Some of his tenants had doubts as to the advantage of this trait, and I have heard them express, with a good deal of point and earnestness, my concern, however, is with the house, which has been built some half-century or more, in a kind of bastard Tudor. The fabric was of brick, and what were supposed then to be Gothic features essential to the style, such as crocketed pinnacles, finials, cusped window-heads, twisted chimney shafts, four-centered arches with foliated spandrels, and the like, had been distributed with a liberal hand. They were all in compo, after the fashion of the time, and the mouldings had dropped off here and there. The richly-traceryed parapets showed their brickwork in unsightly scabs and patches; modern cowl black, varied, and hideous, vulgarised the skyline, and the dampness of the situation had stained the walls a dirty green, and covered them with an unwholesome parasitic vegetation. The lodges were of the same character, only worse. The drippings of the surrounding trees had rendered them and the almost empty stables forlorn and dispiriting to a degree.

You entered through a sort of groined porch, and by way of a vestibule (the windows of which were filled with detestable stained glass in the vilest taste) into the great hall, dark and gloomy, with sham oak ceilings and fitting and gloomy, with sham oak ceilings and fitting. The walls were covered with arms and armor (from Wardour-street) where they did not exhibit tomahawks and the other cheerful implements of savage warfare. Your footsteps woke distant and fear-inspiring echoes,—dying away in endless reverberations down long passages all groined in plaster. The principal corridor was decorated in vermilion, green, ultramarine, white and yellow ochre (not gold); an exact imitation, it was said, of the Chapel of St. Francis at Assisi, not very homely in effect,—an altogether uncanny and uncomfortable sort of embellishment for the place. (The internal joinery, it is impossible to speak

* See p. 511, ante.

with patience. The object of the designer appears to have been to carry the idea of Mediæval warfare through all the articles of domestic use; and in some fatal moment a whilome owner had furnished the whole house *en suite* in the Gothic taste, to match the architecture!

Not being at that stage of the proceedings aware of the idiosyncrasy of my client, who had apparently been hitherto infamously treated by every one he had employed, I advised a new house on a more advantageous site, and I was at once directed to prepare plans for adapting the old one. The only pretty, and, indeed, passable portion of the structure was the original cottage, to which the larger house had been added piecemeal. This I wished to preserve. It had no pretensions to architecture; but it had a verandah on two sides of trees, branches and trunks, prettily shrouded in climbing roses and creepers, and it had a picturesque thatched roof, with a snug dormer or two peeping out of it. I thought that with some internal alterations it might be made an agreeable change from the solemnities of the sham Gothic of the house, and a pleasant escape from its stately rooms and galleries. It was, of course, ordered to be destroyed.

I prepared two schemes,—one which was a mere extension of the existing house, the new portion to resemble the old, and the old to be renovated; and another scheme, in which the body of the old house was used as a sort of stock whereon to engraft such features of domestic Gothic as were then thought to be "your only wear." The two schemes were submitted to the reversioner, for it was probable that, in the natural course of things, the property must before many years change hands. He decided unhesitatingly for the latter scheme, and I was accordingly instructed to push on with the former without delay.

A poor man cannot afford to pick and choose, and I set to work. 'Twas long to tell of the fights over small things which accompanied the preparation and passing of the plans. When I had thoroughly grasped my friend's character, it was quite easy to obtain black by electing for white. But my complete knowledge of his little ways came too late,—not until I had lost all interest in the matter and desired only to get the affair well out of hand. The contract was signed and the work commenced, and then the real troubles began. It is not difficult for two people to get on together when one of them is deliberately and persistently complaisant. But with the introduction of a third person,—the builder,—the sweet simplicity of this arrangement was upset. Builders are men, and not only men, but generally manly, and they resent any treatment which is based upon the assumption that they are unprincipled sneaks.

My client was excited by a builder as a terrorist is by a rat. He never left the spot. Not he! He was on the works the first thing in the morning,—or spying at them through his dressing-room window,—and he smoked his after-dinner cigar when the men had gone home, as he perambulated the walls, kicking off a loose brick here, and probing into the work with his walking-stick to test the bond. The workmen swore roundly at these evidences of his interest in their labours. The mortar had no chance of getting mixed in other than the prescribed proportions,—and never was any builder so worried in the matter of the exhibition of vouchers for the integrity of all his materials.

As time wore on every one got sore and everything went wrong. My client conformed to the professional etiquette in so far that he preferred all his complaints against the builder through me. And I am bound to say that he apprised me very frankly of all my own shortcomings.

And now came out a curious part of his character.

He had a knack of writing short sarcastic notes ascribing every commercial vice to the builder and his myrmidons, and by implication,—and even sometimes directly,—the grossest carelessness or incompetence or both to myself. At first I was, in my innocence, almost frightened at the gravity and seriousness of his passionate expostulation. But upon running down with all speed to explain or correct what was wrong I was, to my amazement, received with open arms. The causes of complaint were avoided or evaded or made light of. I was "put up" with ceremonious politeness,—marked attentions were showered upon me. Port of special quality, with a recondite history, was produced for my gratification, though I am far from curious in

such things. And I was dismissed with presents of rare fruit or what not, and sent on my way in a carriage and pair rejoicing,—to find on my return, or soon after, another letter full of bitter complainings and taunts.

It was of no use to reply by letters, they were left unnoticed, and every post brought only new grievances. The builder also made me the medium of copious and not ill-founded charges against his employer,—long stories of unwarranted suspicions, and all manner of meanness and injustice.

Driven to desperation, I sent in a request to be relieved from a position which had become intolerable, and I was besought to reconsider my resolution; and so matters dragged on. I was not reconciled to the eccentricities of my client, but I grew callous, and my only hope was a speedy and decent termination to my miseries.

The "extras" which rose under a system of constant interference were, as may be supposed, considerable. This afforded my client a fine opportunity for the exercise of his peculiar talent. Letters of unusual length and concentrated bitterness traversed every item in the bill, and brought counter-charges of all kinds. The builder's courage gave way under the violence of the attack, and he declined to face his employer, except with the support of my presence. A meeting was arranged, and we made up our minds for a warm day. We were received at the Hall at lunch time, and found a repeat awaiting us fit for a prince. My client put off a discussion of the question which had brought us together. At the end of a pleasant and chatty meal, he placed an envelope in the builder's hand, and, bidding him good day, threaded his arm in mine, and drew me aside into his library. He wished to take my advice about some further work.

Passing through the nearest town on my way to the station, I saw the builder "hanging about" to waylay me *en route*. He looked distraught, and had evidently something of moment to impart. The envelope, it transpired, contained a cheque for the full amount of his charge, and another for 100*l.*, "as a consolation for any little extra trouble he had been put to." My own account was paid in due course without cavil, and with a good grace.

But bad times came. The tenants could not pay their rents, farms were vacant on every side, the projected additional work was postponed and finally abandoned, and I was thus relieved from any further concern about the peculiar ways of my very queerest client.

A QUESTION OF FIGURES AND A QUESTION OF ART.

THE great national monument of the Niederwald, the colossal statue of Germania crowning the height above picturesque Bingen, inaugurated a few weeks since by the Emperor William, has attracted, not unnaturally, no small amount of attention even outside Germany. Lengthy descriptions of the work (which has been now twelve years slowly creeping towards its completion), have from time to time appeared, our readers having been more than once informed of the progress of the great monument. But there is one feature of the event in connexion with the reports of its inauguration published by our press which merits especial attention. Nothing has been more amusingly puzzling than the contradictory statements which even still continue to be made on every side respecting the cost of the great work. Several of our daily contemporaries commenced by curiously estimating the million of marks subscribed by the German nation as 500,000*l.*—a statement which, copied by numerous other journals, has gone a considerable round of the press; then came the correction, which has of course taken its time to circulate, and at length the public are fully aware of the noticeable fact that Professor Schilling and Karl Weissbach's colossal monument, rising on the vine-clad height near Rüdesheim, has cost the German nation the very modest sum of barely 60,000*l.* inclusive, let it be remarked, of all the incidental expenses of twelve years.

With the sums expended in our country on similar though far less important memorials, there is something instructive in observing the items of the total cost of the Niederwald monument, which are as follow:—Ground and terraces, 113,000 marks; the architectural pedestal, 337,000; the watchman's house,

18,000; the ornamental gardens, 3,500; the candelabra and inscription, 9,000; the model for the foundries, 210,000; the statue of Germania, 175,750; the figures of War and Peace, 60,000; the group of the Rhine and the Moselle, 35,000; the escutcheons, 10,880; the eagle and wreath, 26,950; the principal relief, 51,300; two minor reliefs, 21,300; the prizes for the public competition, 27,000; the salary of the supervising architects, 31,000; and lastly, the costs of administration during twelve years, 31,000 marks,—total cost, 1,192,000 marks, or 59,600*l.*

We venture to submit these items for comparison with the cost of more than one recently-erected monument in our country.

The deductions to be drawn from these figures are characteristic of a great difference existing between the ideas of artistic remuneration in our country and in Germany. In the competition which is about to take place for the erection of the new Admiralty buildings, the sum to be awarded to the successful competitor is a handsome one (25,000*l.*), yet so singularly constituted is the profession in our country, that doubtless not a few of its members would, in case of success, seriously weigh the advantages that might seem to accrue from obtaining such a sum, at the sacrifice of so much other work as would be involved in the attention necessary during several years to carrying out the Government buildings. It would be curious to see how differently a body of foreign architects would consider such a remuneration.*

The question is suggestive of the many other differences which exist between the ideal of artistic "success" at home and abroad. We wonder what foreign poets will say when they hear of the sum which of late the public has learned a well-known firm of publishers yearly allows to our poet laureate. Every one is aware of the large number of works which, on the Continent,—particularly in France,—are annually purchased both by the Government and the municipality at the various art-exhibitions which are yearly opened, yet the sums thus expended are, comparatively speaking, very small. The Paris municipality succeed in filling the pretty "squares" of the French capital with an ever-increasing number of marble and bronze statues, on a sum that in our country would be considered only barely sufficient for the "supply" literally of one or two statues by some popular artist who is already so overworked as to render it impossible for him to devote that proper attention to his creations which, from an artistic point of view, is all that should be encouraged in the purchase of works of art. We too often appeal in our country to an artist to "turn out" work much in the same fashion as we request some manufacturers to supply us with such and such a quantity of his manufactured goods. And let it be remarked, by their system our French neighbours are succeeding in forming a school of sculpture which is justly admitted to hold at the present moment a foremost place. Young and earnest artists are constantly brought forward, and a life given to an art which people are far too fond of repeating is "quite dead."

It is worth while, however small may be the effect, to draw from time to time attention to the fact that the too persistent application to art in our country of the commercial principles which have rendered us so wealthy is not producing those same results which revenue returns and census papers display respecting our national trade and population. The pursuit of art in all its many forms solely for its pecuniary advantages has, at all times, been preached against; but can it be denied that the lessons of the preachers are being daily neglected in our country, and we repeat, with consequences which must be regarded as far from satisfactory from all but a purely commercial point of view? And, after all, how insignificant the commercial attractions of art ought

* It is not alone in connexion with artists' incomes that there exist curious differences between our country and Germany. Recent statistics show that not far short of 30 per cent. of the estimated population in Germany belong to households having less than 2*l.* a year, or 8*s.* a week, yet all above this have to pay taxes to the state. In 1881, the total incomes of the Prussian people amounted to no more than 411 millions sterling; now, in 1880, the assessed incomes of the United Kingdom amounted to about 577 millions. Further examination of statistics reveals that only 24 per cent. of the population enjoy incomes of over 150*l.* per annum; only 5,442 households possess an income of over 1,000*l.* per annum; no more than 548 an income of 5,000*l.*, nor has there been any increase within the last ten years. See an interesting article published in the *Saturday Review* for September 30, 1882.

to be to the minds of those who are more fitted for the exercise of commerce in its true sense! It may safely be asserted that this commercial view of art is not indulged in France and Germany, or not by any means to such an extent, and this fact is worthy of note. There, artists, whether they be architects, painters, sculptors, engravers, or musicians are content with a smaller remuneration for their labour, and the sums expended both publicly and privately are more widely,—and, let it be added, more wisely,—distributed over the profession, with the consequent result that more honest labour, to call it by no other name, is produced than is possible where pecuniary, in many cases absolutely commercial views, inspire the artist. Has not the artist's constant superiority to the mere money-maker ever consisted in the creative enjoyment of which he is the master? Our artists, let it be remembered, in entering into competition with the commercial money-maker are engaged in but a very small line of business, one in which the first speculator, such as we see modern speculators, can far outdo in a day's transaction the artist's earnings of a year.

It is a further ugly feature of the question that the artist's position has become in some manner of late years connected with the social movement which is so marked at the present moment. Indeed, there are not wanting those who attribute to this influence not a small element of the unsatisfactory condition into which our English art is falling. Perhaps some clue to this situation may be found in the recently-uttered remarks, not sufficiently noticed in our press, of the Rector of Lincoln, on the opening of the session of Bedford College, respecting the doubtful influences of our modern civilisation upon the poetry of existence, and his very proper regret that our system of education so singularly neglects the cultivation of the emotions and the development of "the original inherent capacity of feeling" which constitutes one of the most precious gifts of the great inheritance of the past.

There are those who are ready to account for this with well-thought-out æsthetic reasons, but, like so many other questions, it may be reduced to a matter of figures, and the figures which we have above quoted, detailing the entire cost of the German National Monument recently erected on the banks of the Rhine, when properly considered and taken in comparison with what would have been deemed necessary for a similar work in our country, may be regarded as helping to explain in no small measure what is admitted on all sides to be one of the far from satisfactory phases of modern English art.

CONTINENTAL GATHERINGS.

THE completion of the colossal Palais de Justice at Brussels, briefly noticed in these pages last week, was marked by a simple yet impressive ceremony, one feature of which deserves especial mention, the warm and touching words addressed by the King of the Belgians to the assembled workmen who most appropriately took a conspicuous place in the proceedings; in the march-past each body being represented by its respective banner. "It is with peculiar pleasure that I address you," said King Leopold to the "dean" of the workmen, who had presented to his Majesty an address. "You are fully aware of my interest in the cause of national labour, and my earnest desire to see it constantly employed in the embellishment of the country and the creation of such works of art as augment the wealth of the State and develop our public prosperity. You know I personally love all work and all workmen. My efforts have ever tended to find new outlets for their activity and for the spread of our national products. My Minister of Justice has justly remarked that the great palace which you have erected may be regarded as a permanent exhibition of the skill of several of our most important industries, and as such, it not alone fosters their development, but reflects the utmost honour both on them and on the nation at large." This characteristic little speech was, it can be understood, received with the warmest enthusiasm. An affecting welcome was given by the king to the widow and daughter of M. Poelaert, presented to his Majesty by M. Wellens, who succeeded the late lamented architect in the direction of the works. As in the case of the architect of our own new Law Courts,

M. Poelaert was not spared to see the completion of his colossal creation. A native of Brussels (where he was born in 1817) Joseph Poelaert, as a pupil of Visconti,—the architect, it may be remembered, of the new portions of the Louvre,—was admirably fitted on his return from Paris for the post of City Architect offered to him: the Monnaie Théâtre, the Colonne du Congrès, the Church of St. Catherine, and the church at Laeken being some among his many designs. When, a little previously to 1860, a competition was held for the plans of the new Palais de Justice,—a competition which utterly failed,—Poelaert modestly brought forward his own long-matured designs, which were immediately accepted, and the first stone of the new palace was laid October 31, 1866. Some idea of the boldness of the conception can be obtained when it is stated that the building occupies a superficies of some 52,464 square metres or yards, while our own Law Courts, reduced to a similar standard, occupy some 14,693 square metres, and St. Peter's 29,000. The cost of the structure, including its furniture, has slightly exceeded the forty-five millions of francs generally stated, amounting in all to forty-eight millions (1,800,000*l.*). While six centuries have been necessary for the completion of the Cathedral of Cologne, and 120 years for that of St. Peter's (St. Paul's, it is true, was built within the life-time of its architect), the Brussels Palais de Justice, the largest building in the world, has been completed in seventeen years. What will be done with the former Law Courts, the old Palais de Justice, with which all visitors to the cheery little Belgian capital must be familiar, is not yet decided. The site of the rambling sixteenth-century Jesuit College, long occupied by the courts, a network of galleries, bridges, and corridors, will doubtless be utilised by the erection of some new public building, which will render still more attractive the pretty Brabant capital where are so delightfully mingled the relics of a brilliant past with the evidences of an active living present.

Belgium's old enemy, Holland, has been enjoying a success in the Amsterdam Exhibition, shortly to close, not without having left, like most of the recent international exhibitions, its mark on the tendencies of modern industry. To mention the item of furniture alone,—an important branch, largely represented at Amsterdam,—it is universally conceded as one of the noticeable features of the exhibition that the old superiority of France in this direction is being sturdily attacked by such countries as Belgium, Holland, and Germany. England, unfortunately, which might worthily have taken a place in the contest, has not been well represented. It is, indeed, no wonder, with the advance we and other countries have made in our so-called "art" industries, that French exports are proved to be on the decline, and the fact is one which our manufacturers should keep well in view. It is also a marked feature of this section of the exhibition that the style of art most largely represented is distinctly the Renaissance; the exhibits from Mainz, from Cologne, from Berna, from Ghent, from Paris, and from Holland, are almost without exception in accordance with the essentially decorative canons of the sixteenth century; this tendency, which to those familiar with the Continent has been evident for the last few years, is worthy of note by the younger generation in our country.

The Electric Exhibition at Vienna is also, it would appear, meeting with great success, the novel feature of the temporary theatre lighted entirely by electricity having proved so attractive as to oblige three daily performances, the intervals being filled in with lectures on the different systems of electric illumination. It would seem that one of the chief attractions is the cleverly-organised feature of the annexe, in which is shown the application of the electric light to purely domestic purposes. Drawing, dining, sleeping, and billiard rooms, studies, and even kitchens, are shown, lighted by electricity, one of the most interesting novelties consisting of a bed-room in which the electric light is concealed behind the semi-transparent hangings of the wall; the light thus obtained is most delightfully softened. The richly-decorated Oriental pavilion,—arranged by Herr Otto Hieser, the architect of the Palace of Sinaia, opened only a few days since by the King of Roumania,—has also proved a great attraction.

Reference to Vienna renders easy a transition to the unfortunate town of Zegedin, which is now at length rebuilt. It is not often, in the

Old World at least, that a brand new city springs into existence within four years. Every one remembers that terrible 12th of March, 1879, when the river Theiss swept away the city of Zegedin. On the heap of ruins left, the new city has been re-erected, and a few days since it was formally visited by the Emperor Franz Josef. The new town consists of two leading streets, and seven less important thoroughfares; 3,000 houses have been built, town-hall, a tribunal of commerce, barracks, schools, churches, quays, and numerous charitable institutions, and last, but not least characteristic feature of every Austrian town, a theatre. A triple dyke has been built to protect the city against the recurrence of such a disaster as that of 1879. The sum expended,—raised, it will be remembered, by international subscription,—amounts to over 30 millions of florins. As a touching expression of gratitude to the foreign aid received, the streets bear the names of the principal capitals of Europe,—London, Berlin, Paris, Brussels, Vienna, &c., while numerous inscriptions further recall the generosity displayed by the world at large to rebuild the ill-starred city.

The Berlin Hygienic Exhibition has just closed, after a most successful career, and at a moment when in the metropolis the thoroughfares are almost, without exception, in the familiar condition known as "up," it may not be uninteresting to draw attention to the remarks recently uttered at the Exhibition by Dr. Pettenkofer, of Munich, an eminent hygienist, whose name has more than once been quoted in these pages, as to the danger attendant on so constantly pulling to pieces the thoroughfares of a great city with a view to examining the pipes. The pipes which are thus spread constitute, the Doctor urges, a source of no small danger in our densely-populated centres. The primitive arrangement by which the innumerable companies and authorities who are allowed to regulate our municipal matters deposit their various pipes in the earth, must have struck every one familiar with a method not unknown in Paris, nor even in London, placing all such minor pipes within a large subterranean tunnel, easily visited without the necessity of tearing up the roadway for the purposes of constant repair.

As we have announced in these pages, the palace of the Tuileries has at length been totally razed; it only remains now for the inventory to be prepared by the committee which has been appointed with a view to choose among the many architectural fragments, capitals, cornices, and columns strewn out in order over the western corner of the bustling Cour du Carrousel, those relics of the old palace which are to be presented to the various museums of the State. Some fifty cartloads of dusty, prostrate stones now represent all the past glory of this historic palace, some architectural remembrance of which, it is to be hoped, our South Kensington Museum will not fail to obtain from the French Government.

When so many buildings are being demolished in the present day, it can be understood that a small amount of indignation was aroused at an announcement made a few days since by the French contemporary that the authorities had determined on so shifting the position of the dyke connecting Mont Saint Michel with the mainland as to destroy for ever the singular insular position of this beautiful historic monument. The announcement happily proves to be premature, but will, we hear, form the subject of a Parliamentary inquiry during the forthcoming session of the French Chambers, certain engineering works being, it appears, necessary in the piece of coast which surrounds Mont Saint Michel.

The Paris Academy of Fine Arts has, we learn, decided, a few days since, that the biennial prize founded by the late eminent architect, M. Duc, shall be awarded next year. The prize, it may be remembered, as announced by us at the time of M. Duc's death, is especially intended to aid, under the direction of the Academy, in the development of a genuinely modern architecture suited to present wants and habits, and yet at the same time displaying an ample acquaintance with the best examples of the past,—a prize which, it is sincerely to be hoped, will effect the good it is intended to work.

There is commotion among the happy colony of young art-students who occupy that picturesque old quarter of Paris which surrounds the Ecole des Beaux Arts, so little known to

sitors to the banks of the Seine and its constantly derided monotonous boulevards. The *Journal Officiel* of a few days since published a "leurre," introducing the first of a series of reatened changes in the management of a famous establishment in the Rue Bonaparte. Admission to and exit from the school alone be granted in future after a series of examinations (till now, entry to the admirable classes, the lectures and studios has been perfectly free to all comers); while a rather and most wise innovation consists in the determination to give increased importance to the successful course on the Decorative arts so ably conducted by M. Galland, whose name is not unknown on the banks of the Thames. These changes, it is true, do not quite satisfy all the critics of the system in vogue at the Ecole; it is urged that till the nine free *Ateliers* of the Rue Bonaparte are abolished, the patronage of the special style of art patronised by the powerful clique of painters, sculptors, and architects who conduct these studios will be unfairly continued. It is timed that admission to such privileges as the Ecole affords should be alone accorded to persons who shall have proved their ability to profit by such advantages. The facility of entry to the free *ateliers* (established some twenty years ago), it is stated, has broken down the old methods of acquiring a knowledge of drawing by hard work. With the doubts expressed in various quarters as to the tendencies of modern French art there is, perhaps, some justification in the cry of the croakers. The *Salon*, which is about to close in a few days, has been most instructive in showing to the public the direction of French art, somewhat difficult to judge of in the excitement of the yearly exhibitions; yet who can deny, though our own English School is so alive, that with all its shortcomings and all its faults, French art is at the present moment the most essentially living of all the various schools?

OLD PARIS.

N consequence of the proposed enlargement of the new Sorbonne at Paris an interesting relic of Old Paris will shortly disappear. This is the house No. 13, Rue de Cordiers, which is remarkable as having been the residence of several illustrious men. Among others, Leibnitz resided here on his arrival in Paris, the house at that time a furnished lodging-house,—"Hôtel St. Quintin." The poet Gresset also lived here, and, later on, the philosophers Mably and Condillac. Jean-Jacques Rousseau, attracted by the simplicity of the hotel, lodged there in his turn. In the "Confessions," book 7, he says:—"Mr. de Cordiers having given me the address I went to the Hôtel St. Quintin, near the Sorbonne, a dirty street, dirty hotel, dirty room, but where, however, several persons of merit have resided, such as Gresset, Bordes, Abbé Mably and Condillac, and many others."

In the month of July, 1745, the author of the "Social Contract" came back to the dirty hotel in the dirty Rue des Cordiers. "You saw," he wrote to Raquin, "that I have commenced a work upon which I rely to relieve myself from my embarrassments. It has been long on hand that I have resolved to shut myself up in the Hôtel Saint Quintin." After the death of the illustrious philosopher the landlord changed the name of the house to the Hôtel Jean-Jacques Rousseau, a name by which he was afterwards known. In our own times the celebrated men have lodged in the hotel, among others Héguippe, Moreau, and Gustave Flaubert, the critic of the *Revue des Deux Mondes*. The house is two stories high, has three windows only towards the street, and is old and mean. It was put up to auction in the year 1875 at a reserve price of 1,200*l.*, and was sold 1,202*l.*

Roberts's Rainwater Separator.—This contrivance, of which diagrams have been sent us, appears to be an improved version of previous patent. Its object is to turn the rush of rainwater, full of impurities from roofs, into a waste-pipe, directing the flow of the rainwater cistern only after the fouled water has run away. It ought to be very useful in country houses depending much on water storage.

RETIREMENT OF MR. GODWIN FROM THE BUILDER.

ON the 23rd inst. a deputation from the office of Messrs. Wyman & Sons, representing the "companionship" of printers working on the *Builder*, waited on Mr. Godwin to present him with an address on his retirement from the editorship of that paper, and were welcomed by him with his accustomed urbanity.

Mr. Monro, in explaining the object of their visit, said that nearly forty years ago, on the appointment of Mr. Godwin as editor of the *Builder*, he had had the pleasure of being introduced to that gentleman as the printer of the paper, and was dubbed by him "clerk of the works." Various changes had since then taken place, and eventually on the death of his (Mr. Monro's) father, who had been the "printer" for some years, he had succeeded him, and remained on the paper to the present time. The "companionship," finding that Mr. Godwin had retired, felt that they could not allow him to depart without some expression of the esteem in which he was held by them, and decided to offer him a token of their respect in the shape of an address.

Mr. Bate ("reader") then read the following address (which was enclosed in a neat gilt frame, representing an emblematic "bundle of sticks" tied with a love-knot):—

"TO GEORGE GODWIN, Esq., F.R.S., &c.

Sir,—The Companionship of the *Builder*, having heard with regret that you have resigned the editorship and control of that journal, with which you have been so long identified, and which you have so ably and successfully conducted, beg leave respectfully to tender you their best wishes that your retirement may be fraught with health and happiness.

Engaged as they have been in the *Builder* for many years (two of them for more than thirty, and most of them for upwards of ten), they feel that they will greatly miss in the future your genial and unvarying affability,—your ever courteous manner towards them,—which has so frequently stimulated their exertions.

They do not forget that though their failings may have been at times deserving of blame, you have been always ready to excuse them, to sympathise with them in their toil, and to reward them when extra labour has been required. They remember also the many little kindnesses you have conferred upon them, and that you never failed to add to their enjoyment when opportunity occurred.

While proud of your talents and the ability manifested in your management, they venture now, on your departure, to express the hope that your well-deserved leisure will be attended with improved health and prolonged life; and, assuring you of their esteem and affection, have great pleasure in subscribing themselves

Your most obedient and faithful servants,

WILLIAM H. MONRO.
JOHN JAMES. JAMES RHIND.
LEWIS PRADIE. HY. JNO. ANDERSON.
WM. FARHAM. JAMES MCLAREN.
ANDREW CUNNINGHAM. GEO. ORCHARD.
J. B. HOLLEY. F. H. CHAPMAN.
C. RITCHIE. FRANK TATCHEL.

JNO. BATE, Reader.
Messrs. Wyman & Sons' Printing Office,
74-76, Great Queen-street, W.C.,
October 15, 1883.

Mr. Godwin, in reply, said he was highly gratified in receiving such a handsome testimonial. He was delighted that he had succeeded, amid his editorial labours, in securing the esteem of those with whom he had passed so many years of his life. He had no idea that his conduct had been so much appreciated, and he could assure them that the spontaneous expression of such sentiments towards him as the address contained would be a great consolation to him in his retirement. He cordially thanked them for their kind remembrance of him in so valuable a present.

Mr. Bate remarked that in the course of the thirty-two years he had been engaged on the *Builder* as "corrector of the press" he had often come into contact with Mr. Godwin, whose invariable courtesy and complaisance had endeared him to all the members of the *Builder* "Ship." He and they felt the severance as much as Mr. Godwin himself no doubt would for some time to come. He mentioned a few of the incidents that had occurred, and stated that the unanimous praise of his conduct had been frequently rendered.

Mr. James was able to confirm the remarks of the previous speakers, after an experience of some twenty years in the "companionship."

Refreshments having been produced, Mr. Godwin (with whom were also a few friends), in the course of a very pleasant, chatty evening,

full of reminiscences of the past, again expressed the pleasure the address had given him, and the deputation withdrew.

NOTES FROM BIRMINGHAM.

SIR,—For some years past the accommodation for the sale of live stock in the present Smithfield Market has been felt to be inadequate, and a proposition was made by Councillor Osborne in 1865 to follow the example of London and other large towns by erecting a new cattle-market in some convenient open position, near to good railway accommodation away from the centre of the town. That proposition was lost at the time by only one vote in the Council, but it had the effect of shelving the question for years. Now, however, it is again revived, and the Markets and Fairs Committee, after long deliberation over sites, are about to recommend the Council to authorise them to acquire, by the purchase of the freehold, some thirteen acres of land belonging to the London and North-Western Railway Company, situated in Nechells Ward, near to the boundary of the borough, and not far from the Windsor-street Gasworks. The site has frontages on three streets, and the Fazeley Canal and Aston brook form the boundary on the other side. A branch line from the London and North-Western Railway already passes through it, taking coal and coke to and from the gasworks, dividing the land into two unequal parts,—5½ acres on one side, and 4½ acres on the other side.

On the larger portion it is proposed to erect a new cattle-market, and on the smaller portion slaughter-houses and a wholesale meat market, the two parts being connected by a subway under the railway. The cost will probably not be less altogether than some 40,000*l.* to 50,000*l.* It is greatly to be hoped, if this proposal is carried out, that the Council will determine to close all private and other slaughter-houses in the borough. They are, I believe, without exception, an unmitigated nuisance, and notwithstanding very efficient inspection, contribute considerably to a state of ill-health amongst neighbouring residents.

Another proposition which the Council have before them is one for the establishment of assize courts in the borough. This question also has been mooted for some years past, and when the land on part of which the Council House is built was obtained, a part was reserved for new courts. Since that time, however, the land so reserved has been devoted to new gas offices and a museum and art gallery, now in course of erection, and another site, is proposed for the courts, in the new Corporation street, nearly opposite the new theatre, and very nearly adjoining the new County Courts. The General Purposes Committee are now instructed to push forward the negotiations with the Government for making Birmingham an Assize town, and for contributing toward the cost of the change. It is felt to be a gross anomaly that Birmingham, with its more than 400,000 inhabitants, engaged in an extensive manufacture and commerce, involving much civil and criminal litigation, should be obliged to send most of its disputed cases to the little insignificant county town of Warwick, with its less than 12,000 inhabitants, or to London. It is estimated that no less a sum than 50,000*l.* is annually paid by Birmingham solicitors to London counsel and agents for work which might just as well be done here, besides a further sum of 25,000*l.* spent in travelling and hotel expenses, all of which money, it is contended, might be saved or spent in the town. There seems no doubt that it would be greatly to the advantage of the district to have Assizes held here, and that there would in consequence be a corresponding diminution in the legal business transacted in your new and extensive Law Courts in London, and in the county town of Warwick.

"T. B.," who objects [p. 433] to my remarks on overtime [p. 364], grants all I contend for when he says, "Systematic overtime is objectionable for the regularly employed, because it is certain to prove injurious in the long run, both to master and to man, loss of stamina, mental and bodily, invariably resulting, with loss of care and finish." I hope he will believe me when I say that I am not so devoid of common sense as to object to necessary occasional overtime. That cannot, in any such business as the building trade, be always avoided.

One of the most extraordinary circumstances of modern life is the apparently hopeless inability with which the Veterinary Department of the Privy Council attempts to administer the Cattle Diseases Acts. Things have been going on from bad to worse in regard to the foot and mouth disease especially, until we may shortly expect to find every market in England closed against store cattle. A great many, including the Birmingham market, are closed by Privy Council order at the present time, to the great inconvenience and loss of dealers and the public. These orders are issued by the Department solely on the reports of their inspectors. That being so, we should expect to find these inspectors not only qualified veterinary surgeons, but practical common-sense men as well. Instead of that, they are all, I believe, without exception, half-pay army and naval officers, who have been placed in the office without qualification or examination of any kind to receive yearly salaries of 350*l.* per annum and upwards, with an allowance of 2*l.* per day travelling expenses. It is impossible that a department so constituted should be well administered, and, indeed, the mistakes and blunders of these same inspectors are most ludicrous. One of them came recently into the Birmingham market, and seeing some cattle standing slightly foaming at the mouth, at once came to the conclusion that they were suffering from foot-and-mouth disease. On its being explained to him by a local inspector that the foaming was caused by the cattle having just been driven from a distance into the market, he hesitated, and said that it was a case for inquiry, and this too in a market where, by their own order, all cattle must be killed within twenty-four hours of their exposure! It is by no means an uncommon thing for an inspector to leave London by a morning train, and on his arrival here to spend two hours watching cattle being unloaded from trucks at the railway station, and then return to London. We shall not get rid of cattle disease in this country until thoroughly practical men have been appointed as inspectors, as is being done in the Factory Department of the Home Office.

The Birmingham School Board, at their last meeting decided to adopt one-sixth of the population as the ratio of school age to be provided for in the public elementary schools of all denominations. This would give a number equal to 68,000 scholars, and as there is now accommodation for about 60,000, they have determined to build eight additional schools to accommodate 1,000 each, as was forehadowed in my former notes [p. 384]. A disposition also appears to introduce fresh talent in the architecture of the new schools, and we may expect the new commissions to be distributed amongst the architects of the town.

The Birmingham and Aston tramways have proved a great success by being worked by steam. The small cars have had to be superseded by large bogie cars capable of seating seventy persons each; and the fares being low, 2*d.* for any distance inside or out, they are largely patronised. Several miles of additional rails are being laid and projected. One, a double line, is being laid from the foot of Bradford-street through Highgate and the Moseley-road to Moseley village. McGowan's steel rail is being used.

The small-pox epidemic shows little signs of abatement in and about Birmingham. The Health Committee of the borough have walled off a large piece of land belonging to the lunatic asylum at Winson-green, and on it have erected picturesque and spacious wooden buildings as temporary hospitals to which patients suffering from infectious diseases may be removed. These hospitals are now in full working order, but as the committee have no power to order the compulsory removal of patients to them, many sufferers are treated in their own homes, and in consequence the germs of the disease are spread. But it appears to be more prevalent in the suburbs outside the town than in the borough itself. It is so severe in Aston that the Local Board have had to improvise tent hospitals, and in Sparkbrook they propose to close the schools. It is also very bad in Smethwick. The thought has sometimes occurred to me whether the fact of our main sewers being laid at almost a dead level, and thus inviting deposit, has not much to answer for in promoting zymotic disease, and whether it would not be more advantageous to give the sewers a sufficient gradient to prevent deposit, and introduce intermediate pumping stations.

The value of the Midland Institute as an educational centre has long been recognised. In it thousands have been and are being taught much that is valuable in literature, science, and art, but except in the Chemistry department little that is essentially practical has been quite neglected up to the present time, but now the managers have availed to the necessity of giving instruction in that branch of the arts, and a room in the basement has been fitted up and opened as a class-room. One would have supposed that as Birmingham is a town devoted almost entirely to the manufacture of metal goods, a class for the teaching of metallurgy would have been one of the first opened when the Institute began its operations some twenty-five years ago. Some years ago, before the alterations and extension of the Institute buildings, there were, thanks to the munificence of Mr. Follett Osler, F.R.S., a complete set of meteorological instruments at work, consisting of a barograph or self-registering barometer, constructed so that the rise and fall of the mercury showed itself three times extended on its scale, a rain gauge, a wind gauge showing and registering the direction and force of the wind, and a Robinson's anemometer showing and registering the amount of air passing over the instrument. A curator had charge of these instruments, and their readings were graphically indicated for public use daily on a board fixed on the outer wall adjoining the street next the standard clock, so that every one might read them, and the readings were much appreciated. Now, however, in consequence of there being no provision for the instruments in the new building, the only ones in use are the clock and barograph, and we are therefore dependent upon private enterprise to supply the deficiency. The sudden death, in a railway carriage, of our late lamented meteorologist, Mr. J. L. Plant, a short time ago, has robbed Birmingham of a most devoted enthusiast of the science, who made it his duty, by a short paper in the local press every month, to acquaint his readers with his observations and comments. His place will doubtless be taken by some other student, but the question seems very pertinent why the instruments in the Midland Institute should be idle against the wish of the donor, and to the loss of the public.

THE LATE MR. BOWES A. PAICE.

We record with much regret the death of Mr. Bowes A. Paice, an event which has saddened many of our readers. Ill-health had for some little time past prevented him from taking an active part in the professional societies, in connection with which his active and kindly services will never be forgotten by those who were brought into contact with him. He died from congestion of the brain on the 16th of this month at No. 48, Cromwell-avenue, Highgate, the residence to which he had removed a short time since from his old address at No. 9, George-street, Hanover-square, and was buried at the north end of Highgate Cemetery on the 20th. He was an Associate of King's College, London; was articled to Messrs. Francis, architects, of Palmerston-buildings, and devoted himself strenuously to the study and practice of his profession. He joined the Architectural Association early, and took part in the classes and the work of management; was elected honorary secretary for the Session 1870-71, and served for that session and the following in conjunction with Mr. John S. Quilter, and for Sessions 1872-73, and 1873-74, in conjunction with Mr. S. Flint Clarkson. A good deal of special work fell upon him before and during the annual excursions in 1872 and 1873; the former of these will be kept in memory by the remarkable book on the Churches of the Nene Valley, some of the materials for which were collected during that excursion, and the 1873 excursion will also be remembered by some few of us as the last of the excursions in England carried through under the generalship of Mr. Edmund Sharpe. Mr. Paice was a hard-working member of the party who visited Charente in 1875 with Mr. Sharpe, making Angoulême the headquarters, in order to prepare illustrations of the very distinctive twelfth-century architecture of part of Angoulême, now well known by the memorial volume published by the Association in remembrance of the originator of those excursions, of the fourteenth of which we gave

some account a few weeks ago. Mr. Paice was President of the Association for Session 1877-78.

He joined the Royal Institute of British Architects as an Associate in 1868, and was steady in his attendance at the meetings. As a promoter of reforms, he was a member of the Committee on Competitions, a subject in which he took considerable interest. His activities were not, however, confined to his profession, but he found in general society, church guilds, and societies, and in his work as an officer in the Volunteers, occupation for some of his leisure. An illuminated address and a sword, given as a surprise,—the secret having been well kept from him,—by the men of his Company gave him (as might have been expected), a good deal of pleasure. Among the works of which he was the architect, Blackwood Church, Monmouth-shire, and St. Andrew's, Wigan, may be named; also works at Maidenhead and Torquay, &c., and the Lower Memorial Clergy House for St. Peter's, London Docks,—a parish with which his family had long been connected. His services in connexion with the last-named building, which is still in hand, might be cited to illustrate the disappointments of architecture, and their labours given without stint for inadequate remuneration. The foundation of a building was actually laid by Earl Powis, on the only site then obtainable, but before the building was fairly in hand the lease of the houses in Gravel-lane fell in, and fresh designs were worked out completely for a building on the present site. These were again set on one side owing to changes in intention, and modifications to meet the available funds. In such a case the architect would be found to be the most liberal contributor on the list. Earl Nelson, the chairman of the Lower Fund, writes of the devotion shown to all his work,—not only in securing practical fitness, but as art.

He received the Gold Medal of the Royal Agricultural Society of Scotland for plans of farm buildings for housing cattle. A useful career has thus been cut short, but recollection of his pleasant qualities will linger long in the memories of his friends.

"TWO PENN'ORTH" AT THE VICTORIA COFFEE HALL.

OUR readers may remember that in connexion with the Victoria Coffee Hall,—in the fortune of which we have at all times expressed an interest,—we announced in these pages the newly organised series of weekly lectures to be delivered at the Hall under the conditions of the Gilchrist Trust. A first-rate military concert by a band like that of the Middlesex Yeomanry Cavalry, and a lecture, illustrated by the aid of the most modern form of that old friend of our youth the "magic lantern," is, it will be admitted, a fair "two penn'orth" evening's amusement. That with such a programme for the Tuesday of every week the spacious hall of the old Victoria Theatre should not be crowded, is, in a great city like this, somewhat strange, though there are, perhaps, those who might express surprise at such entertainment in the New Cut attracting even so goodly an audience as come to enjoy the admirable beneficence of the Gilchrist Trust.

It is a rare enjoyment,—apart from its instructive value,—such a lecture as was delivered last Tuesday week by Mr. J. Carpenter, the son of the eminent naturalist whose name is so intimately connected with the deep sea discoveries of the *Challenger* expedition, and who was also present on the occasion.

To see revealed the forms of those singular beautiful and minute varieties of life which only modern research has brought under the observation of the scientific student, is a treat which it is indeed an act of generosity to afford to such audiences as those for whom the entertainments at the Victoria are expressly intended, and a treat which it is gratifying to find appreciated by Gd. stalls, 2*d.* pit, and 1*d.* gallery, and we cannot but feel that such an institution as the Gilchrist Trust, to aid the delivery of scientific lectures, acts, and has acted, in a beneficial manner as to merit further extension on the part of that very large class of people who appear from time to time not to know what to do with their money.

But putting aside the clearly apparent benefit of affording wholesome enjoyment to the masses, there are other phases of the question. Such lecture as that to which we have referred may properly be regarded as affording instructive

at alone to that indefinite section of the community we have agreed to term "the masses," but to another section of society which considers itself somewhat higher placed in the social scale, and therefore perhaps not unfrequently rather prone to believe it has not so much to learn.

The wonderful forms of nature revealed by the microscope and reproduced by the aid of the photograph, are, properly considered, not alone interesting to the scientific student; regarded by the artist and the decorator they display a field of suggestive study which may fairly be said to be completely novel; some commendation in a time when "novelty" is a mercantile commodity. The reference made by Mr. Carpenter to the recently-opened Natural History Museum at South Kensington was calculated to rouse in the thoughtful mind many suggestions as to the field of decoration that was, and is, here thrown open to the artistic world in the forms of nature revealed by microscopic research into the till now unknown mysteries of animal creation. Such forms as those which the lantern threw upon the screen in illustration of the lecture of Mr. Carpenter on the "Wonders of Ocean Life" could not fail to have struck any observant artist with admiration of their beauty for decorative purposes, and we venture to think that in these days, when we hear so much concerning "decorative art" and the necessity for intelligence directing its creations, a wide field of suggestive design is opened to those following this now lucrative branch of the arts, in the forms of animal and vegetable life which the microscope has revealed to the scientific world.*

The walls of the Museum of Natural History, of every museum, in fact, thus beautified with the exquisitely delicate and suggestive pictures of nature's decoration would, we feel certain, soon prove the error of our too contented adherence to many of the past forms of decoration debased by modern usage. A simple return to the study of the forms of nature,—the origin of so much decorative art,—could not fail soon to lead to new developments in art, and thus science and art, mutually aiding each other would both be gainers. The lovely and delicate fossil flowers and animals, dredged up from two or three miles' depth of the ocean, where their still living representatives are silently performing for the distant future the work which their progenitors performed for our use in the present day, afford a field of decorative study which we have no hesitation in saying, with all due respect to the beauty of the conventionally accepted standards, cannot be surpassed in perfection; while each section of the smallest fragment examined by the microscope, reproduced by the photograph, and finally thrown in an enlarged form on the screen by the lantern, reveals a further wealth of suggestive decorative design. Here is an aspect of scientific inquiry not quite so alarming in the necessity for deep study as its researches usually demand, for the artist has but to avail himself of the work already carried out by others; and no clearer proof could be found of the sense of enjoyment such forms afford to the human eye than the applause with which the revelations of the microscope are met by audiences such as that which assembled in the New Cut to listen to the lecture of Mr. W. Carpenter.

The Late Prof. Jordan.—St. Petersburg papers announce the death, at the age of 83, of Professor Jordan, President of the Imperial Academy of Arts. He was the son of poor parents, but he had a powerful patroness in his godmother, the Empress Maria Fedorovna, wife of the Emperor Alexander I., for whose nomination he was received, at the age of eighteen, as a pupil at the Academy of Arts, in the department of Engraving. Six years later his copperplate of "Mercury imposing Sleep on Argus" received the smaller gold medal, and again, at the end of five years, the engraving of "The Dying Abel" received the larger gold medal, and Jordan was sent to Paris to prosecute his studies. On the outbreak of the revolution of July he was ordered to London, where he continued to work under Raimbach's direction on a copper-plate of Raffaello's "Holy Family" (in the Louvre), which he had begun in Paris.

* We know of one scientific man who has introduced, in the decoration of his house, forms derived from mineral crystals as seen under the microscope.

THE RHIND LECTURES IN ARCHEOLOGY.

THE ROMAN OCCUPATION OF BRITAIN.

THE Rev. Dr. J. Collingwood Bruce, of Newcastle,—the Rhind Lecturer in Archaeology for the current year,—began a series of lectures in the Masonic Hall, Edinburgh, on the 15th inst., on "The Roman Occupation of Britain."

Dr. Bruce said the voyager who first revealed to the inhabitants of Europe the existence of our little island, was Pytheas, of Marseilles, who flourished about the year B.C. 330, and was contemporary with Alexander the Great and Aristotle. As the Carthaginians jealously concealed from other people the places where they obtained their supplies of tin, the merchants of Marseilles, who were desirous of sharing in the trade, sent Pytheas, a mathematician of eminence, upon a voyage of discovery. His main object was to find out the Cassiterides, or the tin islands, on the north-west coast of Spain. He was, however, directed to proceed as far as his judgment prompted and circumstances allowed. Sailing out of the Mediterranean, and skirting the coasts of Spain and France, he reached Britain. He appeared to have arrived in Kent in the early summer, and to have remained in the country until after the harvest. The results of the visit of Pytheas to England, as Mr. Elton remarked, might be traced,—doubtless he learned something about the tin trade, and he was probably the originator of that commerce in the metal which was established soon after his time on the route between Marseilles and the Straits of Dover. Again, almost all the earlier British coins were modelled after those of the age of Philip of Macedon and Alexander the Great, though, as time went on, they departed more and more from the excellence and correctness of the originals. The existence of these coins gave confirmation to the probability that Britain at this period was brought into connexion with some Greek colony. But although Britain was thus revealed to one portion of the Continent, when the Macedonian Empire was still in its prime, the people of Rome seemed to have regarded its position as inaccessible, and its very existence as a matter of mystery and dread. The history of its original discovery had been lost and obscured by fable, and of that circumstance the Great Julius skillfully availed himself. After a sketch of the position of the Roman Empire, B.C. 56, when Julius Caesar resolved to bring the Roman eagles face to face with the Britons, the lecturer said that the account given by Caesar showed that the occupants of the British soil in that day were not the wild untutored savage people they were generally pictured. Their cornfields showed that they knew and practised the arts of peace, and the construction and management of their chariots proved that they were skilled in the arts of metallurgy, and no mean mechanics and tacticians. It was noted that among the trophies of Caesar's second campaign were some British pearls, which in the form of a breastplate were presented as an offering to the goddess Venus. The expedition against Britain in the time of Claudius, A.D. 43, was next referred to, and a graphic sketch given of the character of the army which was commanded by Aulus Plautius. This army consisted of about 24,000 legionary troops, and of 45,000 auxiliary troops, including cavalry,—making together 70,000 men. That high figure, with the character of the generals sent, such for the bravery and the military skill of the inhabitants of Britain at this early period.

Roman historians did not tell where this large army disembarked. This was of little consequence; but it was natural that their operations would commence in the middle of the south coast, which it was their business to take possession of. At Chichester there was a suitable landing-place, and there also was still existing a Roman inscription belonging to the period of which they were now treating. It recorded the erection of a temple to Neptune and Minerva, in honour of the Imperial Family, by Cogidunus, a native Prince, who had received from Claudius the right of Roman citizenship, and the rank of Imperial legate. Tacitus, in his "Life of Agricola," and the lettered stone, illustrated and confirmed one another in regard to Cogidunus. The stone was now at Goodwood, and it had been asked how many of the thousands who went there at a certain season of the year ever paused to read and ponder upon this inscribed stone, which contained so early a record of the events of their beloved country. At Winchester an altar had been found, which was now in the British Museum, dedicated to the "Mothres" of Italy, Gaul, Germany, and Britain, i.e., the mother goddesses of the men of which the main body of the army was composed. In the triumph which followed upon the success of the Roman armies, the title of Britannicus was conferred upon the young son of the Emperor, and for the first time Britain was named in the coinage of the Roman Empire. Some gold silver pieces had come down to their time bearing on the reverse side a triumphal arch, on which was inscribed the words "De Britannia." A splendid triumphal arch was erected to the Emperor, the remains of which in the sixteenth century still spanned the Corso in Rome. A fragment of the inscription,—about one-half of which was attached to the arch,—was now preserved in the wall of a

terrace near the Barberini Palace. It consisted of a huge marble tablet, the inscription being formed of inlaid letters of brass. The inscription was as follows, the missing portions having been conjecturally supplied:—"To Tiberius Claudius Caesar Augustus, High Priest, possessed of the Tribunician power for the eleventh time, Consul for the fifth time, Imperator for the twenty-second time, Father of his country, the Senate and Roman people, dedicate this arch, because without any loss he subdued the Kings of Britain, and for the first time brought the outermost nations of the globe into subjection." The resistance of Caractacus and of Boadicea to the Romans was next referred to; and a notice of the extension of the limits of Roman occupation northwards, under Vespasian, brought the lecture to a close.

Dr. Bruce's second lecture was delivered on the 17th inst., when he continued his narrative of the Roman occupation of Britain, from the time when Vespasian assumed the purple. Early in this reign, he said, the limits of the Roman province, which in the time of Claudius had been marked by a line extending from Gloucester to Colchester, were advanced northward so as to be represented by a line extending from Chester to Lincoln. In the year A.D. 78, Agricola was appointed Governor of Britain, and in this post he was continued by the two subsequent emperors, holding it, in all, for seven years. He encouraged the people to build temples, courts of justice, and commodious dwelling-houses; he established a plan of education, encouraging the sons of the chiefs to acquire a knowledge of the Roman tongue. Roman apparel was recommended, and the toga became fashionable. Leaving Agricola's administration with the remark that with the close of Tacitus's life of that general our continuous information as to the history of the British province ended also, Dr. Bruce passed rapidly to Hadrian's visit, rendered necessary by the unsatisfactory state into which the affairs of the island had fallen. The sixth legion brought over by this emperor probably came, he remarked, to the Tyne. There was recently dredged from that river an altar dedicated to Neptune, as if the soldiers, after experiencing the perils and discomforts of the German ocean, had been profoundly thankful once more to set foot on solid land, and so expressed their gratitude to the deity to whom they owed their preservation.

After observing that for our knowledge of Hadrian's proceedings in Britain we were chiefly indebted to the spade of the excavator, Dr. Bruce said that, first of all, the emperor looked to the state of the roads by which his troops might at any time be rapidly moved. Milestones bearing his name were still in existence, two having been found within the last month or two; and it was he who built the wall across the lower isthmus, between the Tyne and the Solway. The campaigns of Lollius Urbicus, including the construction of the rampart known as Graham's dyke, between the Firths of Forth and Clyde, were next touched upon, and the subsequent incidents of the Roman occupation passed in rapid review down to the year 406, when the requirements of Rome rendered it necessary that the legionary troops should be withdrawn, and Britain was left in a miserable condition. The lecture was illustrated throughout by reference to Roman coins, of which numerous drawings and enlarged photographs were exhibited, and a *propos* of which the lecturer took occasion to commend the ancient practice of preserving in the coinage a pictorial history of passing events.

The third lecture was delivered on the 19th inst. Noticing first that at the beginning of the fifth century the legionary forces were withdrawn from Britain to defend the Capitol, and that the Roman occupation then came to an end, the lecturer proceeded to ask the question, "What could have induced that people to interfere with us?" There could be little doubt that Caesar was mainly animated by ambition in his invasion of our island, but Caesar's ambition would not account for the costly expeditions of Claudius and Vespasian, Hadrian, and other emperors. They must have anticipated substantial advantages. Britain could not have been a poor country during the time of the Roman occupation. The number of towns and cities, the populousness of some of these, the luxurious character of the villas which were from time to time brought to light by the spade of the excavator, the rich and tasteful ornaments which were found associated with the dust of the departed in their burial-grounds, all testified to the fact that the occupation of this island of cloud and fog and rain, of long nights and dreary winters, was not an act of pure generosity on the part of her civilisers. Depend upon it, they made it pay. Going on to refer to the Roman roads, camps, and walls in Britain, the lecturer remarked that it might seem strange that he gave roads the first place. He did so because the Romans knew their importance. Troops went all the more boldly forward when they knew that they had the means of bringing up supplies, and, if need should occur, of effecting a safe retreat. Occupying the whole civilised world, and some of the uncivilised, as their domain, Rome was under the necessity of having the means of readily communicating with every part of it. On looking at a map of Roman England, one could not but be struck at the complete network of roads which overspread the land, and doubtless many existed of which no trace could now be found. By way of showing how well ready access to the

great centres of population was provided for, it was mentioned that seven roads were known to have branched off from London,—though it was not then the capital; Wroxeter was the centre of five roads, and six started from Manchester. Scotland was not so well provided with roads as England, just because it was not so tightly held in hand. All the Roman roads were carefully paved. That their structure was considered to be something extraordinary by the Mediaeval inhabitants of the country was evident from the fact that they considered them to have been the work of wizards; and one of them,—that from Corbridge to Berwick,—was called the Devil's Causeway. There were resting-places for travellers at reasonable distances, and the roads were also provided with milestones, which were cylindrical in form, 2 ft. in diameter, and stood above the ground 6 ft. or 7 ft. The milestones were usually inscribed with the name of the Emperor in whose reign they were erected, and the number of miles that the spot was from the next station. The Emperor was lord of the road, and any offence committed on it was an offence against Majesty. The same idea had descended to modern times, for they commonly talked of the King's or Queen's highway, and a highway robbery was yet an aggravated offence. A Roman mile might roughly be stated at seven English furlongs. Most of the Roman milestones in Britain had perished. Two, however, stood in the places where they were put by the Romans,—one in Northumberland, the other in Westmoreland. About seventy others were to be found in museums. Two were in the Museum at Edinburgh. How numerous were the cities and camps between which these roads afforded communication was evident from the frequency with which the names of places, even at the present day, ended in "castrum" or "chester."—the Gothic form of castrum, and in "caer," the Celtic form of the same word. Besides that, many of the cities, such as at York and Chester, bore to this hour the form of a Roman Camp. Dr. Bruce, in conclusion, gave an interesting description of the wall or barrier which crossed the island from Wallsend on the Tyne to Bowness on the Solway, and which was seventy-four miles in length. It consisted, he said, of two principal parts,—the *murus*, or stone wall, and the *agger*, or earth wall, together with a military way and camps. The opinion at present generally entertained was that these works formed parts of one great design, and that all were originally constructed by Hadrian (A.D. 120). On the supposition that the works formed one great design, the *murus* was probably intended as a defence against the north, and the *agger* as a defence against the south; for although the tribes to the south had been subdued, their fidelity could not be relied on. It was supposed that the wall was 12 ft. high, with a battlement of 4 ft., and that it was 9 ft. in thickness. The highest piece of it now standing was 9 ft. 6 in. high. It was likely that the wall had been constructed by forced labour, and that if that was so the Britons had no easy task. Stationary camps or barracks for the soldiery who garrisoned the wall were provided at an average distance along it of about four miles, and in addition there were attached to it mile castles and turrets, the former of which, in all probability, had been intended to receive detachments of soldiers, and the latter for sentries.

COMPETITIONS.

Boys' Public School, Westoe.—The Boys Public High School Company of London have selected the designs prepared by Messrs. Oliver and Leeson, of Newcastle-on-Tyne, and submitted by them in competition for the company's first new school, which it is proposed should be built forthwith upon a site already secured at Westoe, near South Shields.

Langport Drainage, Somerset.—The authorities having invited engineers to submit schemes for the prevention of the flooding to which portions of the town are periodically subject, have awarded the premium to, and accepted the scheme with report and particulars submitted by, Messrs. Brierley & Holt, civil engineers, Blackburn and Manchester.

Fisheries Exhibition.—The designs for Wholesale and Inland Fish Markets submitted in competition at the Great International Fisheries Exhibition by Messrs. Oldham, Chambers, & Willins, architects, Norwich, have been awarded the first prize of Fifty Guineas (offered by the Corporation of Liverpool) and the Silver Medal. We may here mention that the design for the medal has been made by Mr. Lewis F. Day.

Ekmans's Mechanical Joinery Company, Limited, of Stockholm, have appointed Mr. Henry Smyth, who has long been connected with the timber trade, their sole agent for the United Kingdom. Their London business will continue to be carried on at 33, Wharf-road, City-road.

CHURCH OF GROSS-ST.-MARTIN, COLOGNE.

This church, of which we give a view in this week's *Builder*, rises at the eastern border of the city, on what was formerly a small island in the Rhine, which was joined to terra firma by Archbishop Bruno (surnamed the Great), Prince Bishop of Cologne and Duke of Lothringen, son of King Henry I. of Germany (born 928, died 965). Its tower rises grandly from the sea of houses around it. The gradual decay of the church has been arrested by a thorough restoration. There is only another turret on the tower wanted to complete the restoration of the external design; and it is stated that there is every prospect of the addition being made soon.

Apart from the work at the Cathedral, now happily completed in all its grandeur, much has been done at Cologne during the last thirty years towards the restoration of churches. The funds are either being supplied by building associations or they are advanced by the municipality, or else raised by rates levied in the respective parishes. The principal churches have been restored by funds raised by one of other of these expedients.

Gross-St.-Martin is an Abbey church belonging to one of the oldest foundations in Germany. Considerable changes were made in the church during the course of centuries, especially in the twelfth, when it was partly destroyed in a conflagration. The church was again damaged by fire in 1278. The work of restoration began in the following year, and Abbot Adam Meyer, of Eschweiler (1454-1499), carried up the tower to its present height. When the French Government suppressed all monasteries on June 9th, 1802, the church was assigned to the congregation of St. Brigitta as parish church, and thus preserved.

It has been suggested that the buildings surrounding the church on its eastern side should be pulled down. They prevent a good view of its best portion, the choir with the tower rising above it. Even as it is, however, the church as seen from the Rhine has a very fine effect, as those who have seen it will remember.

THE OSSINGTON COFFEE TAVERN, MARYLEBONE.

This coffee-tavern is situated in Paradise-street, in a thickly-populated neighbourhood at the back of the northern end of High-street, Marylebone, chiefly inhabited by the working class, and where in the courts and alleys a good deal of the "rough" element is to be found. The buildings have been erected and completely fitted up entirely at the cost of Viscountess Ossington, a sister of the late Duke of Portland, whose active interest in the cause of temperance is well known, and it was her ladyship's desire to provide for the working-men of this part of the Portland estate an attractive house of entertainment free from the pernicious influences of the public-house. The building has a frontage of 27 ft. in Paradise-street and a depth of 75 ft., the side front being towards Grafton-court.

The ground-floor is chiefly occupied by the large coffee-room, 52 ft. deep, with the bar, and well lighted by large windows; at the back there is a separate dining-room 20 ft. square, adjoining which is the kitchen. The other offices are in the basement of the front building.

On the first floor there is a club-room, 38 ft. by 20 ft., with a separate staircase and lavatory; the manager's rooms are also on this floor.

The two upper stories contain thirteen small bedrooms or cubicles, each having a separate window, and ventilator over the door, the partitions being carried up to the ceiling, in order to give greater privacy; they are plainly but comfortably furnished, and are let to single men only. There is a separate lavatory provided for the lodgers. The water-closets are served from separate cisterns, and the soil-pipes are ventilated.

Externally, the arcade on the ground-floor, which marks the extent of the coffee-room, is in red Corshill stone, as are also the bay window of the front and all the cornices and string-courses; the remainder is faced with pink-stocks and brick dressings. The roof of the bay is covered with copper, the other roofs are slated.

The contractors for the general works were Messrs. Staines & Son, of Great Eastern-street; the cooking apparatus was fitted up by Messrs. Benham & Sons, of Wigmore-street; and the other fittings and furniture were supplied by Messrs. Hogben & Co., of Appold-street, Finsbury. The cost of the building was about 3,700l., exclusive of fittings. The architect was Mr. Chas. Fowler, the Surveyor to the Portland Estate in London.

The adjoining house has also been altered and fitted up by the same benevolent lady as a lodging-house for single men. It contains sixteen separate small bedrooms, each fitted up in the same way as those in the coffee-tavern. The drainage and sanitary arrangements are entirely reconstructed, and suited to the special purpose. There is a resident manager and attendant, and it is believed that the accommodation provided will meet a much-felt want. The alterations were carried out by the same contractors under Mr. Fowler's direction at a cost of about 650l.

CHANCEL SCREEN, ST. JOHN'S CHURCH, UPPER ST. LEONARDS.

This church stands on a site previously occupied by a temporary church which was twice destroyed by fire.

The present permanent chancel was built two years ago and joined to the nave of the temporary structure which was left standing and still used while the permanent nave, now just completed, was built over it.

During the short interval in which the church was necessarily closed for clearing away the temporary building and the completion of the floors, the chancel screen, of which an illustration is given this week, was erected. It is executed in wrought iron by Messrs. Hart, Son, & Peard, who obtained the work in competition with several other firms. The architect is Mr. A. W. Blomfield, M.A. The screen is the gift of a lady a member of the congregation.

LONDON STREET ARCHITECTURE.

NOS. 30, 31, AND 32, FLEET-STREET, AND FALCON-COURT.

THESE buildings now in course of construction opposite the Church of St. Dunstan, are for Messrs. Philip, the large map and chart printers and stationers of Liverpool, who have had for many years a branch establishment on the spot. They will occupy a part of the ground-floor and basement, and let off the remaining shop and basement and offices, which latter are arranged in pairs, and will be very simply lighted.

The front rooms on the fourth floor, with tall cut up windows and sloping glass tops, look northwards, and are intended for draughtsmen, the housekeeper's rooms being in the roof.

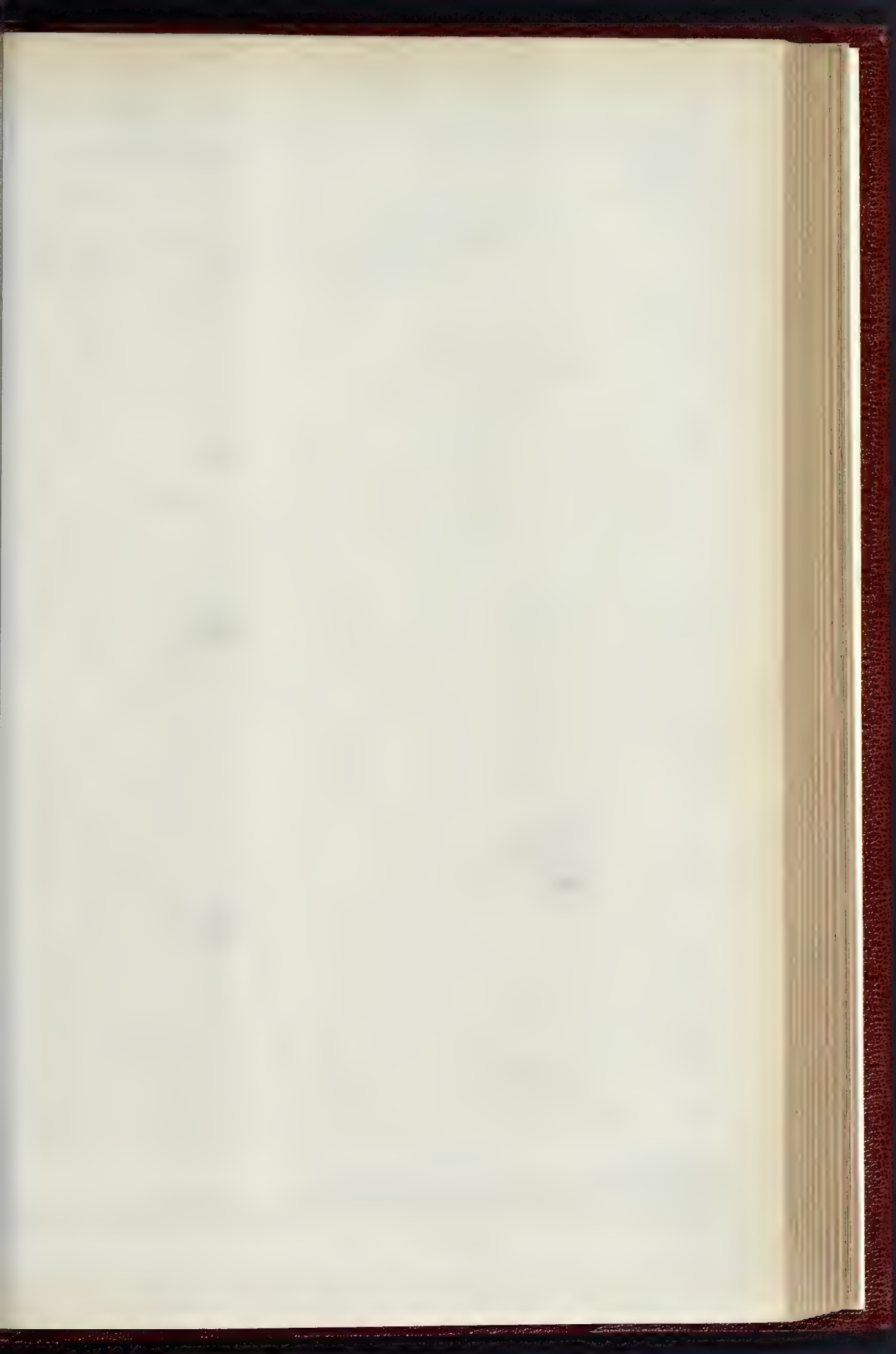
The front is to be built in brown Portland stone. The arms and crests are of the Cordwainers' Company, to whom the land belongs; the other devices pertain to Messrs. Philip's business. The contractor is Mr. Charles Wall, of Ashburnham Works, Chelsea; the architect is Mr. T. E. Knightley, 106, Cannon-street. The style is French Renaissance.

CHIMNEYS AT HAMPTON COURT.

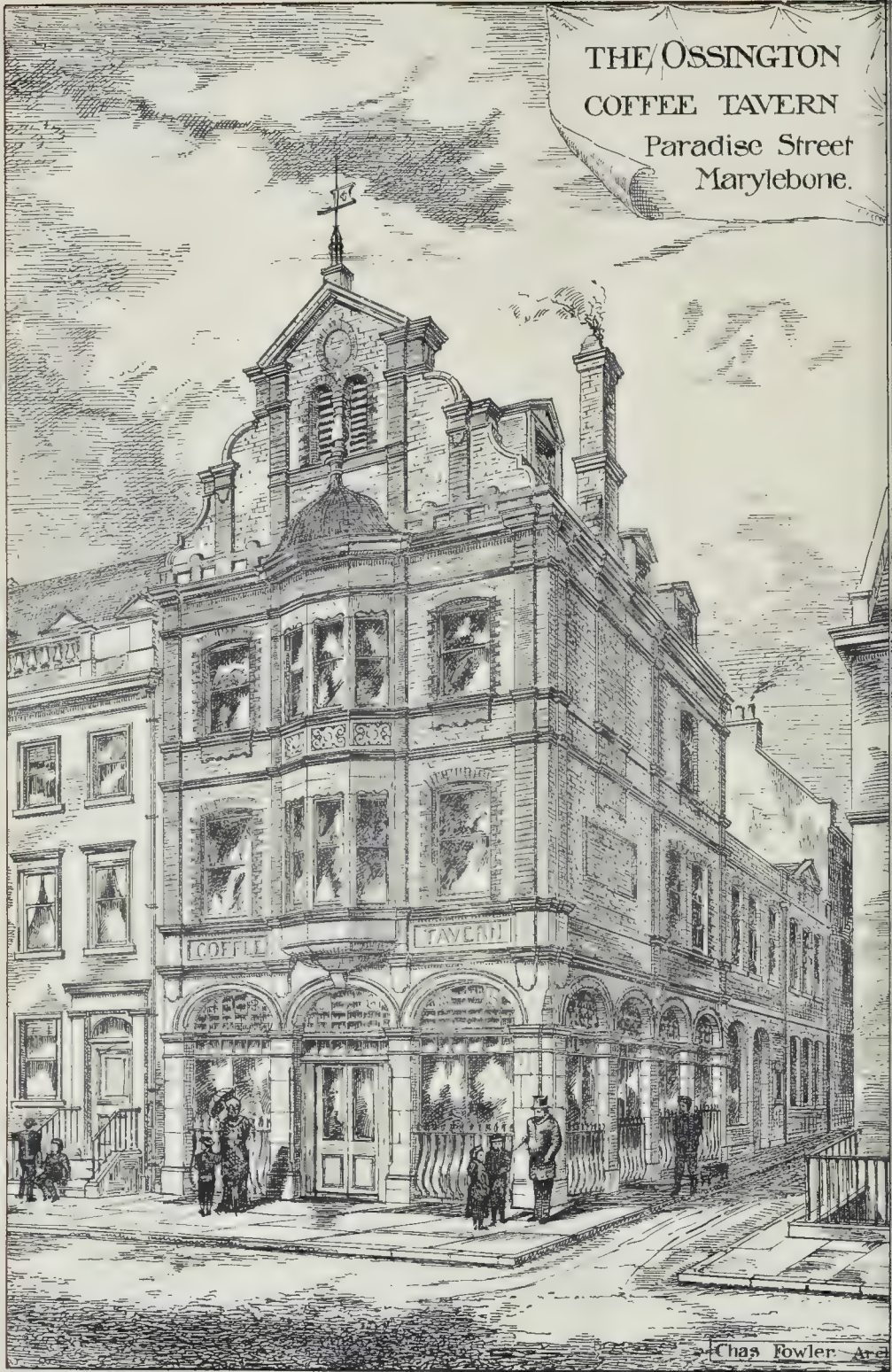
THESE chimneys are on the north front of the palace, facing Tennis Court-lane, and are not, I believe, so well known as the rest of the building. They form part of the original palace built by Cardinal Wolsey on the manor of Hampton, leased to him by the Hospitalers in 1515. Wolsey "presented" the place in the year 1526 to King Henry VIII., who added the Great Hall. The buildings already surrounded five courts, of which only two now remain. The walls of the Hall are lined with very fine Flemish tapestries, probably designed by Van Orley. The palace was greatly extended in William III.'s reign by Sir Christopher Wren, who designed the Fountain-court and the east front overlooking the garden. Hampton-court was a very favourite royal residence from Henry VIII.'s reign until George II.'s.

ARTHUR KEEN.

Mr. W. Hilton Nash, of 5, Adelaide-place, London Bridge, has been appointed Architect and Surveyor to the Merchant Taylors' Company.



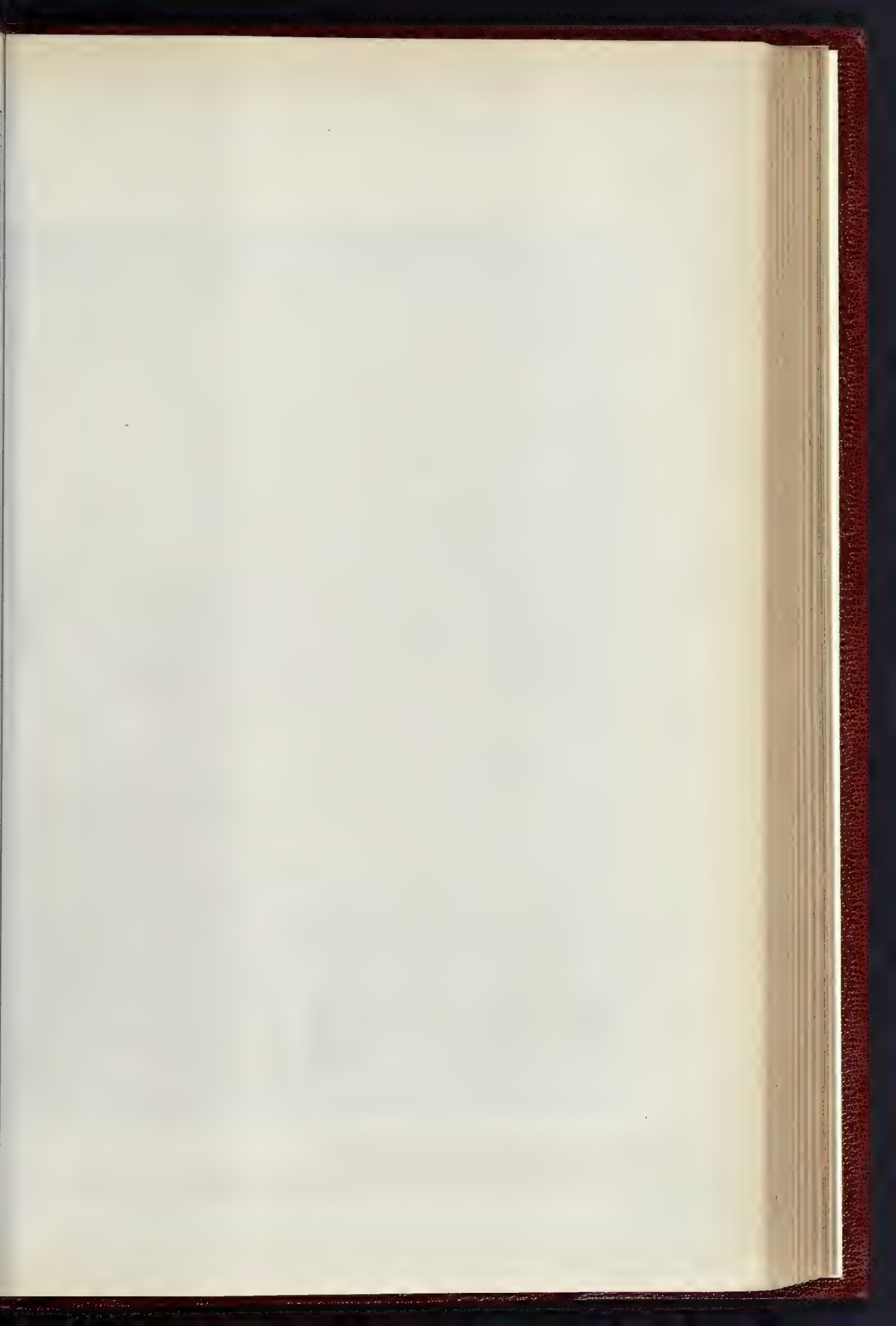
THE OSSINGTON
COFFEE TAVERN
Paradise Street
Marylebone.



W. & A. Bass Photo. 100 High Holborn

Chas Fowler Archt

Wyman & Sons Printers 10 Queen St

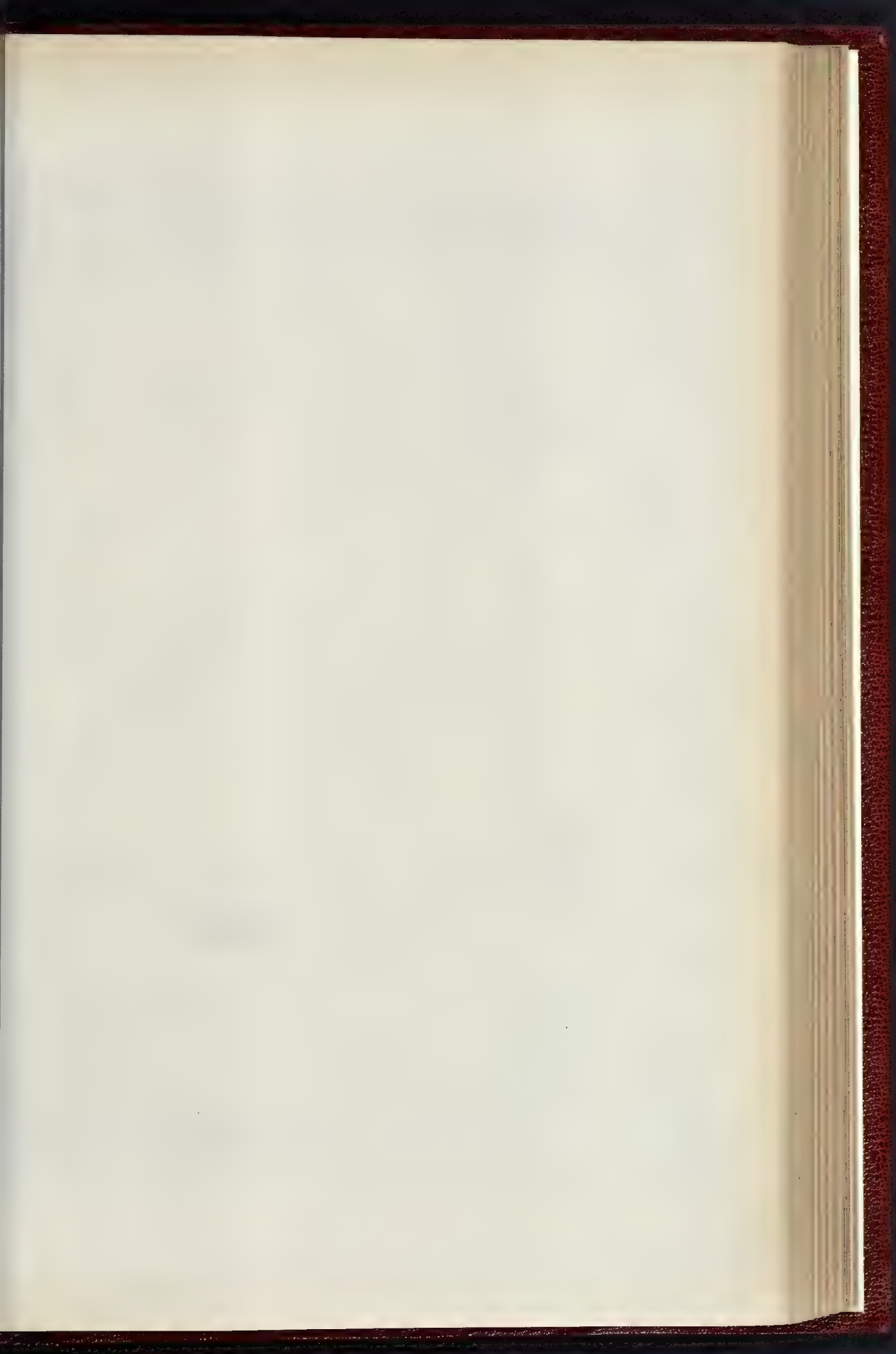


THE BUILDER, OCTOBER 27, 1883.





THE CHURCH OF ST. MARTIN, COLOGNE.



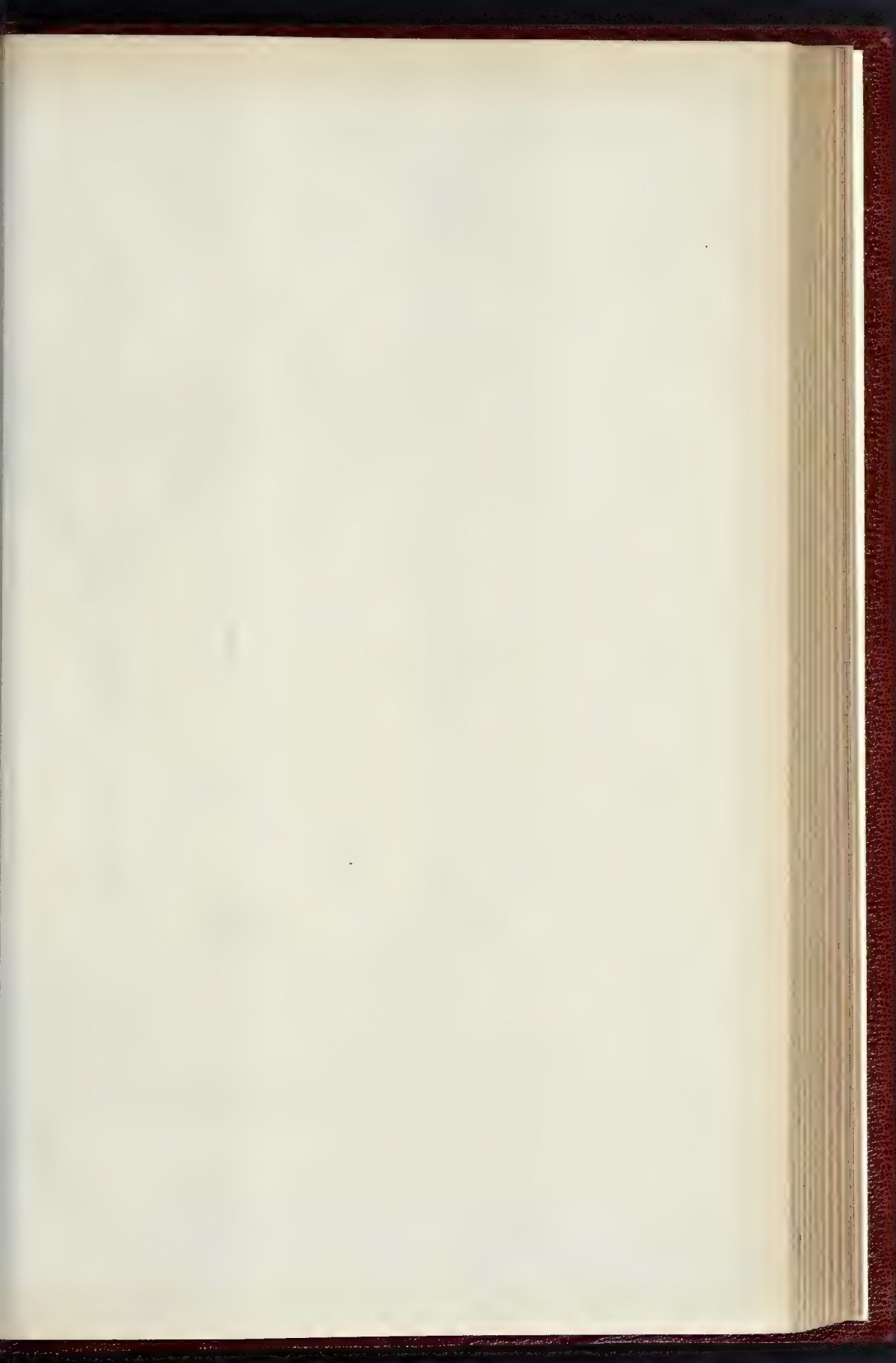
THE BUILDER, OCTOBER 27, 1883





Vincent Brooks, Day & Son, Printers litho

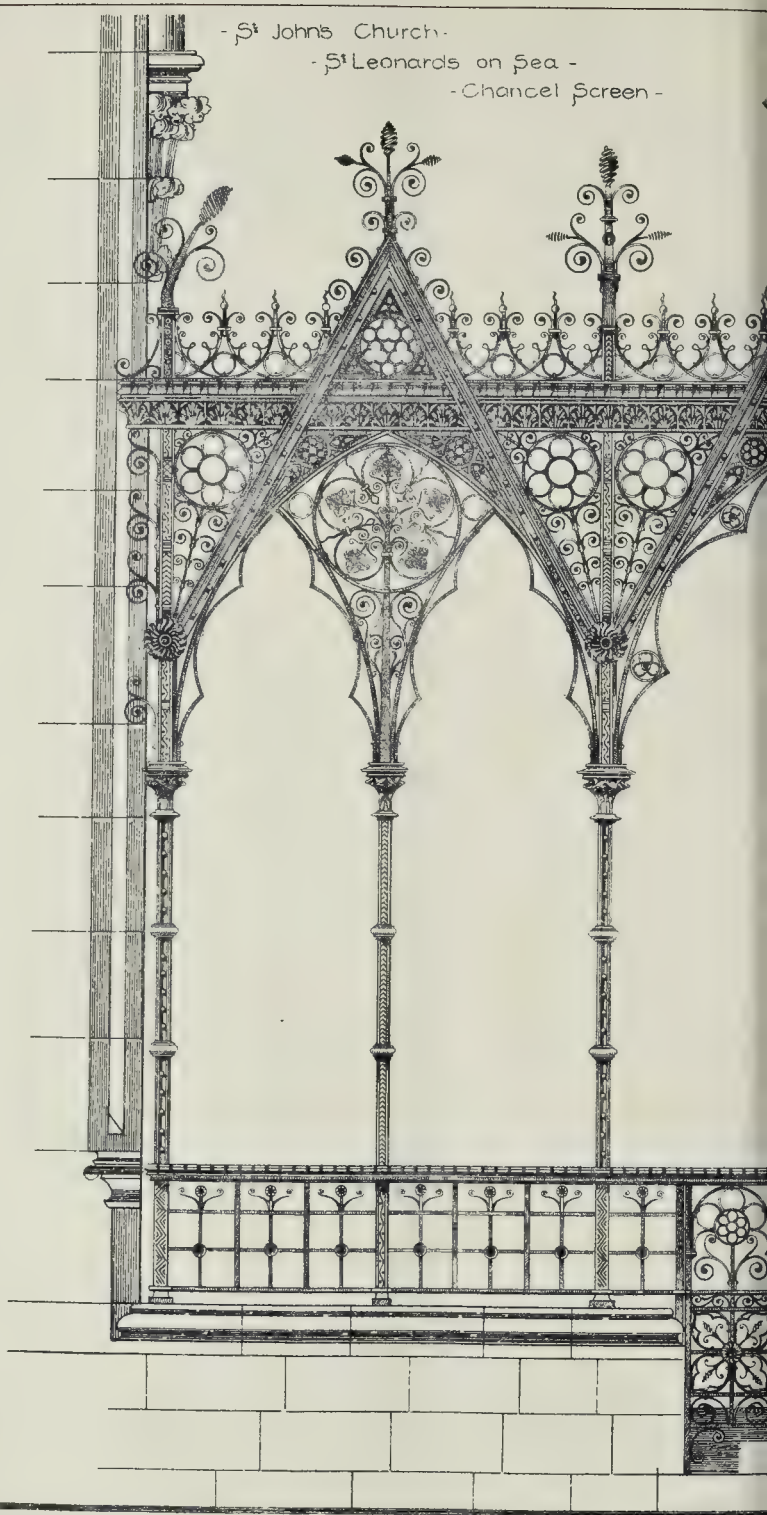
STREET ARCHITECTURE, 30, 31 AND 32, FLEET STREET AND FALCON COURT.

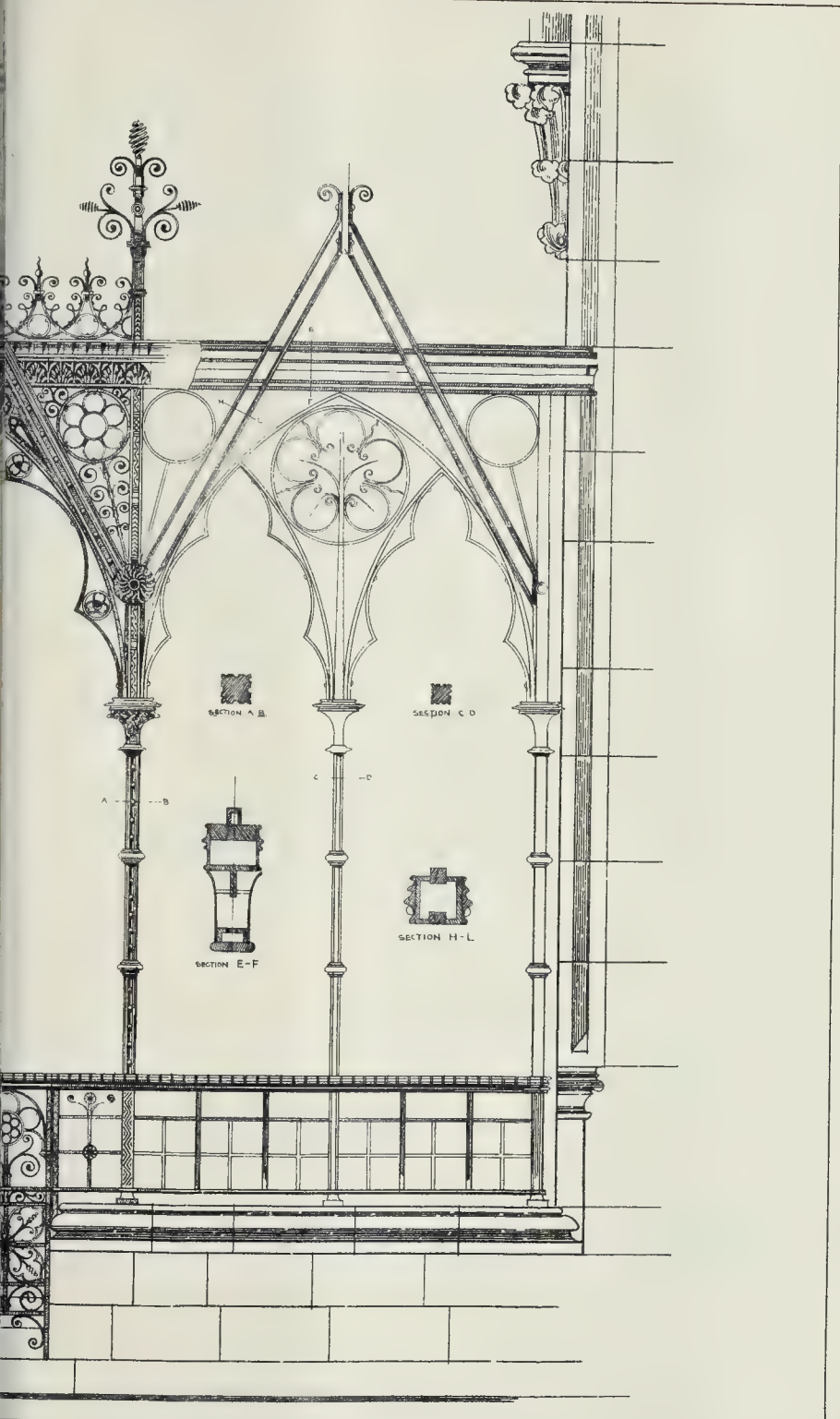


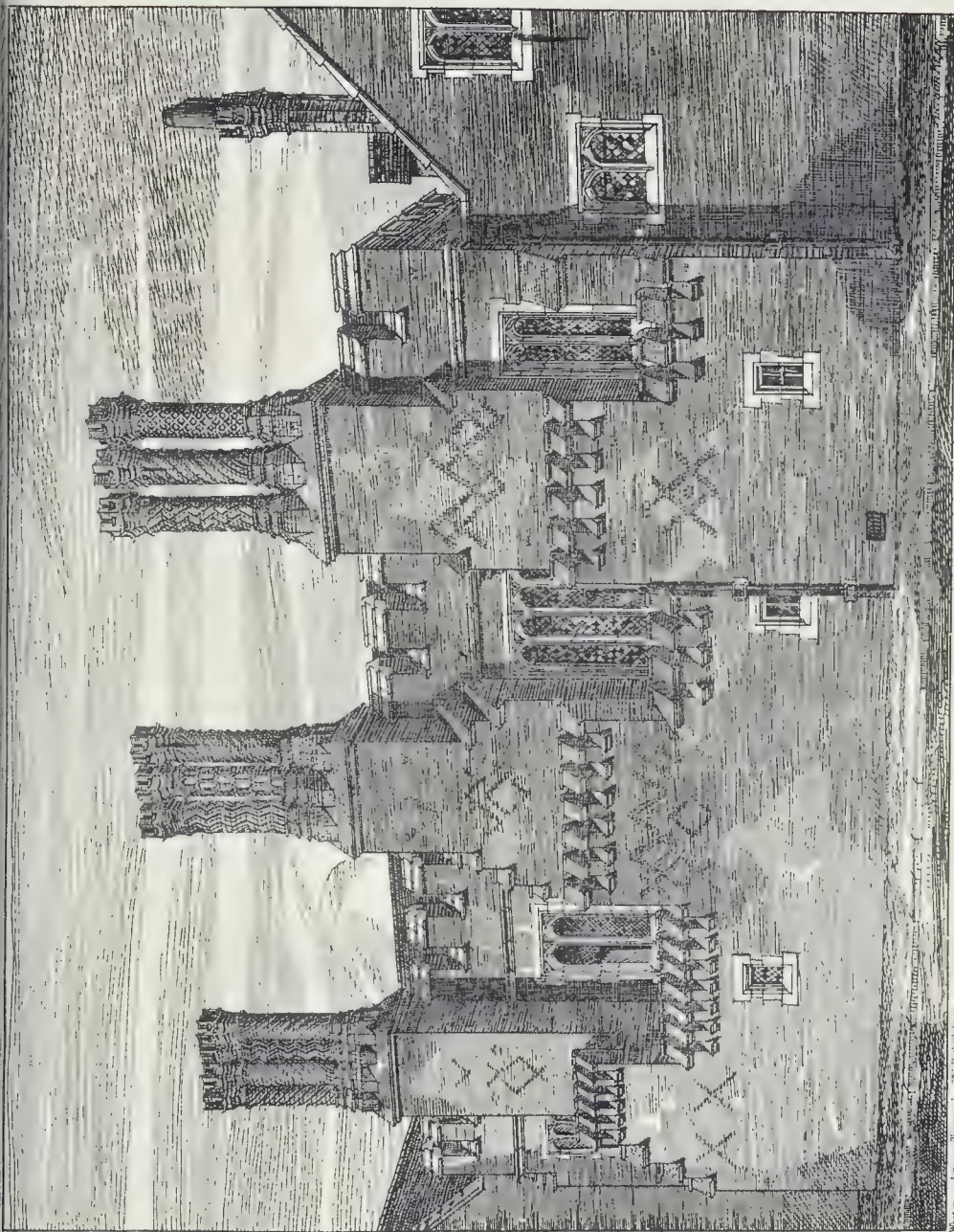
- St John's Church -

- St Leonards on Sea -

- Chancel Screen -



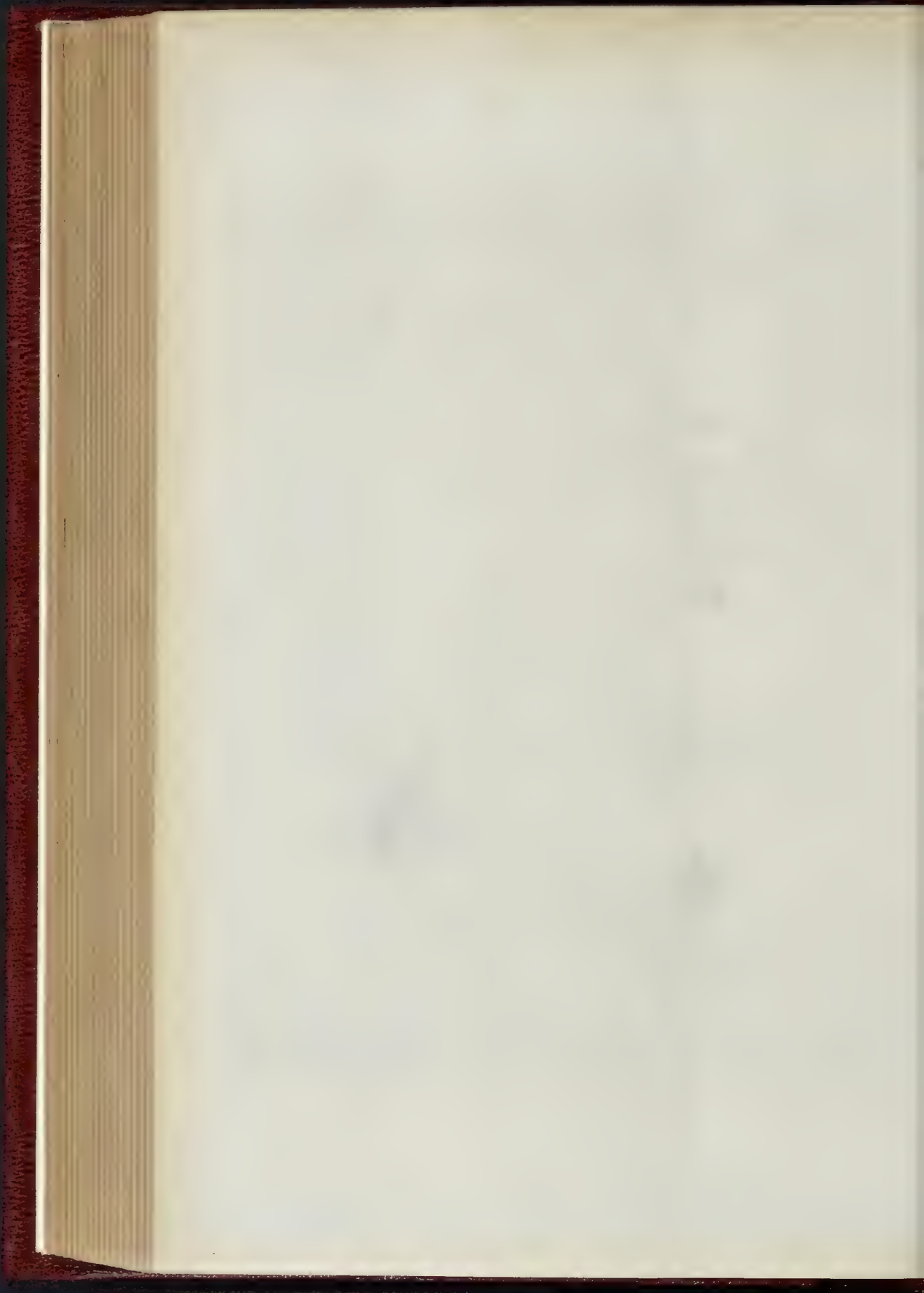




CHIMNEYS AT HAMPTON COURT.

W. Marshall del.

Whitman & Co. Lith. N.Y.



THE HOLBORN RESTAURANT.

From the time that the buildings formerly known as the Holborn Casino were purchased and adapted (as far as they could be) to the purposes of a restaurant, the success of the establishment has been so great, thanks to good management, that it has been found necessary to entirely rebuild the premises, and to make considerable additions to them. Of course, in the rebuilding (the carrying out of which with safety and without interruption to the business for a single day has called for much care as well as fertility of resource on the part of those responsible), the premises have been specially designed to meet their purpose, and with increased comfort and convenience the establishment is sure to maintain its popularity. The work is now practically completed, and on Monday evening a large party of ladies and gentlemen were invited to view the premises, of which we append a few particulars, supplementary to those which we have given from time to time, reserving to a future occasion more detailed notes, possibly accompanied by illustrations.

The new building as seen at the principal frontage in Holborn exhibits a facade of stone and granite, as designed by the architects, Messrs. Archer & Green, of Buckingham-street, Strand. The *Crush Room*, reached through the lobby of the main entrance in Holborn, is a spacious and lofty vestibule, affording ample convenience for arriving and departing visitors, and for guests awaiting their friends. Passing into it, we find a double flight of marble stairs, conducting to the Venetian Salon and other large rooms. The Grand Salon is entered from the *Crush-room* by a sculptured doorway in statuary marble, the work of Mr. H. Armstrong, R.A. The *Crush-room* has a dado of richly-coloured dark marbles, and the walls are all lined with carefully selected English alabaster, highly polished, framing large Venetian mirrors. The chimney-pieces are of veined marble, having panels of statuary marble enriched with Cinque-Cento carving, and the shelves are ornamented with Salvati Venetian glass. Above these chimney-pieces are other Venetian mirrors framed in mirrors similar to those below; right and left are pilasters, the shafts,—of the same richly-toned marble as dado,—having bases of black marble and solidly gilded Corinthian capitals. Four monolithic columns, corresponding to the pilasters, stand on pedestals of marble in consonance with the dado. Crowning the whole is the ceiling, panelled, diapered, and richly gilded. The *Grand Staircase* ascends right and left from the *Crush-room*, and is of Carrara marble. The balusters, of highly-polished English alabaster, largely varied in its markings, support a massive hand-rail. The walls are panelled; margins of rich brown marble surrounding alabaster so arranged as to produce, from the actual markings of the material, quaint and picturesque patterns. Below these panels is a dado of like design and colouring to that in the *Crush-room*. The *Grand Salon* is surrounded by three balconies, entirely supported by solid white marble columns, enriched with gilded capitals, and thrown into relief by hangings of crimson velvet. The two lower balconies are arranged for the service of dinners at separate tables, so disposed as to secure complete comfort and a certain degree of seclusion. The upper balcony is appointed and furnished for coffee and smoking. The fronts of the balconies are protected by elaborate brasswork, with panels of *repoussé* of the same metal, and finished with rich *ornolu*. These and the electroliters throughout the building have been supplied by Messrs. B. Verity & Sons, of King-street, Covent Garden. The ceiling of the Grand Salon is composed of Messrs. Jackson & Sons' decorated fibrous plaster, and the lighting is effected by the adoption of translucent tinted and stained glass, set in richly-gilt wrought-iron frames. Both metal work and glass are from the designs of Messrs. Clayton & Bell. The Orchestra occupies a considerable space at the northern end of the Salon. The area of the Grand Salon, at its southern extremity, is separated from the Queen-street vestibule, leading to the Grill-room and the large private dining-room at that end, by an elaborately carved screen of walnut and ebony by Messrs. Maple & Co., who have supplied all the furniture and upholstery throughout the building. The *Venetian Salon*, to reach which the visitor should return to the *Crush-room*, is on the first landing of the Grand Stair-

case, and extends across the entire frontage of the building in Holborn. Next to the Grand Salon, this may be regarded as the principal apartment of the building. The walls, of purple-veined Pavonazzi marble, are divided into panels by pilasters of Vert des Alpes, having Corinthian capitals richly gilded, and black marble bases. The dado and mouldings are of Siena and deep green and black marbles; the cornices of alabaster and gold Venetian mosaic relieve the richly-coffered ceiling, the coving of which is broken by the window-heads and lunettes, the latter containing paintings by Mr. C. J. Durham and Mr. C. W. Morgan. On the north side are five large windows, specially designed for this room by Messrs. Clayton & Bell, who have also furnished the stained-glass windows of the Grand Salon, and the rooms in the front of the building. The floor of the Venetian Salon is composed of mosaic, consisting of an enormous number of tessera; and, along with all the other Roman mosaic flooring, is the work of Messrs. Burke & Co., of Newman-street, who have also supplied the whole of the marble work throughout the building, and to whom the proprietors express themselves as indebted for the assiduous attention they have bestowed upon it during the progress of construction. We may have more to say about the exceedingly good work done by this firm. Among the other apartments are the *Queen's Salon*, the *Prince's Salon*, and the *Masonic Temple*. The latter has been constructed from special designs by the architects, Messrs. Archer & Green, and the decorations have been carried out by Messrs. Campbell & Smith. The *Duke's Salon*, at the southern end of the building, is reached either by way of the Holborn Buffet entrance, or from Queen-street by the Lincoln's Inn entrance. There is some excellent carving on the woodwork of this apartment. Niches containing mirrors, and four large gilded figures, cast by Elkington & Co., representing the four quarters of the globe, serve further to relieve the walls. The *Grill Room*, approached either by passing through the Holborn Buffet or from the Queen-street entrance, is both a handsome and popular department of the building. The ornamental portion of the grill has been provided by Messrs. Doulton & Sons, of Lambeth, and is an excellent example of their celebrated *faience* ware. The *Buffet* has its separate entrance in Holborn. It is spacious and handsomely decorated, constructed chiefly of marble, the roof being supported by solid marble columns. The bays of the ceiling are filled with appropriate and effective paintings by Mr. C. J. Durham, of the Slade School. The *Lincoln's Inn Buffet* is approached from the Queen-street entrance by a spacious vestibule and passage, the walls of which are composed of figures and ornaments, in high relief, formed of the Burmantofts *faience* of Messrs. Wilcock & Co.

Among the firms not already specially named as having executed works in connexion with these buildings, we may mention the following:

F. G. Anstey, 11, Alpha-road, Regent's Park, Portland stone and granite work in front of building; Benham & Sons, 59, Wigmore-street, W., kitchen fittings and culinary apparatus; Bailing & Co., 169, High Holborn, gas water-heaters; Braby & Co. (Limited), Euston-road, zincwork; Russell, Gibbs, & Co., 76, Wells-street, Oxford-street, silvered plate in *Crush-room*; Cooper & Sons, 131, Drury-lane, ornamental ironwork; Dennett & Ingle, 5, Whitehall, S.W., fireproof flooring; Drew & Cadman, 245, High Holborn, buffet fittings, woodwork in "Colonel's Room"; Edison Electric Light Company, 74, Coleman-street, E.C., electric lighting throughout the building; T. Easley, 38, Great Portland-street, W., ventilation, wrought-iron work, and skylights; England & Sons, 5, Barry-place, Bloomsbury, part of tinework; Eade & Sons, High Holborn, glazing; D. Glass, Mansel-street, Whitechapel, service-room fittings and hot plates; Goslett & Co., 28, Soho-square, silvered glass in Grill-room; J. W. Gray & Son, 115, Leadenhall-street, E.C., lightning-conductors; Alex. Gibbs, 21, Bloomsbury-street, W.C., stained glass in Grill-room; Handside & Co., Derby, iron roofing, &c.; Hulet & Co., 65, High Holborn, gas and water maining, and special tubes; Jennings & Sons, Palace Wharf, Stangate, Lambeth, lavatories and sanitary work; G. Jennings, High Holborn, ornamental writing; George Kent, 200, High Holborn, ice leaders; Minton, Hollins, & Co., Bond-street, part of ornamental tilework; Macfarlane & Co., Possil Park, Glasgow, cast-iron work; C. W. Morgan, King Henry's-road, some of the lunettes in Venetian Salon; T. J. May, High Holborn, ironwork; A. L. Moore & Co., 89, Southampton-row, W.C., stained glass in Holborn Buffet, Colonel's and Duke's Rooms; Readle & Co., 3, Westminster Chambers, S.W., external glazing; Robinson & Robson, 33a, Belvedere-road, Lambeth, art ironwork in handrail of Duke's Staircase; Dr. Salvati Burke & Co., 311a, Regent-street, Venetian mosaic and glass; Simpson & Sons, St. Martin's-lane, Trafalgar-square, tinework, and enamelled iron ceilings in Holborn Buffet and Colonel's Room; J. Stone, St. George's-road, Southwark, cellar wine-bins; H. Smith & Son, 23, York-street, York-road, Lambeth, bakery, ovens, and fittings; Shand, Mason, &

Co., 75, Upper Ground-street, Blackfriars, fire mains, hose, and buckets; B. Verity & Sons, 31, King-street, Covent-garden, electroliters,—brass, *repoussé*, and ornolu work in balconies; Williams & Co., Ferry Iron Works, Wharf-road, Cubitt Town, portion of tinework; Waygood & Co., Great Dover-street, S.E., goods lift.

Mr. G. H. Holloway has, by his advice and experience, rendered efficient aid to the clerk of the works (Mr. T. Holloway) throughout the construction of the building. The whole of the work has been carried out by the proprietors without the employment of a general contractor.

EXOTIC ART.

ON Monday evening Mr. J. H. Chamberlain, architect, delivered a lecture on "Exotic Art" to the members of the Birmingham and Midland Institute. Referring to the title of his lecture, Mr. Chamberlain said that during the past few days he had received many inquiries as to its meaning, and it seemed to him that as those inquiries were so repeated, possibly no one, himself included, knew in the least what "Exotic Art" meant. Imagine his relief on taking up the *Century Magazine* for the present month when he found that an essayist knew all about it. The writer's remarks were:—"It is impossible to say that artistic feeling is exotic in England, not knowing with absolute certainty whether they were Englishmen who built the magnificent old cathedrals or not; but it does seem that, since the race was what it is, anything æsthetic is a chance flower, and of so rare occurrence that its exceptionality,—its want of visible cause and effect in precedent or succession,—proves the rule more clearly than though no example had ever been found." The writer then went on to say that the cities of the civilised and half-civilised world would not furnish another such collection of hideous public edifices, with so little originality, so little sense of fitness or artistic insight, as the capital of England showed. He described St. Paul's as "a squat parody on St. Peter's, with everything that is ugly of the original, and no advantage of position like it; the British Museum was "an ill-harmonised *pot-pourri* of Greek motives"; Trafalgar-square, "a curious antithesis to the Place de la Concorde, with the elaborate intimation of that freak of some barbarous Roman, Pompey's Pillar, instead of the obelisk, and that ludicrous combination of the shut-up and elongated, the National Gallery, crowning it." They would see from this the essayist was perfectly assured that at the present moment art in England was not only barbarous, but was also exotic, and he did not appear to be able to make up his mind as to whether or not we had always been exotic. As regarded the cathedrals, one could be easily convinced that Englishmen built them. But what the writer said was that art in England was exotic now, and that once it was not so. They might agree with him that English art was not exotic for 300 years, and that for 500 years it was. In 1050 art was only beginning to bud; 1550 was the central period, the period of the change; and 1851 was the period of another great change. Exotic art was similar to exotic gardening. What it did was to endeavour to reproduce, under entirely new conditions, the particular products formed by some other and different conditions. Either the imports must be acclimatised or they must have artificial conditions to suit them. As to gardening, they could do this readily, but they could not make artificial conditions of this kind with respect to art. They knew that if a palm were planted in a bed of cold English clay it would die; but with regard to art, they did not know anything of the kind. People passed through the streets and cities and they did not know death from life, and yet there was a difference which some of them recognised. If he were to define what "exotic art" was he should have to try two or three definitions. They might call it "foreign art out of place," or "foreign art reproduced under false conditions," but he should define it as "art that could not possibly be evolved from the country or nation producing it." People did not think that any art was a form of life; that it was a perfectly natural development, and that it depended for its characteristics upon the country and the people of the country by which it was evolved. He would illustrate this by saying that English people would not have thought of building a pyramid or an obelisk. Coming nearer home, they would not have built a church in Dale End, or in fact any of those foreign ornaments that

are to be seen in various parts of England. The lecturer gave several illustrations by outlines on the black-board of public buildings,—amongst them the Birmingham Town Hall,—and said that these forms could never have been dreamed of in England, and therefore they were exotic. The next question to ask was, "How far did exotic art extend?" Fortunately it did not embrace the whole of art; they must except painting and sculpture. They were brought into contact with decorative art every moment of their lives, and if they wanted to see how far it entered into their lives they had only to turn out of their houses everything that had something of decoration and they would find that they would have nothing left at all. As regarded painting, there was one great branch of art in which they all rejoiced that none of the foreign art existed. He meant landscape-painting. And what was more, it was going on in a glorious path of conquest, and year by year it would gain greater triumphs. Our landscape-painters looked with their own eyes, undimmed by looking through any Roman or Grecian spectacles, and they painted things as they really were. But how different their position would have been if anything of Roman or Grecian art had been mixed up with it. Sculpture was very nearly dead. There were great sculptors,—living masters of their art,—but it did not enter into every-day life. If our painters were to perish to-morrow there would be a great feeling of grief throughout the land. Tell the same people that there would be no more sculpture and they would hardly miss it. Why was it nearly dead? Simply, he believed, because it would have nothing to do with common every-day life. It did not like us. It said, "You do not dress properly,—your noses are not the right shape." Pointing to a drawing of a Greek face on the platform, he said because our noses are not straight from the forehead, and our upper lips were not short, sculptors took no cognisance of us. The Greek ideal was not always consonant, at any rate, with what was greatest in literature. Shakespeare's upper lip was long, and Scott's was longer still. Let them take Flaxman's outlines, for instance. Whatever he had illustrated they would find that Greek type observed, and it was a most unfortunate thing for that great man that he was so enveloped, so swathed, with exoticism, that he never even to his last day became completely English. He passed on to speak of the growth of art in England until 500 years ago. About this time it began to decline, but a great change was really taking place. In 1550 they did not want great castles and large houses, the age for them had passed, and art was endeavouring to adapt itself to these new wants, and it did it successfully. It was the period of a great revolution with respect to thought and feeling,—Medievalism had passed away, and a new race was coming into existence with new ideas, strength, and determination. What they wanted was progress, light, freedom from captivity; and yet in literature and art the men who wanted freedom forged themselves new chains. They said it was their duty to imitate the ancients in literature and art, and so they introduced the products of ancient thoughts, minds, and wants. This went on for a great many years, and it was really no exaggeration to say that art in England was practically dead. At last there was a change, which was brought about in the first place by the revival of English Gothic. The year 1851 marked a new outburst of ancient activity, whose evidence he saw around, and felt its warmth to this day. Even our grandfathers would stand aghast at what we were doing, and would exclaim:—"No nation could stand such ruinous expenditure. But how many new countries had been discovered, what new and varied and strange wants had been felt? A much broader and wider ideal of art had been obtained, and the consequence was that we understood foreign conditions better than we did formerly. But at the same time it had increased our exoticism,—because when these things came into England everybody tried to imitate them. What was the remedy? He did not for a moment deny the existence of art in England. Our art was exotic to a great extent, and this hindered it from being developed in the right way. All art was based on ideas. It was like speech, if they had nothing to say they should not try; but if they had something to say in art, let them first see whether the ideas were theirs or belonged to

some one else, and then see whether they had adequate expression for it.

A melancholy interest attaches to this lecture, for Mr. Chamberlain died very suddenly within an hour after its delivery. Mr. Chamberlain, who was in his fifty-second year, was a native of Leicester, where he received his art education. He went to Birmingham about twenty-five years ago, and has ever since practised there as an architect, first on his own account, and for many years past in partnership with Mr. W. Martin. In his professional work Mr. Chamberlain was a very close and diligent worker, bestowing an exceptional amount of time and care in the execution of his designs. According to the *Birmingham Gazette*, when the building of the Free Libraries, in Ratcliff-place, was commenced, Mr. Chamberlain had not entered into partnership with Mr. W. Martin, and the designs for the original building were executed by Mr. Martin himself, but Mr. Chamberlain subsequently designed most of the enrichments in the plaster mouldings, and also assisted in carrying out the fittings and furnishings. In the restoration of the Free Libraries after the fire, Mr. Chamberlain, in conjunction with his partner, prepared the drawings of the building as it now exists, the ornamental and decorative parts being mainly Mr. Chamberlain's own designs. The re-decoration of the Town-hall a few years ago was carried out from Mr. Chamberlain's drawings. Every bit of ornamentation and foliage in the internal decorations were drawn by Mr. Chamberlain, together with the whole of the details.

A YEAR'S BUILDING WORK IN OXFORD.

In accordance with its usual custom at the commencement of the academical year, the *Oxford Journal* gives a detailed account of the various works of alteration and improvement, new buildings, &c., which have been carried out or commenced during the past twelve months. We call a few items from the long list:—

The Colleges.—At Christ Church, the stonework of the south bay window of the dining-hall has been restored in Taynton stone, and a new stained-glass window inserted. A considerable amount of sanitary work has been executed, under the supervision of Mr. Griffith. C.E. Three spacious lecture-rooms have been formed on the first floor of the old library. The builders entrusted with the work were Messrs. Symm & Co., of Oxford. At University, a considerable part of the stonework of the north side of the large quadrangle has been renewed by Messrs. Symm & Co. At Lincoln College Messrs. Knowles & Son, Holywell, have restored and re-cased the front of the main tower over the entrance-lodge with Bath stone from the Combe Down quarries, on the lines of the old tower. About a dozen chimney-stacks have been taken down and rebuilt, in each case being lined with fire-clay pipes. The buttery and cellars have also been thoroughly re-arranged. The library and the rooms north of the tower at All Souls' College have been re-cased and restored in Box Ground stone in a style to match the existing work. This has been carried out at a cost of 1,200*l.* by Messrs. Knowles & Son, under the superintendence of Mr. George Young, the College Surveyor. The main drainage system of the College has also been thoroughly overhauled, under the supervision of Mr. Griffith. At New College the beautifully-carved fine old oak panelling in several of the sets of rooms in the back quad has been removed, and has been replaced by plaster. The oak was in a very good state of preservation, and questions are being asked as to the object of the alteration. The work of restoring the gables on the south side of the quad at Oriel College has been completed by Mr. Curtis, builder, Little Clarendon-street. At Corpus College restorations have been carried out by Mr. George Castle. A new lecture-room has also been formed in the Fellows' block by Messrs. Symm & Co. At Jesus College the whole of the interior of two staircases on the south side of the outer quad has been entirely removed. The old rooms were inconvenient in many respects, and the staircases were almost worn out and in a dilapidated condition. Several of the old partitions have been removed, and nine sets of rooms have been re-arranged. The new staircases are of solid teak, with oak rails and posts of a substantial character. At the

back of the inner quad some requisite sanitary additions have been carried out. The whole of the work has been executed by Messrs. Franklin & Son, of Deddington, from the plans of Messrs. Bodley & Garner. A very considerable amount of work has been done at Merton College during the Long Vacation. St. Alban Hall has been absorbed into the College by the two quadrangles being connected by massive and effective archways, the difference in the level being overcome by a slight incline in the floor which passes under the Warden's gallery. The kitchen and other offices used by the Warden in the College quad have been made into undergraduate rooms, and the Warden's new kitchen, &c., have been formed in the rooms formerly used by the undergraduates on the south side of St. Alban Hall. The best Taynton Ground stone has been used in the work, which was entrusted to Messrs. Symm & Co. The important extensions at Magdalen College, which have been in hand for about two years, are now almost completed. The façade in the High-street is nearly 200 ft. in length, and the west wing extends 114 ft. northwards at right angles to it. The entrance to the new buildings is under the tower at the east end, which rises some 80 ft. from the ground, and harmonises in effect with the "founder's tower." St. John's quad will now embrace the whole of its former site and the ground up to the new buildings. At either end of the High-street front are two boldly-designed oriel windows on each story, and the other windows along the front are similar in character to those in the old building. The sitting and bed rooms are mostly 15 ft. by 12 ft. 6 in., with a height from floor to ceiling of nearly 11 ft., while the Fellows' rooms are larger. The lecture-rooms, of which there are two, are on the ground-floor, and are panelled to the height of about 10 ft. Messrs. Franklin & Son, of Deddington, took the contract at 38,000*l.*, and have carried out the work from the designs of the architects, Messrs. Bodley & Garner, of London. The stone used is from the Deddington and Taynton quarries, except that for the carved work, which is Ancaster stone. The important additions to Brasenose College have been completed and handed over to the authorities. The new buildings take the place of two slightly-built and not well-planned constructions, formerly standing in the kitchen or cloister quadrangle. By their removal, and that of some cottages and out-buildings, a spacious quadrangle,—bounded on the east by the ante-chapel and cloisters, and on the west by the new wing, which is set a good way back,—has been formed in the place of the old confined and irregular space. To the south the new quadrangle is only separated from the High-street by the houses and shops facing that street, and the buildings now erected form part of a scheme for a quadrangle, which will extend the whole distance from the old Brasenose buildings to High-street, and add one more to the series of collegiate and academical buildings with which the street is lined. The building contains twenty-two sets of rooms for undergraduates, two large lecture-rooms, and a spacious set of rooms for a Fellow. The old collegiate plan of disposing the rooms on separate floors has been followed, but various conveniences in the way of sculleries and servants' offices, which were unknown or disregarded when the older college buildings were designed, are provided. The foundations are laid at a depth varying from 14 ft. to 20 ft., being the depth of the "made" or artificial earth for the most part within the ancient limits of the city. In the soil that has been removed at Brasenose a great variety of relics of the past were found, consisting chiefly of pottery, coins of no great value, old knives, wig curlers, and tobacco pipes, some of which date from the introduction of tobacco. In order to gain space enough for the new building it was necessary to demolish the greater part of an Amsterdam-court, which occupied the site and preserved the name of Amsterdam or Broadgates Hall, one of the numerous academical halls with which Oxford abounded during the Middle Ages, and especially before the existence of colleges. The walling of the new buildings is of Headington rubble, faced with Gibraltar rag stone, with dressings of Clipsham stone for strings, sills, weatherings, and mullions, and hard Doulting for the rest. The durable flag-stone of Castlehill, near Thurstro, has been used for the landings, and the stairs are of hard Portland. Mr. Meekford was the clerk of the works. The contract for the building has been carried out by Messrs. Symm & Co.

The Indian Institute.—Good progress has been made with this building, which is being erected at the corner of Broad-street, and the memorial stone of which was laid by the Prince of Wales in May last. The style of the building will be that commonly known as Jacobean. The angle formed by the junction of Holwell with Broad-street will be occupied by a turret surmounted by a lantern, which will contain the principal staircase, leading to the basement below and to the library and museum above. On one side of this turret, facing Broad-street, will be the main entrance. The whole of the first and second floors towards Broad-street will be occupied by the library, which will, when completed, have a series of five oriel windows, while the upper floor will have the same number of smaller windows lighting the galleries. The front towards Holwell-street will be broken up into parts by two projecting features, which are intended to obviate the awkwardness of the site. The material throughout will be of Milton stone. The roof timbers are already being put on, and the building is expected to be opened in March. Mr. Basil Champneys is the architect, and the builders are Messrs. Symm & Co.

The Old Schools.—The repairs in the interior of the quadrangle of the Bodleian Library and the Old Schools were begun in June, 1882, under the direction of Mr. T. G. Jackson, architect for the Curators of the University Chest, and are as follows:—The old stonework was very much decayed, and, where it is replaced, Cliphsham stone has been used. There are twenty new pinnacles, and a lightning-conductor is fixed to each. The parapet walls, of which there are twenty-one between the pinnacles, are all renewed, and the copper and lead gutters with flashings are made good at the back of them. The cornice on the north, south, and east sides is renewed, with the carved bosses which have been carefully copied from the old ones, that were far too decayed to be re-fixed. There are thirty large four-light windows on the north, south, and east sides, and twenty-four smaller windows in the four corner wings, which are more or less restored with new sills, jambs, and mullions, and the lead glazing made good. Ten of the doorways have been restored, as also has the greater part of the basement, with much of the ashlar in the walls. The west side, with the two wings of the Bodleian Library wall, are panelled, and much of it is being restored in the two upper stages. The large centre window has the jambs and mullions renewed on the outside. The old lead stack-pipes have been made good and re-fixed, and the library floors ventilated. Proper soil and water drains have been laid to convey the water from the roofs and quadrangle, and connected to the main drain near the corner of Brasenose-lane. Messrs. Symm & Co. are the builders; Mr. McCulloch, of London, did the carving; and the work has been carried out under the supervision of Mr. William Burgess as clerk of the works.

Wycliffe Hall.—Some additions have been carried out at this Hall by Messrs. Symm & Co., consisting of improvements to the refectory in the old buildings, and a new vestibule and porch, to give access to the Hall from the principal's residence. The adjoining house, known as "Holyrood," has also undergone considerable alterations and additions to adapt it as a residence for the principal of the Hall. Mr. G. J. Rowell undertook the contract for the works, which, together with the above mentioned, were under the superintendence of Messrs. Wilkinson & Moore, architects.

Churches.—The erection of the new Church of St. Margaret, at the corner of Rackham-road, near Heyfield's Hut, is being rapidly proceeded with. It is designed in the Late Decorated style, and will seat, when completed, about 550 persons. It will consist of chancel, nave, north and south aisles, organ-chamber, and vestries. The internal dimensions will be 112 ft. from east to west, and 51 ft. from north to south. The walls externally will be of coursed Gibraltair stone, with dressings of Box Ground stone, and internally plastered, with dressings of Gorseham stone. The chancel will be separated from the nave by an open traceried oak screen, and an oak framed truss with the spandrels filled in with tracery, instead of a stone chancel arch. The roof will be of pitch-pine, boarded and panelled, and the nave, chancel, and organ-chamber covered with Broseley tiles, and the aisles and vestry with lead. There will be a large porch at the west end of the church, and a smaller one to the south aisle. The present

contract is for the chancel, with a temporary nave, and will provide accommodation for about 150 persons. All seats will be free and unappropriated. Mr. H. G. Drinkwater is the architect, and Mr. Williams, of Abingdon, is the builder. The whole of the interior stonework of St. Aldate's Church has been scraped and the walls washed, and the roof has been varnished, the whole having been done by Mr. John Money. New gas fittings have been placed in the building and a great improvement has been effected on the old way of lighting, there being now a drop corona with eight lights in each bay. This part of the work has been carried out by Mr. Hadland, Pembroke-street. At St. Giles's Church the ground on the south side has been lowered, and the original plinth-courses, moulding, &c., which have been buried for many years, exposed to view. Messrs. Symm & Co. did the work. Since last October rapid progress has been made with the new church for the district of Cowley St. John. The church is now all but complete so far as the funds in hand will admit, and the bishop has signified his intention of consecrating it on the first Tuesday in November. The chancel was erected seven years ago as a memorial to the late Archbishop Longley, and the works now in hand include a nave, north and south aisles, north and south transepts, vestry, organ-chamber, south-west porch, and west end tower and spire. The nave has five bays, with an arcade clearstory over, and the roofs will be panelled and boarded. The ground-floor of the tower will form a baptistery. A damp-proof basement, warmed by hot-water pipes, is provided under the organ-chamber for the bellows, thereby allowing the large pipes of the organ to stand on the church floor level, with ample space above for the sound to develop, a "squinch" will be formed in the chancel arch pier, enabling the organist to see into the nave. The church is warmed by Messrs. Haden & Son's combined hot-air and water heating apparatus, placed in a damp-proof chamber under the south transept, and the circulating-pipes under gratings in the passage. Special attention has been paid to the ventilation of the church, fresh air from outside being warmed and passed into the church at frequent inlets, the vitiated air being drawn out from the ceiling-vent by three of Buchan's fixed induced self-acting air-ventilators, placed inside the tower belfry windows. The whole of the carving in the chancel and one bay of the nave arcade has been vigorously done by Mr. J. McCulloch, of Kennington-road, London. Plans for the parsonage-house adjoining have been prepared, and will shortly be carried into execution. Messrs. Symm & Co. are the builders, and the work has been carried out under the direction of Mr. A. Mardon Mowbray, of Eastbourne.

Miscellaneous.—Extensive alterations have been made to the premises known as the City Drapery Stores, Nos. 10, 11, and 12, High-street. Those works have been carried out by Mr. F. H. Kingerlee, of Banbury and Oxford, under the supervision of Mr. F. Codd, architect, Bocardo Chambers, Oxford. Still in the High-street, one of the houses in the court adjoining All Saints' Church, which formerly formed a portion of Mr. Sheard's premises, No. 21, High-street, has been cut off from the latter, and converted into a tutor's residence in connexion with Brasenose College. The works have been ably carried out by Mr. Thos. Selby, of Worcester-place, from plans by Messrs. Wilkinson & Moore. At the Penitentiary, Holwell, some additions have been made to the chapel by Messrs. Knowles & Son, under the supervision of Messrs. Wilkinson & Moore, architects, consisting of a new bay in length and an enlargement of the vestry. The Radcliffe Observatory has been redecorated, under the supervision of Mr. Griffith. Part of the roof-timbers of the tower, which were found to be in a very defective state, have been removed, and the roof re-covered by Messrs. Symm & Co. Mr. George Castle has carried out great sanitary improvements at the Clarendon Press, and new gutters have been put on the roofs on the Bible side, and the stonework restored. In the northern suburbs new houses continue to spring up. Mr. Walter Gray has had several detached residences completed during the past year facing the Woodstock-road, and has commenced others in St. Margaret's-road. The remainder of the vacant ground in this road is now being covered with some new houses by Mr. John Money. Several

houses of a smaller class have been built in the Southmoor and other new roads adjoining the canal. We believe that in many cases designs for these new houses were obtained from Messrs. Wilkinson & Moore, architects.

ARCHITECTURAL ASSOCIATION.

PAPERS, &c., FOR SESSION 1883-84.

The opening *conversations* takes place this (Friday) evening, the 26th, in the galleries of the Royal Institute of Water-Colour Painters, Piccadilly.

The President, Mr. Cole A. Adams, will deliver his Presidential address on the 9th of November.

The following papers have been already arranged for:—

- Nov. 23, "The Law Business of Architects." By Professor R. Kerr.
- Dec. 7, "Papers." By Mr. E. Ingress Bell.
- Jan. 4, "On Coloured Decoration." By Mr. J. D. Crace.
- Jan. 18, "Decorative Plaster." By Mr. Aston Webb.
- Feb. 15, "The Local Government of the Metropolis: its Relation to and Effect on Street Architecture." By Mr. L. H. Isaacs.
- Feb. 29, "On the Arrangement of Buildings in Flats." By Mr. F. E. Eales.
- Mar. 14, "Shams." By Mr. H. W. Pratt.
- Mar. 28, "Water Supply to Country Houses and Isolated Public Buildings." By Mr. W. E. Rich.
- April 18, *Members' Soiree*.
- May 2, "Cornices and String-courses." By Mr. H. H. Statham.
- May 16, "John Thorpe and the English Renaissance." By Mr. J. A. Gotch.
- May 30, "Notes on Heraldry." By Mr. C. R. Pmk.

NORTHERN ARCHITECTURAL ASSOCIATION.

The twenty-fifth annual meeting of the Northern Architectural Association was held on the 9th inst., in the Old Castle, Newcastle-on-Tyne, Mr. J. Tillman (Sunderland) presiding.

Mr. W. H. Dunn (hon. sec.) read the annual report, of which the following is an abstract:—

In presenting their report, the committee are reminded that the Association has now reached its silver wedding, it being twenty-five years since the members joined hands together for the elevation of the profession and the establishment of a uniformity of practice. At the quarterly meeting held in February last, the general rules of the Royal Institute relating to competitions were adopted by this association, and 500 copies were printed. A copy was sent to each member of our City Council, with a request that they would adopt the same for future architectural works. Two public buildings have since been submitted to competition by the Corporation, viz., the police barracks and fire-brigade station at Westgate and an infectious hospital at Hexton, wherein the general regulations were adopted. In conclusion, your committee would draw attention to one subject which some years ago was discussed by the association, viz., the offering of a medal to articles pupils in the offices belonging to members for measured drawing of old buildings. It would not only give an increased impetus to the pupils to become more acquainted with the many rich architectural remains that exist in the neighbourhood, and for which the counties of Northumberland are so famous, but also tend to give the association a more practical and beneficial character for the younger members.

The financial statement showed an income for the year leaving a balance in hand of 12l. 18s. 8d.

The election of officers for the ensuing year was then proceeded with, with the following result:—President, Mr. F. W. Rich; vice-president, Mr. W. H. Dunn; hon. secretary, Mr. Thos. Oliver; and treasurer, Mr. W. L. Newcombe.

BRISTOL AND CLIFTON JUNIOR ARCHITECTS' SOCIETY.

A MEETING of the Bristol and Clifton Junior Architects' Society was held on Wednesday in the Architectural Room of the Fine Arts Academy, Clifton, under the presidency of Mr. J. Moncrieff. There was a very large attendance of members.

After some business matters had been discussed, a paper was read by Mr. W. E. Hill on "A Diploma of Architecture: is it desirable?" and Mr. Hill's argument was followed by a lengthy discussion. The lecturer throughout his paper argued that such a diploma was desirable. At the close of the discussion, Mr. Geo. E. Ford (hon. sec. and treasurer) moved,—"That this meeting is of opinion that an Architectural Diploma is desirable." Mr. J. C. Moncrieff, the chairman, seconded the motion, which was agreed to, a vote of thanks to the chairman terminated the proceedings.

BUILDING PATENT RECORD.*

APPLICATIONS FOR LETTERS PATENT.

- 4,568. W. Smeaton, sen., London. Water-waste preventers. Oct. 12, 1883.
 4,927. J. S. Gabriel, London. Paving streets, &c. Oct. 16, 1883.
 4,944. A. C. Kennard, Falkirk. Heating-stoves. Oct. 17, 1883.
 4,954. W. Spence, London. Application of chemical agents to stones and succoes to diminish their porosity, &c. (Com. by MM. Faure & Kessler, Clermont-Ferrand, France). Oct. 17, 1883.
 4,973. W. R. Cornell, London. Constructing and applying blocks of concrete, &c., for building purposes, &c. Oct. 18, 1883.
 4,978. F. Wirth, Frankfurt. Curtain-holders. (Com. by J. Vaas, Karlsruhe, Germany.). Oct. 18, 1883.

NOTICE TO PROCEED

has been given by the following applicants on the dates named:—

October 16, 1883.

- 2,929. F. Piercy, London. Water-closets. June 12, 1883.
 2,932. J. W. Holland, London. Construction and arrangement of cowls for chimneys, &c. June 12, 1883.

October 19, 1883.

- 2,967. J. E. Manock, Heywood. Stench-traps. June 14, 1883.
 2,969. R. McCombie and W. Seaman, London. Water-closet basins. June 14, 1883.
 3,109. E. G. Banner, London. Construction of pavements and roadways to accommodate telegraph-wires, &c. June 22, 1883.

ABRIDGMENTS OF SPECIFICATIONS,

Published during the week ending October 20, 1883.

862. G. W. von Nawrocki, Berlin. Manufacture of fire-fighters. (Com. by C. Molin, Berlin.) Feb. 16, 1883. Price 2d.

Sawdust, wood splinters, and horse manure are thoroughly dried, and then mixed with resin and turpentine. The mixture is then heated and pressed into the required shape. (Pro. Pro.)

904. B. C. Cross, Leeds. Waste-preventing cisterns. Feb. 19, 1883. Price 6d.

Below the cistern is a chamber in which is suspended a can. The suspending cord thereof passes up a tube through the cistern over a pulley on the top, and down to a plug over the discharge orifice in the bottom of the cistern. A hooked catch is freely attached to the plug and on the catch is a float. When the cistern is filled through the ball-valve the float causes the catch to engage a lever, which, therefore, catches the plug a little way, and the water passes into the can, which, when filled, overbalances the plug and lifts it right up, and all the water passes out of the cistern into the can, and through a hole in its bottom to the discharge-pipe. As, until the cistern is quite full, the float does not cause the catch to engage the lever, the water cannot be wasted.

909. J. C. Bloomfield & J. J. McGuire, Fermanagh. Manufacture of bricks, tiles, or slabs. Feb. 19, 1883. Price 2d.

Gas tar, mixed with powdered chalk, is applied to the brick, while in a molten state, to make it impervious to liquid. (Pro. Pro.)

919. J. G. Fleury, London. Water-waste preventers. Feb. 20, 1883. Price 2d.

This is a tap within which are two elastic cups, and the water is automatically arrested in its passage when a certain amount thereof has passed through a small hole into the space between these cups. (Pro. Pro.)

939. E. Edwards, London. Process of manufacturing tiles, bricks, &c. (Com. by P. A. Luzerne, Perugot, France). Feb. 20, 1883. Price 2d.

The articles are placed in a furnace and burned in the usual way, and immediately afterwards the fires are removed, and green wood or vessels of coal tar, heavy oils, &c., are introduced, which are heated by the heat of the walls of the furnace, when all exs are stopped up, and the thick smoke produced penetrates the pores of the bricks, &c. (Pro. Pro.)

971. J. H. Collins, Winchester. Window-fasteners. Feb. 22, 1883. Price 6d.

Notches or recesses are made in the sash-frame in which the tongue of a spring-catch in the sliding-sash engages.

988. H. Longden & C. F. Longden, Sheffield. Apparatus for heating by hot water. Feb. 23, 1883. Price 2d.

This is a radiator consisting of a series of vertical double-pipes, the lower ends of which open into the horizontal hot-water pipe, while the upper ends are joined together by a pipe. (Pro. Pro.)

- 1,028. W. Shepherd, London. Construction of furniture and other repositories. Feb. 25, 1883. Price 6d.

The buildings are constructed in blocks, and in the spaces between on a level with each floor are transverse girders or rails. Lifts are provided outside the buildings, &c.

* Compiled by Hart & Co., Patent Agents, 136, Fleet-street.

opposite the spaces between the blocks. The van is drawn on the platform of the lift and raised as required, when the platform is moved laterally along the rails until the van is opposite the required compartment.

- 1,064. W. Brierley, Halifax. Apparatus for heating air for warming buildings. (Com. by R. Tangler, Goerlitz, Prussia.) Feb. 27, 1883. Price 6d.

The furnace is formed entirely of brickwork, and has a funnel-shaped hearth, and behind this are several compartments in the furnace through each of which in succession the air has to pass.

SCIENCE AND ART MUSEUM, DUBLIN. COMPETITION.

SIR,—At a General Meeting of the Royal Institute of the Architects of Ireland, held on the 13th inst., the enclosed resolutions were unanimously passed:—

"First, That we, being architects, about to compete for the proposed Science and Art Buildings in Dublin, having now gone sufficiently into the scheme to form an opinion as to cost, are of opinion that the sum allowed under the 'Instructions' is inadequate to produce a building worthy of the purpose.

Secondly, That we again respectfully record our opinion that the late competition was not satisfactory, an independent architectural assessor not having been engaged, as in other late important competitions; and that the result cannot be satisfactory to architects under the arrangements proposed as intimated in Mr. Courtney's letter of June 26th, 1883."

ALBERT E. MURRAY, Hon. Sec.

Royal Institute of Architects of Ireland.

Dublin, October 18th.

HISTORICAL CHAIRS.

SIR,—Will you kindly enable me to ask, through the columns of your journal, for particulars, with engravings, drawings, or photographs, of celebrated chairs in family seats of the nobility and gentry; with information also of notable chairs in cathedrals, churches, colleges, and public institutions at home, in Europe, or the East? I am preparing an account of historical chairs from available literary resources; but, knowing that there are many interesting ones which have escaped my search, as well as some others in private possession, but little known, and wishing to make the proposed volume as copious as possible, I thus beg your assistance on that behalf, with my best thanks for such valuable favour.

C. B. STURTT.

34, East-street, Red Lion-square, W.C.

THE BURLINGTON HOUSE COLONNADE.

SIR,—Anent the article on this subject in last week's *Builder* (p. 512), I would suggest that the colonnade might be made to contribute to the ornamentation of the new Place at Hyde Park Corner if it were placed on either side of the newly-erected arch at the top of Constitution Hill. I am not sure that the colonnade could be made to accommodate itself to the curve of the road, but if this little difficulty could be overcome, not only would the beautiful proportions of the colonnade be displayed, but the arch, which at present seems lost among the trees, and is placed in position at variance with all the other structures in the neighbourhood, would be brought into harmony with its surroundings.

CHARLES ROBERTS.

Bolton-rose, Oct. 19.

TREES IN KENSINGTON GARDENS.

SIR,—The *Saturday Review* lately gave a notice of some books on forestry, in which the deplorable state of the science in England was commented on.

If any person at the present time who wishes to see and feel the truth of these remarks will only take a walk through Kensington Gardens, he will be convinced of the truth of the *Review's* remarks, as well as be disgusted at the way in which the trees in the Gardens have been managed.

Although there is no doubt that much of the mischief has been done by not thinning the trees a long time ago, still, I think far greater damage has been done lately by putting a quantity of clay on the surface, thus raising the ground round the base of the trees and rotting the bark.

This damage has been very much increased by the earth being carted in in wet weather, and the surface left full of ruts, as bad as any country lane, instead of being made smooth and sown with grass seed.

Some very fine plane-trees were killed last year near the Marble Arch by raising the gravel walks around them.

When we consider the number of persons who are paid for looking after the Gardens,—“rangers,” deputy-rangers, &c., all well paid,—I think we ought to get a better return for our money.

ROBERT PALMER.

CHISELBOROUGH.

SIR,—A kind friend has just lent me your number for September 22nd, knowing that I should be delighted with the clever sketches it contains, taken by a member of the Architectural Association. In the letterpress which accompanies them, entitled “At Yeovil and Round About,” I saw a remark which should not remain unrefuted. Speaking of what he calls “the very distinctive Chiselmorrough Knoll,” but which (whether tumulus or natural formation) we call Baalhame,—an excellent spot for an outlook connected with the camp on Ham-hill or for a beacon-fire, and which has curious traditions told about it as being one of the last posts surrendered in British times,—the writer of the article adds that this hill (I suppose as closing in the spot) “is in some part responsible for some of the saddening stories about that strange village.” What these “saddening stories” may be he does not tell, and we Chiselmorrough folks regard his pitying words much as Canning’s “Nasty Knife-grinder” did those of his interrogator. Doubtless years and years ago, as in other villages away from the high roads of civilisation, lawless deeds were done here, and crime and the goitre were too common; and in “Murray’s Handbook” is a short notice to that effect, which we like a good deal in that book, has become obsolete, and should be revised or expunged.

We claim to be neither better nor worse than our neighbours. Schools well reported of, a church well attended by hearty congregations, our sons and daughters doing credit to the parent stock in all parts of the world, are indications that we are, at least, on a par with average Somerset villages. There can be no question as to the general healthiness of the inhabitants.

Our friend George Mitchell, who is fond of telling the world that he once “put his hand to the plough,” and has since “looked back” (attracted, I suppose, by something more profitable), gives us a rub occasionally, but his “facts” generally prove fictions, and we can afford to smile at them.

If your architectural friends should again visit this neighbourhood, I invite them to sketch, not indeed the church, but its ancient spire, one of the very few (only five or six) ancient spires in Somerset; and, if they are campanologists, to view one of the best specimens of Stephen Norton’s work, to the illustration of which the veteran Ellacombe devotes so much space in his excellent “Bells of Somerset.” I could add other facts of interest, but will not trespass on your space.

FREDK. NEWELL,
Rector of Chiselmorrough.

SOUTHPORT.

DAMAGE TO THE SEA-WALL.

SIR,—I dare say some of your readers who attended the meeting of the British Association at Southport last month will recollect the new Railway embankment and sea-wall building for the new Cheshire Lines Railway, near the Winter Gardens. I write to say that this work has been very seriously damaged by the recent high tides and storms, and will probably require to be rebuilt.

Several breaches have been made in the wall all along, and one particularly large one at the most prominent part of it towards the sea, and the sea now enters into the inclosure, and converts it into a large lake. The surf in beating over the wall seems to have got behind it and run out the sand of the embankment into the inclosure, when the wall, deprived of its support behind, crumbled down into shapeless masses. The tram-lines on it are in some places washed bare, and in others are buried in masses of sand and debris. The new Promenade at the further or Park end has also suffered by leakage, the surf getting under the roadway and washing away the subjacent sand. The asphaltic road has therefore collapsed in two places, producing two large fissures in the path. The sea at high tide, day and night, broke in great masses over the parapet of the sea-wall and drenched the road and promenaders. Large numbers of people turned out to see the unusual spectacle; such a sight they say not having been seen here for several years. The surf came right up to the sea-wall all along, but no damage seems yet to have taken place to it, and the old pier has stood the gale and seas thoroughly well.

J. W. BLACK.

Southport, Oct. 18, 1883.

Can it be True?—It is stated in an evening paper that the Fisheries Exhibition, with its adjuncts and annexes, is undrained, and that several of the executive, including the chairman, Mr. Birkbeck, M.P., are ill. The buildings, we are further told, are to be thoroughly drained and prepared for the great Food Exhibition to be held next year. If it be the fact that the Fisheries Exhibition is undrained, the results mentioned are not surprising, seeing that the Exhibition has attracted two and a half millions of visitors, and has been attended daily by a large staff of officials and exhibitors’ representatives.

PROVINCIAL NEWS.

Newcastle-on-Tyne.—Alderman C. H. Young moved, at the meeting of the Newcastle City Council on Wednesday last,—“That the joint memorial from the College of Medicine and the College of Physical Science, presented to the Council on the 13th of June last, praying for a site on the Bull Park, Town Moor, for their proposed new building on the terms previously agreed upon between the Corporation and the College of Physical Science on the 7th of April, 1880, be and is hereby granted. That the annual interest which will arise on the 2,500*l.* purchase-money of the said site be applied to the payment of the annual rent due to the Stewards of the Freeman, when the twenty-five acres on the Nun's Moor, proposed to be enclosed and appropriated, say at 4*l.* per acre, shall have been taken possession of for the use of the inhabitants of the city. That the town clerk be instructed to give the necessary Parliamentary notices, in order to carry both schemes into effect. That, in the meantime, the united colleges be offered Singleton House and grounds, in Northumberland-street, as a temporary domicile, at such rental as may be agreed upon, until such time as a permanent building is secured for them.”

Leeds.—A statement of the estimated cost of the new cattle market and the revenue from it, prepared by Mr. J. Hardwick, Deputy-Chairman of the Markets Committee, will shortly be laid before the town council. The cost of the site is 13,744*l.* 8*s.* 8*d.*, and it is estimated that the carrying out of the entire scheme will entail an outlay of 34,000*l.* total, 47,744*l.* 8*s.* 8*d.*

Chard.—On the 20th inst. the Mayor and Corporation, together with the borough officials, met in the council-chamber, and afterwards adjourned to the new Corn Exchange for the purpose of formally opening the same. The building is 32 ft. wide and 72 ft. long, with a lofty iron and glass roof supported by fluted iron pillars. There is a convenient stage, fittings, &c., and wood floor, so that the building may be used for concerts and other entertainments. Mr. Henry Williams, of Clare-street, Bristol, is the architect, and the contractor was Mr. Poole, of Ilminster, the amount of the contract being close upon 1,200*l.*

CHURCH-BUILDING NEWS.

New Swindon.—The newly-erected chancel of St. Paul's Church, New Swindon, has been consecrated, and the work of the fabric may now be considered practically complete. The nave and baptistry were from designs by Mr. B. Edmund Ferrey, of Spring Gardens, London, but the architect of the chancel was Mr. John Bevan, of Bristol. The tenders of Mr. W. Jones, of Gloucester, were accepted for both nave and chancel, and he has carried out his contract. The interior of the chancel is 29 ft. in length by 22 ft. 6 in. wide, and there is an organ-chamber on the north side, and choir and clergy vestry on the south, with stalls, &c. The roof is of the wagon-headed type, with moulded ribs. The stone panels in the south wall of the chancel are filled with stencilling, the centre compartment being an angel bearing a shield. This part of the work was the gift of the architect. The old choir-stalls are retained for the present. The chancel screen is of pitch-pine, elaborately carved and surmounted by a cross.

Cardiff.—The Church of St. Mary at Marshfield has just received some handsome additions, and has been re-opened. A fine new organ has been erected on the north side of the chancel. Its case is of pitch-pine, and it has been erected by Mr. W. G. Vowles, organ-builder, of Bristol. The east window has been filled with stained glass, containing figures of Our Lord and St. Paul and St. John.

This is by Mr. Horwood, of Frome Selwood. There is also a reredos of Osen stone and polished serpentine. It contains sculptured figures of Moses the Law-giver, King David the Musician, and St. Peter and St. John the Divine. The sculpture is by Mr. Harry Hems, of Exeter. All the works have been carried out from the designs and under the immediate direction of Messrs. Habershon & Fawcner, architects, Newport and Cardiff.

Whiston.—After being closed since June last year for purposes of restoration and enlargement, Whiston Church was re-opened on the 11th inst. by the Dean of York. During the progress of the restoration, traces of work

belonging to three periods of architecture were discovered in the edifice. In the wall between the nave and tower there was evidence that it belonged to the Early Norman period, and this was made more certain by the discovery of a “horse-shoe window,” which must have been blocked up for generations, and through which the sanctus-bell was probably rung. The old nave was of the fourteenth and the chancel of the fifteenth century. The old nave and chancel now form the south aisle to the new portion erected, new arcading of an elaborate description, with carved capitals, &c., being put up between the old and new parts of the building. The addition to the church consists of a nave, 60 ft. long, 22 ft. wide, and 35 ft. high, with open-timbered roof. The chancel is about 30 ft. long and 20 ft. wide, with arcading on each side, the roofs being of pitch pine. There is a new organ-chamber, and also a new vestry. The seats are open benches of English oak. The chancel stalls, prayer-decks, &c. are also of English oak, and are of an elaborate character. The doors are all new, and of substantial English oak. The floor to the pews consists of Gregory's patent wood blocks, and the aisles and passages are tiled. The chancel is paved with Godwin's best encaustic tiles, of varied patterns. The pulpit, which is described as a fine piece of workmanship, has been executed from the architect's designs by Mr. Harry Hems, of Exeter, who has also done the whole of the stone carving throughout the church. The tower has been raised about 3 ft.; the modern parapet has been removed, and a parapet with pinnacles of an elaborate kind has been substituted. The buttresses and pinnacles are all panelled. The tower is finished with a spire about 18 ft. high, the vane being of wrought iron, gilded. The whole of the roofing of the church is of Colley Weston tiles. The modern doorway in the tower has been removed, and a lancet window (of which it is stated there was evidence formerly) has been substituted. The east window is the gift of Mrs. Howard as a memorial to her late husband, the Hon. and Rev. Canon Howard, the former rector. The subject is the Nativity and Anointing of our Lord, also his Crucifixion, Resurrection, and Ascension. It has been executed by Messrs. Clayton & Bell. The west window is the gift of the Waring family, and is the work of Mr. Charles Kemp, of London. The whole of the work has been done under the superintendence of Mr. John Oldrid Scott, of London, as architect; Mr. George Hannaford, of London, was clerk of the works; and Mr. J. J. Past, of Melton Mowbray, is the builder. The cost of the new portion of the work alone will be about 5,000*l.*, and this will be entirely defrayed by Lady Charlotte Howard.

Aberaman (South Wales).—This church, which is situated near Aberdare, and has been erected at the sole cost of Sir George Elliot, bart., M.P., as a memorial to Lady Elliot, and for the benefit of his employes, about 400 of whom it will accommodate, was opened by the Bishop of Llandaff on the 29th ult. It consists of nave, 63 ft. by 28 ft., with north porch 9 ft. square, chancel (with semicircular apsidal end), 35 ft. by 22 ft., and two transepts, each 14 ft. 6 in. square. The sloping character of the site has been utilised so as to provide three useful rooms beneath the chancel and transepts, these floors being supported on iron girders and white brick arches. The general style of architecture adopted is the one that prevailed during the fourteenth century. The pitch pine nave and transept roofs are open to the ridge and plastered between the rafters, and the chancel has a wagon boarded ceiling. The coping and other dressed stone came from Messrs. Pictor's Westwood Quarry, and the carving in imitation of natural foliage and fruit has been executed by Mr. G. F. Herridge, of Cardiff. The chancel and sacristy are paved with Maw's encaustic tiles. The wrought-iron and brass-work, including all the gasfittings, came from Messrs. Brawn's, Birmingham. The heating is by means of hot-water piping carried along the walls and passages. The glazing of the windows, supplied by Mr. Ben. Gay, of Bristol, is cathedral rolled, in variegated tints, but the glass in the chancel lancets is by Mayer, of Munich. Mr. C. Shepherd, of Cardiff, was the contractor, and the architect was Mr. E. H. Lingner Barker, of Hereford.

St. Helen's.—On the 20th inst. the Mayor of St. Helen's (Lieut.-Col. Gamble), laid the foundation-stone of a new church which is being erected on Cowley-hill, St. Helen's, and which

is to be dedicated to St. Mark. The church is intended to contain 700 sittings, all free, for the district of Cowley Hill and Gerard's Bridge, which contains a population of 6,000. The sum required for the purpose would be about 5,000*l.* Lieut.-Col. Gamble gives a site and one-fifth of the entire cost, not to exceed 1,000*l.* Mr. Gandy, of St. Helen's, is the architect for the new church, and the contract has been let to Mr. Thomas Roberts, in whose hands the work has so far progressed satisfactorily.

East Harptree.—The ancient church of St. Laurence, East Harptree, which has been undergoing restoration for the past two years, was re-opened on the 20th inst. by the Bishop of Bath and Wells. A restoration committee, consisting of the Rev. C. H. Nutt (rector), and Mr. C. A. Kemble and Mr. J. Grant (churchwardens), set earnestly to work in the matter, and their efforts well backed up by Mr. W. W. Kettlewell, the “squire of the parish,” the work was commenced. The contract was entrusted to Messrs. F. Merriock & Son, Glastonbury, and the work has been carried out from the plans and under the direction of Mr. G. Somers Clark, of London, architect. The church has been thoroughly restored, inside and out. The roofs of the chancel and the nave are of pitch pine, and have been decorated in stencil work by Messrs. Bell, of College-green, Bristol. The oak girders and carved wall plates of the sixteenth century have been retained. The old-fashioned and ugly square pews have been replaced by handsomely-carved oak benches; there are new carved oak choir stalls, and an elaborately carved oak chancel screen, with a large Latin cross in the centre. The Newton tomb, which formerly stood at the back of the altar, has been restored, and now stands in the north porch. The new brass lamps were supplied by Messrs. Singer, of Frome.

Bristol.—On Sunday last St. Barnabas Church, Ashley-road, Bristol, was reopened, on the completion of the extensive repairs and decorations which have been in progress for the last two months. The walls have been distempered in three shades, with stencilled bands relieving and emphasising the different colours. The chancel has been treated in diaper work. The old glass in the windows has been removed, and replaced with tinted lead glazing. The ceilings have been covered with stained and varnished boarding, relieved by pitch-pine mouldings. The transept seats have been altered to harmonise with those in the aisle. A new choir vestry has also been formed in the gallery by placing a wood screen filled with tinted lead glazing across the lower arch. The decorative work and glazing have been carried out by Messrs. Bell & Sons, of College-green; and the structural alterations by Messrs. E. T. Hatherley, Stoke's-croft, directed by a committee consisting of the vicar, the churchwardens, and other gentlemen.

Somerby, Oakham.—The chancel of the parish church has been completely restored. The old flat roof has been replaced by a high pitched one, like it had formerly. The windows have been restored, also the old Norman priest's door in the north side. Two small windows were discovered at the west end of the chancel; these have been opened, and are now filled with stained glass, as is also the large east window and one window in the north side. The sedilia has been restored; a new floor of Minton tiles laid; massive oak benches have been fixed. The altar-rail, also of oak, is supported on standards of wrought iron and brass from Brown & Co., of Birmingham. The stained glass, which is of a superior character, is by Mr. Lavers, the well-known artist of London. The builder's work was carried out by Mr. Hayes, of Melton, the whole being from the designs and under the superintendence of Mr. R. Winter Johnson, architect, Melton Mowbray.

Progress of the Mersey Tunnel.—During the week ending October 20, Colonel Beaumont has driven 25 yards from the Birkenhead side, and the advance by hand on the Liverpool side has been 11 yards. The distance still to be passed before the ends meet is 416 yards. A junction will be made between the Mersey Railway and the Chester and Birkenhead Railway, for which a considerable clearing of houses has been made in Birkenhead, and the tunnel is being pushed forward rapidly to the intended point of junction. This section of the work is to be finished by February next.

DISSENTING CHURCH-BUILDING NEWS.

Torcross.—On the 18th inst., the memorial stone of a new Congregational Chapel was laid at Torcross, Devon. The building will be of local material, and will cost about £500. The plans, which were originally drawn by Mr. Wills, of Derby, will be carried out under the direction of Mr. Adams by Mr. Edgcombe, contractor for the masonry, and Mr. Harvey, contractor for the woodwork.

Oxford.—The new Wesleyan Chapel, Walton-street, was opened a short time since. It is Gothic of the Early English period, and it is faced entirely with red brick. The interior is also finished with red brickwork with stamped plaster. It is calculated to seat 450 persons. There is a school at the back, in which are four class-rooms, and accommodation for tea meetings. The building has cost about 3,000. Mr. Mallett Ellis, of 8, Old Jewry, London, is the architect. The building has been erected by Messrs. Wilkins & Sons, of Eynsham and Oxford.

Leadhills, N.B.—The foundation-stone of a new Free Church at Leadhills, Lanarkshire, was laid on Friday, the 19th inst. by Mr. James Alexander, of Glasgow. Some special interest is attached to the occasion from the fact that the new church will be, in point of altitude, the highest church in the United Kingdom, the village of Leadhills being (*vide the Gazetteer*) the highest inhabited village, and the new church is situated on an excellent and picturesque site on one of the highest parts of the village. The church is designed in a simple type of Early English which will harmonise well with the surroundings, and will, as required by the situation, be a most substantial structure. The interior will be simply but handsomely treated, and all the windows will be enriched with stained glass. Sittings are provided for 350 persons, besides the usual accessory accommodation, and the total cost will be under 2,000. The building has been designed by Mr. J. B. Wilson, architect, Glasgow, and is being erected under his charge.

STAINED GLASS.

Rothwell.—In consequence of a deficiency of light in the chancel of Rothwell Church, the old small three-light east window has been abolished, and a much larger five-light window, with traceries above, opened out. This new window has just been filled with stained glass, the subjects of the respective lights being the Nativity, Christ disputing with the Doctors in the Temple, His Crucifixion, Resurrection, and Ascension. Below these illustrations are medallions of angels, bearing and displaying various instruments and emblems of the Passion. Each subject is surmounted by an ornamented canopy. In the tracery lights above, the eight principal ones contain figures of the four of the greater Prophets, viz., Isaiah, Jeremiah, Ezekiel, and Daniel. The smaller tracery lights are filled with foliate ornamentation on rich grounds. The style, in accordance with the architecture, is late fifteenth century. As far as practicable, the old stained glass has been used and incorporated into the new serial illustrations. Messrs. Powell Bros., of Leeds, are the artists of the illustrations; Mr. W. Richardson, of Leeds and Rothwell, being the architect.

Bilston.—The Church of St. Leonard, Bilston, has been re-opened, after restoration under the superintendence of Mr. Ewan Christian. A handsome stained-glass window, representing the Crucifixion, has been placed in the east end of the church. Messrs. Warrington & Co., of No. 40, Fitzroy-square, London, were the artists.

Sedgley.—Sedgley Parish Church has lately undergone renovation, in the process of which it has been relieved of its high pews and deep side galleries, and now two of its stained windows, which had hitherto been but half finished on account of the obscuring galleries, have been completed. One of these is in the north aisle, and the other is in the south. That in the north aisle is erected in memory of members of the Nayler family, and the general subject of it is "The Gathering unto Shiloh." In the lower part is the visit of the Wise Men of the East to worship the Infant Christ in Bethlehem; and in the upper part, which has just now been added, is the Old Testament prelude to this, namely, the visit of the Queen of the South to

hear the wisdom of Solomon. The window in the south aisle is erected in memory of members of the Fellows family, and the general subject of it is "The Early Appearings of Christ in the Temple." In the lower part is the Visit at twelve years old, when he answered and questioned the Doctors; and in the upper part, just added, is the Visit made at the time of His Mother's Purification, when Simeon and Anna were there. The lower parts of both windows were executed some years ago by Messrs. Chance Bros., of Smethwick; the upper parts have been executed by Messrs. R. W. Winfield & Co., of Birmingham, successors to Messrs. Camm Bros. The new parts of the Nayler and Fellows windows are from a design by Mr. T. W. Camm.

Miscellanea.

Shepton Mallet.—The Local Board of Health, to whose sewerage difficulties we referred a short time since (p. 303, *ante*), seem still to be "not happy." At a special meeting of the Board held on Monday, Mr. G. A. Mackay in the chair, the engineer, Mr. A. T. Catley, presented a report announcing that the worst part of the sewers had been re-opened and amended, and he hoped they might now "be passable, though they could never be made into first-class work." After some financial statements in regard to the work, two members of the Board drew attention to the fact that several of the pipes were out of level. Mr. Catley said he knew it. The only way to make the job a first-class one would be to root the whole work up and re-lay. He had never anticipated that the work would be so difficult. A member suggested that the Board ought to be hanged if the work had to be done over again, to which it was suggested that there was no fear about that, as there was no money to do it over again. The Chairman inquired if any member would volunteer to go round with the engineer and see where the failures from leakage existed, but "all the members had appointments for the following day. . . . The clerk stated that, acting upon the instructions of the Board, he had prepared for Mr. Catley's signature a lien upon the moneys due to him from the Board as collateral security for the moneys passing through his hands. Such a lien or other bond would be required by the auditor, but Mr. Catley had returned the document, and refused to sign it. The Chairman read the document, asking Mr. Catley if he would not sign it.—Mr. Catley: No, I do not like the look of it.—Mr. Catley then drew up a very short memorandum which he offered to sign. The Chairman, having read it, said, 'The Board cannot accept any document which does not meet with the approval of our legal adviser.' Mr. Catley then put in a letter, in which he stated that the reason why he would not sign the lien was that he saw no prospect of being paid for the services he had rendered.—Mr. Luff: Mr. Catley's duties do not terminate until the sewage scheme is in fair working order.—The Chairman: You do not give us any definite and not far distant time when we shall have our works completed.—Mr. Catley: It is an unfortunate job from beginning to end.—The Board quite agreed with Mr. Catley."

A Large Sun-burner.—The auditorium of the Alhambra Theatre will be lighted by one of Strode & Co.'s patent ventilating sun-burners. The sun-burner will have 819 jets, giving a light of upwards of 12,000 standard candles; it will be fixed in the centre of the domed ceiling, and be surrounded by a grating of pierced ironwork designed by the architects.—Messrs. Perry & Reed,—and, in addition to the removal of the products of combustion of the very large quantity of gas consumed, is also expected to efficiently ventilate the auditorium.* The only sun-burner approaching this one in size was made and fixed by Messrs. Strode & Co. at the Michaeloff Theatre in St. Petersburg some years ago. In addition to this sun-burner, Messrs. Strode & Co. are also constructing and fitting up arrangements of rings or coronas of gas jets for illuminating the turrets, which will be lighted simultaneously by the flash-light arrangement applied by them at the Princess's, Savoy, Strand, Glasgow, Belfast, and many other theatres in London and the country.

* It is to be hoped that corresponding attention will be paid to inlet ventilation, and means of warming the air, or the result will be to draw cold draughts into the auditorium.

The Parkes Museum of Hygiene.—The following lectures for the winter session, 1883-1884, have been arranged for, and will be delivered in the Museum, 74A, Margaret-street, Regent-street, on the dates named:—Thursday, Nov. 1, Mr. Ernest Hart, chairman of the Council of the National Smoke Abatement Institution, "On Smoke Abatement." Thursday, Nov. 15, Dr. Robert J. Lee, "On the Disinfection of the Atmosphere." This lecture will be illustrated by experiments and demonstrations. Thursday, Nov. 22, Mr. George Murray of the National History Department of the British Museum, "On the Potato Disease." This lecture will be illustrated by microscopical preparations and diagrams. Thursday, Nov. 29, Dr. Charles Kelly, Professor of Hygiene in King's College, London, "Diseases caused by Sanitary Defects in Houses." Thursday, Dec. 6, Dr. G. V. Foor, Professor of Forensic Medicine in University College, London, "On Coffee and Tea." Thursday, Jan. 17, Mr. T. Pridgin Teale (of Leeds), "Economy of Coal in Private Houses." Arrangements for additional lectures are in progress. The lectures will be followed by discussions. The Museum is open daily from 10 a.m. till 7 p.m., and on Mondays and Saturdays to 9 p.m. It is free to the public from 5 p.m. to 7 p.m., and on Mondays and Saturdays from 2 p.m. to 9 p.m. A charge of 6d. is made at other times, except to members. The library and reading-room are open daily from 10 a.m. to 7 p.m. for the use of members and others recommended by members.

Amalgamation of Metropolitan Gas Companies.—It is announced that the amalgamation of the Gas Light and Coke Company and the South Metropolitan Gas Company may be regarded as practically arranged. We are not sure that this arrangement will be conducive to the interests of gas consumers, who are likely to be pretty much at the mercy of the gigantic company which is presently to take unto itself the lighting of the whole of the metropolis, with the exception of a fraction served by a small company which refuses to amalgamate. Practically, however, the lighting of the whole of the metropolis north of the Thames has been in the hands of the Gaslight and Coke Company for some time past, while the absorption of the Phoenix and Surrey Consumers' Companies within the last two or three years has given the whole of the supply south of the Thames to the South Metropolitan Gas Company,—a company which has always borne a good name for efficiency of management and for the lowness of its charge for gas as compared with the charges of other companies. We are now told that, the amalgamation scheme having been approved at the meetings which have just been held of the proprietors in the two companies, all that is now required is the formal consent of the Board of Trade, and on this point no doubt is entertained.

Bradford Historical and Antiquarian Society.—The sixth annual meeting of this society took place on the 19th inst., when the report for the past year was read by the Secretary, Mr. S. A. Bailey. Papers had been read before the members at the monthly meetings by the following gentlemen:—Mr. W. Exley, on "The Early History of Menston"; Mr. T. J. Empall, on "The Royalist Compounders of Bradford"; Mr. J. W. Turner, on "The History of the Bradford Piece Halls"; and Mr. W. Glossop, on "The Roman and British Remains on Romald's Moor." Excursions have taken place to Marley Hall, Hawkarworth Hall and Baildon Moor, and Pontefract. The programme for the coming session stated that papers would be read by the following members:—Mr. S. O. Bailey, on "The Plans, Maps, &c., of Bradford"; Mr. W. Claridge, M.A., "Memoir of the Rev. Edward Baldwin, sometime master of the Bradford Grammar School in the last century"; Mr. S. Rayner, on "The Early History of Pudsey"; Mr. T. T. Empall, on "The Royalist Compounders of Bradford"; Mr. J. W. Turner, on "Memorials of the Bradford Piece Hall"; and Mr. W. M. Brookes, on "Archbishop Sharp." Mr. T. E. Empall was elected President for the ensuing year.

Royal Victoria Coffee Hall.—H.R.H. Princess Frederica of Hanover and the Baron Pawel von Rammingen have signified their intention of being present at the first Ballad Concert given by Mr. Clement Hoey at the Royal Victoria Coffee Music Hall, on Thursday, November 1st, when Sir Julius Benedict will conduct.

The Joinery Industry in New South Wales.—There are in this colony several large joinery works, fitted with the best labour-saving machinery, and the most modern appliances used in the trade. The establishments of Messrs. Hudson Bros., Messrs. Goodlet & Smith, and Mr. John Booth, at Sydney, employ a large number of hands to meet the requirements of colonial contractors. At Messrs. Goodlet & Smith's establishment, about 100,000 ft. of timber are sawn weekly, nine-tenths of which consist of colonial hardwood, cedar, beech, and pine. Nearly every sort of building materials is manufactured by the firm. They have two large potteries, where sewage-pipes from 3 in. to 24 in. in diameter, building and paving brick, and all descriptions of stoneware, are made. The total number of saw-mills, &c., rose from 112 in 1871 to 213 in 1880.

The Electric Light in Churches.—The *Colony Gazette* refers to the fact of the so-called Isaac Church at St. Petersburg being the first ecclesiastical building in connexion with which the electric light has been used. The interior of places of worship belonging to the Greek church must only be illuminated by wax candles, according to traditional custom. In order to arrive at the desired effect without violating the above-mentioned rule, the electric light had to be placed outside the building, but the success of the arrangements is said to be complete. The electric lamps represent the light of 30,000 candles, while the illumination hitherto in use (together with the lights held by devout persons) was only about 2,000 candles.

Sanitary Administration in the Metropolis.—The Society of Medical Officers of Health held its first meeting for the present session on the 19th inst., in its rooms, Adam-street, Adelphi, when Dr. T. Orme Duffield, of Kensington, was inducted into the chair as President, and gave his inaugural address. He took for his subject the question of sanitary administration in the metropolis, and dealt with it under three heads,—the need of unity of administration, how such unity could be brought about, and the probable benefits of unity being attained. We hope to print a considerable portion of the address, but want of space obliges us to defer it till next week.

New Statue in Paris.—A group is about to be erected on the Place de la Salpêtrière in honour of Doctor Pinel, who distinguished himself by his labours for the improvement of the treatment of the insane. The sculptor is M. Ludovic Durand, who has represented the doctor holding in his right hand some broken fetters; at his feet a young girl raises her eyes to her benefactor. The doctor is attired in the costume of the time of the Directory. The monument has been erected by the Medico-Psychological Society of Paris with the assistance of a grant from the Government and the Municipal Council.

Workhouse and Infirmary, Fulham-road. Sir Charles Dilke, the President of the Local Government Board, inspected the above building on Tuesday last. He was conducted through the new buildings, which are of an extensive character, by Dr. Webster, Mr. Saxon Snell, the architect, and Mr. Charles Wall, the builder, and expressed himself gratified with the completeness of all the arrangements. The infirmary is the largest in London, being erected for the accommodation of 800 patients. The workhouse will, when completed, contain nearly 1,500 inmates.

The "Otto Gas-Engine."—We have been asked to mention that in the actions of Otto v. Ashbury Sumner & Co., Otto v. Ogden, and Otto v. Pickertor to restrain infringement of his patent No. 2,081, 1875, the respective defendants have submitted to orders for a perpetual injunction in terms similar to those of the judgment given by the Court of Appeal in favour of the same plaintiff in an action of Otto v. Linford brought to restrain infringement of the same patent.

The Ruskin Museum at Sheffield.—A meeting of gentlemen interested in the Ruskin Museum was held at Sheffield on Monday. An offer had been made to raise 5,000l. to erect a suitable building; but Mr. Ruskin's solicitors would not waive the rights of St. George's Guild. Since then Mr. Ruskin has written, saying that the Mayor need not be uneasy; that he has not moved from his old purpose with regard to the museum, and will visit Sheffield soon.

The Leys School, Cambridge.—We are asked to state, in reference to our illustrated notice of this school a fortnight ago (p. 482), that Mr. George Dalton was clerk of the works for the dining-hall, north block, and other parts of the building.

Llaneddwyn Church, Merionethshire. has been effectively lighted by means of the Hesperus lamp, the patentees and manufacturers of which are Messrs. Jones & Willis, of Birmingham and London.

Hartlepool Tramways.—The tender of Messrs. Wilkes & Co., of 17, Devonshire-square, Bishopsgate, has been accepted for the construction of the Hartlepool Tramways.

TENDERS.

For additions to carriage works, 149 and 151, Euston-road, for Mr. Stenning. Messrs. Tolley & Son, architects. Quantities by Messrs. Bull:—

Royal	£1,036 0 0
Jackson & Tait	949 0 0
Manning	985 0 0
Gould & Brand	865 0 0
Dixon	862 0 0
Spencer & Co.	847 0 0
Lambie (accepted)	837 0 0

For new fire-extinction appliances, and alterations to the gas and water services, at the Workhouse and Infirmary, Marlborough, Kensington, for the Guardians of St. Mary Abbott's, Kensington. Messrs. A. & C. Harston, architects, 15, Leaden-hall-street:—

Clark, Bunnett, & Co.	£1,871 0 0
Jessels & Co.	1,785 0 0
Wells & Co.	1,725 0 0
Sidler & Co.	1,016 0 0
B. Pitt	1,010 0 0
J. & C. Christie	960 0 0
Shand, Mason, & Co.	850 0 0
Merryweather & Son, Long-acre ...	750 0 0

* Accepted.

For alterations and additions at the Duke of Edinburgh Tavern, Albany-road, Canterbury, for Mr. Butcher. Mr. W. Brocher, architect. Quantities not supplied:—

Prior	£2,8 0 0
D. & A. Brown	298 0 0
B. Hall	281 0 0
Everitt	251 0 0
Luker & Johnstone	260 0 0
Gapper	250 0 0

For a new residence in Long-street, Dursley, Gloucestershire, for Mr. Henry A. Winkles. Messrs. Brunsden & Henderson, architects, 3, Barbican:—

J. Sellick, Dursley	£1,026 3 9
R. Shorne, Weston-Super-Mare ...	830 0 0
S. Bloodworth, Dursley (accepted) ...	770 0 0

For alterations to the Hornsey Wood Tavern, Seven Sisters-road, Finsbury Park, for Mr. A. C. Duggan. Messrs. Brunsden & Henderson, architects:—

F. Saunders	£165 0 0
R. Lines & Co.	159 0 0
Richardson Bros.	121 0 0
Clarke Bros.	104 10 0
F. Smith (accepted)	99 10 0

For alterations to premises, and erecting new glazed roof (Hendle's system) over yard in rear of Nos. 2 and 2a, Finsbury-street, for Messrs. G. & Co., Leadenhall-street. Messrs. Brunsden & Henderson, architects:—

R. Lines & Co.	£159 0 0
Richardson Bros.	149 0 0
F. Saunders (accepted)	144 0 0

* Old materials re-used.

For alterations and repairs to premises, Nos. 21 and 22, Leadenhall-street, E.C., for Messrs. Goy & Co. Messrs. Brunsden & Henderson, architects:—

Richardson Bros. (accepted)	£150 0 0
-----------------------------------	----------

For removing existing buildings, and erecting new three-story add-on, cut-sides, and stable offices, for Messrs. Wintle Bros., Long-street, Dursley, Gloucestershire. Messrs. Brunsden & Henderson, architects:—

S. Bloodworth (accepted)	£215 0 0
--------------------------------	----------

* Old materials re-used.

For new premises, Regent-street, Great Yarmouth, for Mr. D. S. Bayliff. Messrs. Bottle & Olley, architects, Great Yarmouth:—

J. Leggett & J. S. Cooper (accepted) ..	£1,682 0 0
---	------------

For new class-room and lobby to Board School, North Walsham, Norfolk. Messrs. Bottle & Olley, architects:—

Davy, Great Yarmouth	£417 0 0
Corrish & Geyner, North Walsham ...	379 0 0
Easto, North Walsham	307 0 0
Wilson, North Walsham (accepted) ...	205 10 0

For new class-room to St. Peter's Schools, Great Yarmouth. Messrs. Bottle & Olley, architects:—

J. Leggett, Great Yarmouth	£150 0 0
----------------------------------	----------

* Accepted.

For additions to house, Palgrave, near Diss, for Mr. T. G. Smith. Messrs. Bottle & Olley, architects:—

B. W. Whiting & Co., Diss (accepted) ..	£450 0 0
---	----------

For shop and warehouse for Messrs. Wright Bros., Richmond, Surrey. Mr. F. J. Brewer, architect, Richmond. Estimate of engineer's work. Quantities by Mr. W. H. Barber, 12, Buckingham-street, Strand:—

Carliss & Co. (accepted)	£4,000 0 0
--------------------------------	------------

For new club-rooms, &c., for the Norse Rowing Club, Richmond, Surrey. Mr. F. J. Brewer, architect, Richmond. Quantities not supplied:—

Carlman	£800 0 0
Sweet & Loder	879 0 0
Carliss & Co. (accepted)	829 0 0

For alterations and additions to the Clapton Park Club and Institute, 80, Brooksbury-walk, Hornerton. Mr. A. J. Hicks, architect:—

Gower & Petipier (accepted)	£152 15 0
-----------------------------------	-----------

For roads and sewers on the Glebe Land Estate, Woodford Green, for Mr. Bradshaw Brown, Mr. J. D. Hooper, surveyor, Woodford:—

J. L. Cattell	£1,331 0 0
H. Phillips	1,308 0 0
G. Impey	1,183 0 0
L. Knight	1,109 0 0
J. Jackson	1,150 0 0
C. G. Pound	1,131 0 0
T. Knight	1,088 0 0
Roland Bros.	1,065 0 0
R. Strachan	1,025 0 0
E. Wilson	998 0 0
W. Nichols	995 0 0
Woodham & Fry	979 0 0
Jess Jackson	968 0 0
J. Barwell	944 0 0
T. Adams	898 0 0

For new business premises, Broad-street, Reading, for Mr. R. Brigham. Messrs. Brown & Albany, architects:—

Woodroffe & Son	£2,360 0 0
Strong Bros.	2,339 0 0
Wentham	2,267 0 0
Weaver	2,224 0 0
Bourton	2,170 0 0
Kingerlee	2,140 0 0
Higgs	2,130 0 0
Bottrill	2,096 0 0
Searle	2,037 0 0
Simonds (accepted)	1,987 0 0

For new business premises, Nos. 122 and 123, Broad-street, Reading, for Messrs. Freeman, Hardy, & Willis (Limited). Messrs. Brown & Albany, architects:—

Kingerlee (accepted)	£1,350 0 0
----------------------------	------------

For the erection of new stores, and making alterations to present stores, at the Portbury, Reading, for Messrs. E. G. Oakshott & Co. Messrs. Brown & Albany, architects:—

Denton (accepted)	£547 0 0
-------------------------	----------

For new room and offices adjoining the Drill Hall, Wokingham, for Capt. A. F. Walter. Messrs. Brown & Albany, architects:—

G. Wernham (accepted)	£187 10 0
-----------------------------	-----------

For proposed alterations and additions to the Springfield Park Tavern, Bowes Park, N., for the directors of the Birkbeck Trust. Mr. Sydney B. Grosvenor, architect, No. 24, Southampton-buildings, Holborn:—

Brown	£1,050 0 0
Noller	1,049 0 0
Smith	1,045 0 0
Oldis Bros., Finsbury Pavement ...	990 0 0
Baile	817 0 0

* Accepted conditionally.

For the erection of a villa-residence at Windsor, for Miss Allen. Messrs. Byrne & Wilnot, architects, 309, Strand, and Windsor. Quantities not supplied:—

A. L. Oades & Sons, Egham	£1,058 0 0
J. Willes, Windsor	950 0 0
W. Watson, Ascot	965 0 0
W. Reavell, Windsor	770 0 0
J. Dakin, Caeer (accepted)	768 0 0

For three houses and shop in the Oxford-road, Windsor, for Mr. G. H. Long, J.P., floors and grates being supplied, and old bricks and tiles from present buildings being allowed to be used. Messrs. Byrne & Wilnot, architects:—

W. Reavell	£758 0 0
J. Akery (accepted)	650 0 0

Four others tendered.

For the construction of storm-water sewers in the district lying between Granby-street and Wellingdon-street, Leicester, for the Corporation. Mr. J. Gordon, C.E., Borough Surveyor:—

G. Stephenson, Market Harborough ..	£2,350 0 0
S. & W. Pattinson, Sleaford	1,884 15 2
J. Smith, Leicester	1,755 11 6
Kellett & Bentley, London	1,752 7 4
C. Harris, Shrewsbury	1,680 0 0
T. Smart, Nottingham	1,572 0 0
B. Roberts, Bradford	1,610 0 0
A. Palmer, Birmingham (accepted) ...	1,595 2 8

For widening and deepening the River Soar, and improving the Leicester navigation, for the Corporation of Leicester. Mr. J. Gordon, C.E., Borough Surveyor:—

G. Lawson, Glasgow	£40,135 9 7
Henton & Woodwises, Derby	31,414 12 2
Kellett & Bentley, London	31,037 0 0
Foster & Barry, Ratchell-on-Trent ...	3,735 0 0
Whitaker Bros., Here-orth, Leeds ...	30,293 0 0
S. & W. Pattinson, Sleaford	29,162 0 0
S. W. Piling & Co., Manchester * ..	27,993 8 0

* Accepted.

For alterations and new roof to mineral water manufactory, Nos. 126 to 129, High-street, Shadwell. Mr. William C. Livermore, architect:—

Contract No. 1.	
Dragger	£345 0 0
Mausell	320 0 0
Blow	225 0 0
England & Thompson (accepted)	185 10 0
England & Thompson (accepted)	175 0 0

For the erection of the Nightingale Tavern, Nightingale-lane, Wansstead. Mr. William C. Livermore, architect:—

C. Mansfield	£1,275 0 0
W. Buckle	1,100 0 0
A. Nicholls	1,090 0 0
England & Thompson (accepted)	965 0 0

For alterations to stables and erecting dwelling-house for Messrs. Carter, Paterson, & Co., at Camberwell, Mr. W. E. architect. Quantities not supplied:—

Downs	£487 0 0
Habbe & Frost	460 0 0
Higgs	420 0 0
Harris & Wardrop	390 0 0
Watkins	345 0 0
D. D. & A. Brown	314 0 0
Alldridge & Jenvey	321 10 0

For the erection of a house in the Derby-road, Bournemouth, for Mrs. Roy. Messrs. Kemp-Welch & Pinder, architects:—

Jenkins & Son (accepted)	£3,128 0 0
--------------------------------	------------

NOTICE.—The **POLYGONAL REFLECTOR** (Latest Patent) FOR ARTISTIC and PICTURE GALLERIES.
Its construction allows of the angle of light being readily altered so as to reflect in any desirable direction.

The Builder.

Vol. XLV. No. 2128.

SATURDAY, NOVEMBER 3, 1883.

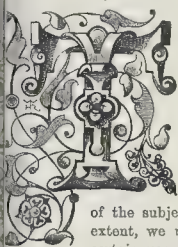
ILLUSTRATIONS.

Proposed Church for the "Old Meeting Trust," Bristol-street, Birmingham (Interior, p. 599).—Mr. William Wykes, Architect	598
New House, near Presteigne, for Miss Greenly.—Mr. Cole A. Adams, Architect	599
Design for Proposed Flower Market for the Thames Embankment (Double-page Photo-Lithograph).—Mr. Edward J. Tarver, Architect	599
A Boudoir in the Renaissance Style (Double-page Engraving).—Designed by A. Bembé, of Mainz	592, 593
Leys School, Cambridge, North Block of Houses.—Mr. R. Curwen, Architect	597

CONTENTS.

Lord Salisbury on the Dwellings of the Poor	577	House, Presteigne	584	The South Wales University College	612
Camps, Castles, Fortifications and Earthworks of Warwickshire: Wapenbury Camp	578	The Leys School, Cambridge: North Block of Houses	601	Leeds and Yorkshire Architectural Society	607
Consumers of Gas	580	Competition Design for Church for the "Old Meeting Trust," Birmingham	601	Building Patent Record	607
Liability of Members of Vestries and Local Boards interested in Contracts with those Bodies	581	Foreign Notes	601	The Admiralty and War Office Competition	604
French and Flemish Exhibition	581	The Educational and Scientific Exhibition at Edinburgh	601	The Prevention of Fires in Theatres	604
The Dudley Gallery	582	Newhaven Harbour Works	601	Casemate Construction	604
On Opening Conversations of the Architectural Association	582	Design for Sir Robert Rawlinson, C.B.	601	The Lure of Sight	604
Metropolitan Sanitary Administration	583	Timber in Algeria	602	Engineering Works in and about Scotland	604
A Flower Market for the Thames Embankment	583	The Periodical Examination of Water Pipes	602	Church Building News	604
Boudoir in the Renaissance Style	584	The Berlin Hygiene Exhibition Building	602	Provincial News	605
		Neuchâtenstein	603	Books: Foy's Le Comptable (Librairie Générale de l'Architecture, Paris)	606
				Miscellaneous	607

Lord Salisbury on the Dwellings of the Poor.



THE article which the Marquis of Salisbury has contributed to the November number of the *National Review* has attracted a great deal of interest and comment, not only from the intrinsic importance

of the subject, but also to some extent, we may suppose, from a certain vague feeling of surprise at the sudden promulgation of something very early approaching to a communistic gospel, in regard to the treatment of a part at least of the community, from a quarter whence we are not accustomed to look for an apostle of this doctrine. Indeed, in despite of the very serious nature of the subject, it is difficult to repress a smile at the ill-concealed surprise of some of the Conservative papers in regard to the article, and their laboriously loyal efforts to accept what is evidently a startling proposition, quite aside their usual habits of social and political thought, as a perfectly natural and logical solution of the difficulty. We make the comment without prejudice, being, in regard to such questions as the housing of the poor, of no politics but those which will do the work and how the way out of the Slough of Despond, if any immediate way there be.

The title of Lord Salisbury's paper, as most of our readers know, is not that given above. His professed subject is "Labourers' and Artisans' Dwellings." The second part of the title he himself shows the unsuitability of in the direct statement, based on his own facts, that the properly so-called "artisan" class are not those whom the question chiefly concerns; all those who can properly be classed under the respectable definition of "artisan" being people in the receipt of, at any rate, sufficient wages to enable them to live, if not in comfort, at least in decency and, if they take the trouble, in cleanliness. Artisans, therefore, are not really included in relation to the question as discussed by Lord Salisbury, by his own showing. In striking out also from our heading the word "labourers," we desire to point to a more than merely verbal alteration. The feeling which one cannot help having as to the inaccuracy of the expression, in this latter case, arises from a painful perception of the fact, surely not unimportant, that it is exactly to those who, in the regular sense of the word, are not "labourers," either from not having regular labour and its wages at their disposal, or from an acquired or constitutional indisposition to do any of them had it put within their reach, that Lord Salisbury's statement of the position applies. In short, "artisans" are those who engage in regular work requiring some amount of skill and

training. "Labourers" are those who do regular labour, such as does not require skill, but only bodily strength in the rough. But the people who make the mass of the inhabitants of overcrowded unhealthy dwellings, where life is endured under such conditions as are incompatible with morality and health, are those included under the general vague term "the poor," or "the very poor," for want of any better or more definite classification; people who have no regular labour, who live anyhow, some of whom would live honestly if they could, some of whom are indifferent on that topic both in theory and practice; all of whom, speaking generally, are engaged in a kind of hopeless and fitful struggle for life; a life little worth having, one would think, and the bare possession of which has to be fought for at the cost of throwing aside all that can give the least interest or enjoyment to it.

The idea that there are thousands of people, a large proportion of them with some latent capacity for enjoying a decent life if it could be evolved by more favourable circumstances, living in this state, is a terrible one. Those of us who are more happily placed forget it for the most part of our time; the most benevolently disposed of us have our own lives, and the lives of those immediately bound up with us, to think of; but the occasional recollection of it is a constantly-recurring nightmare to all but the most heedless, and one cannot wonder that every now and then some one is stirred up, as Lord Salisbury seems to have felt himself stirred up, to make one more effort at suggesting a solution of the problem and finding a way of providing decent living for these "outcasts" such as would be practicable, and, by comparison, immediate in its operation. Every one who is seriously concerned for the public weal ought to feel grateful to Lord Salisbury for what is, at least, we fully believe, an earnest and well-intended contribution to the good cause.

The mere discussion of the subject by a new mind has, of course, its value in giving a new impetus to the progress or possibility of reform, and Lord Salisbury's paper brings together, in a convenient and readable manner, some general information as to the conditions of commercial success in providing dwellings for the poor. But when an essay on a subject of this kind is put forth in a serious spirit by a statesman of Lord Salisbury's standing, the real questions to which a reader who comes to it in an equally serious spirit looks for an answer, are, What is the cause of the present state of things? and Has the writer found a definite and practically operative remedy for it?

We do not find a satisfactory answer to either of these questions in Lord Salisbury's essay; and the reason the essay comes short when considered in this light is, we believe, mainly that its author looks too near the surface of things both for the causes and the

possible remedies. "The housing of the poor in our great towns, especially in London, is a much more difficult and more urgent question than in the rural districts, for the increase of prosperity tends rather to aggravate the existing evil than to lighten it. It is, in fact, directly caused by our prosperity." Surely the writer might at least have contented himself with saying "indirectly." Any form of prosperity which "directly" causes misery to a considerable section of the population is, to say the least, a condition of things to which we must hesitate to apply the word "prosperity"; unless indeed the "our" refers not to the country, but only to London. In that case it is intelligible that Lord Salisbury means to imply that the growth and prosperity of London itself draws disproportionately large numbers to try their fortune in the capital. If so, this is not very distinctly put, though it seems to be connected with the remark immediately following, that while in the case both of rural and urban population the difficulty arises from the dearth of lodging, this dearth "arises in the country simply from the cost of building, while in the town it is due to the cost of building and the cost of land combined," the latter being abnormally forced up by the pressure of increasing numbers to find accommodation within a limited area. This is, of course, all within the plain sailing of the simplest code of maxims of political economy. Another supplementary cause of over-crowding in and over-charge for habitations Lord Salisbury makes too much of, and for an obvious reason. He says,—

"This unhappy population has a special claim on any assistance that Parliament can give. The evil has, in a great measure, been created by Parliament itself. If London had been allowed to go on as it was half a century ago, many benefits of vast importance would have been lost, but the intense competition for house-room would not have existed, and the reformation of rookeries would have been a much less arduous task. But 'improvements' on a vast scale have been made, and those improvements, in too many cases, have only meant packing the people tighter. New streets, railways, viaducts, law courts, and other public buildings, made compulsory under the authority of Parliament, have swept away the dwellings of thousands of the poor; and in that proportion have made the competition more intense for those that remain. Many tenements have let for a high price, which, if no artificial compression had been used, would have found no tenant. Under these circumstances, it is no violation even of the most scrupulous principles to ask Parliament to give what relief it can."

It is evident from this passage that Lord Salisbury must have felt that his projected remedy, the advancing of loans of public money at a low rate of interest for rebuilding the dwellings of the poor, required a good deal of special pleading to bring it within the lines of the logic of political economy. Clearances for public improvements have no doubt had

some effect on overcrowding, but surely by no means in such proportion as to make any pretence for saddling the Government with any of the direct responsibility for the present state of things, and making a case for calling upon it to expend public money in putting the mass of the London poor into proper houses. We should suppose that the addition to the evils of overcrowding from this cause was only in a very small proportion to the whole mass of the indigent population, concerning whose numbers and condition Lord Salisbury observes, indeed, that we are at present without any full and reliable statistics. The employment of public money on this score can only be logically insisted upon in regard to the actual areas that have been cleared and the actual tenants that have been turned adrift; and there is certainly no adequate excuse for the commencement of so very serious an undertaking as the advancement of money from the public funds to such a body as the Peabody Trustees (this is a special proposition of Lord Salisbury's), who do not even pretend to get a remunerative return from their buildings. A more logical argument is that these overcrowded districts are also centres of disease. "If the causes of disease were inanimate, no one would hesitate about employing advances of public money to render them innocuous. Why should the expenditure become illegitimate because these causes happen to be human beings?" It seems incredible that any one should seriously ask such a question. We can deal with the inanimate or brute causes of disease as we please; we can order diseased cattle to be slaughtered; but the most degraded and unhappy of human beings have not only rights of life and liberty which must be respected, but wills of their own which can only be partially controlled.

It is in this latter fact that there lie some of those less immediate, but really more powerfully operative, causes of the distress of the "outcasts" which Lord Salisbury seems to overlook both in his statement of the evil and in his proposed remedies. The misery of to-day among thousands of people who can find no regular work (many of whom do not even wish for it), and can afford no decent habitation, is the invariable outcome of the want of education, and consequent want of self-restraint and prudence, on the part of masses of people for two or three generations back; and this cause is still operating, and will continue to operate, until, in a generation or two, the influence of compulsory education may begin to make itself palpably felt in the higher morality and better knowledge of future generations. The Education Act came two or three generations too late, and the multiplication of the thriftless, ignorant, and unwashed has got ahead of it. Medical officers and School Board officers who know how the least decent of this mass of population live; clergymen who are called on to bless the union of couples little more than boys and girls (impelled, alas! to seek the only gleam of happiness in life which circumstances render possible for them), without a definite prospect of a living, or of the means to support a family, but with just sufficient self-respect to wish for legal union,—these can give too good a guess at the real underlying causes of the mass of misery which is now coming to be regarded in many quarters as a public scandal, but which really is the natural result of principles and modes of living which, according to the accepted rules as to the liberty of the subject, cannot be forcibly interfered with, and will only be materially altered by the slow and gradual dissemination of better educational training and more serious views of the *morale* of life generally. If we lavished a million on putting these people into decent houses, they would live no better for the most part; they would soon make the dwellings as dirty and miserable in all essential respects as the original ones; and the money expended would simply be so much given in charity, in pauperising, and would be only a beginning (if that system were once adopted) of what must go on *ad infinitum* almost; a system of providing houses at unremunerative rents,—in other words, practically giving houses for the residence and increase of the most useless portion of the community.

In short, melancholy as the conclusion is, the evil has got to that point that no measures, however heroic, can be expected to produce any great immediate result in counteracting it; and any idea that this can be done in a moment and by Act of Parliament will prove an illusion;

a result which will be all the more to be deplored if the means employed are such as all theory and experience have shown to be unsound, and therefore injurious as a precedent. This by no means implies that there is nothing to be done. The steps that may be taken with advantage and with certain though slow results, may be said to be, in the first place, the more strict enforcement of the duty of landlords to keep the tenements they let in a state of proper repair and sanitation.* The rents we cannot with any propriety attempt to control. The condition of the premises we can, and a powerful lever may be brought to bear upon landlords, as has been suggested, by a much more stringent view in regard to the compensation to which they are entitled for condemned buildings from which they extracted the maximum of rent while giving the minimum of expenditure on repairs and sanitation. But the most potent agency, both in regard to the improvement of existing dwellings and the possibility of the erection of really remunerative ones in future, at rents within the reach of the very poor, is personal influence and personal agency. This of course can only be a very gradual and partial influence, but experience shows that it is an almost certain one as far as it can be applied. Lord Salisbury especially cites one instance of this, furnished by Miss Octavia Hill's evidence as to the manner in which she was able to make houses which she had bought and rendered decent habitations, pay her as much as four and five per cent. Miss Hill, says Lord Salisbury, "expresses her astonishment at the statement in which many other witnesses agree" (this was in evidence before a Parliamentary Committee) "that the construction of artisans' dwellings cannot be made to pay if the land costs more than 3d. a foot ground-rent, equal to 5s. a foot for the fee simple, which is the price at which the recent Peabody purchases have been made. She has had to pay as much as 9d. a foot, and yet has been able to make four per cent. on her expenditure. Where the ground-rent has not exceeded 6d. she has been able to make five per cent. She was questioned as to the plan by which this economy is effected, but she could give no other explanation except that it requires the minutest personal supervision of details. She collects the weekly rents herself, which gives her the opportunity of making the acquaintance of the inmates; and the object she thenceforth pursues is to improve the tenants with the tenements, repairing the rooms, and persuading the tenants to preserve them, and to take, where necessary, two rooms instead of one."

Miss Hill's building operations have extended only to taking possession of existing small houses; it remains to be seen whether large blocks of tenements cannot yet be produced which will give an adequate return for investment, with rents which will take in the poorest class of persons. Lord Salisbury touches on the question in regard to this, whether it is best to spread laterally out of London, to build cottages in outlying districts, and trust to cheap railway travelling to bring the people to their work, or whether we should follow the example of the old walled towns with their strict limits, and extend our buildings upwards. This will depend a good deal on what can be done with the railways; the experiments in remunerative suburban cottage building with railway access do not, according to Lord Salisbury's account, appear to have answered very well. We have generally been disposed to think that much more may be done with vertical building than has yet been accomplished; the higher we go the more is the proportionate expenditure on ground-rent reduced, and the experiment may be capable of being carried out with less outlay on the building than has hitherto been the case, while keeping the inhabitants in the immediate neighbourhood where their means of livelihood must be sought for.

But for the success, even partial, of such efforts, there must go with the outlay the personal interest and supervision of the landlord or his representative. The great curse of the poorest classes has arisen from their subjection to landlords who know and care nothing about them except as sources from which to squeeze rent. Miss Hill, who should know more of the matter than any one else living among us at present, says the evil will never be

reached except by a good deal of volunteer work. "You will never reach the poor except through people who care about them and watch over them." Those who know anything of work in the East End of London will know of other instances in which gentle-mannered but firm-minded women, as visitors and rent-collectors, have been able to raise the character of a whole group of tenants and tenements. The poor tenant in the poor lodging, if he is to be efficiently helped, "wants not yours, but you" not your money as a gift, but your help and sympathy. No grand scheme will immediately make an appreciable improvement. This must be attained, to use Browning's phrase,—

"But by dim, vulgar, vast, unobvious work,"

and for this willing workers are wanted. Therefore we say to those ardent young souls who, had they lived in the land of Medieval fable, would have gone about slaying the dragons that ravaged the country,—Here is a dragon to slay, as worthy of your spear as ever the Medieval beast was of St. George's; lend your hands and hearts to the fight.

CAMPS, CASTLES, FORTIFICATIONS, AND EARTHWORKS OF WARWICKSHIRE.*

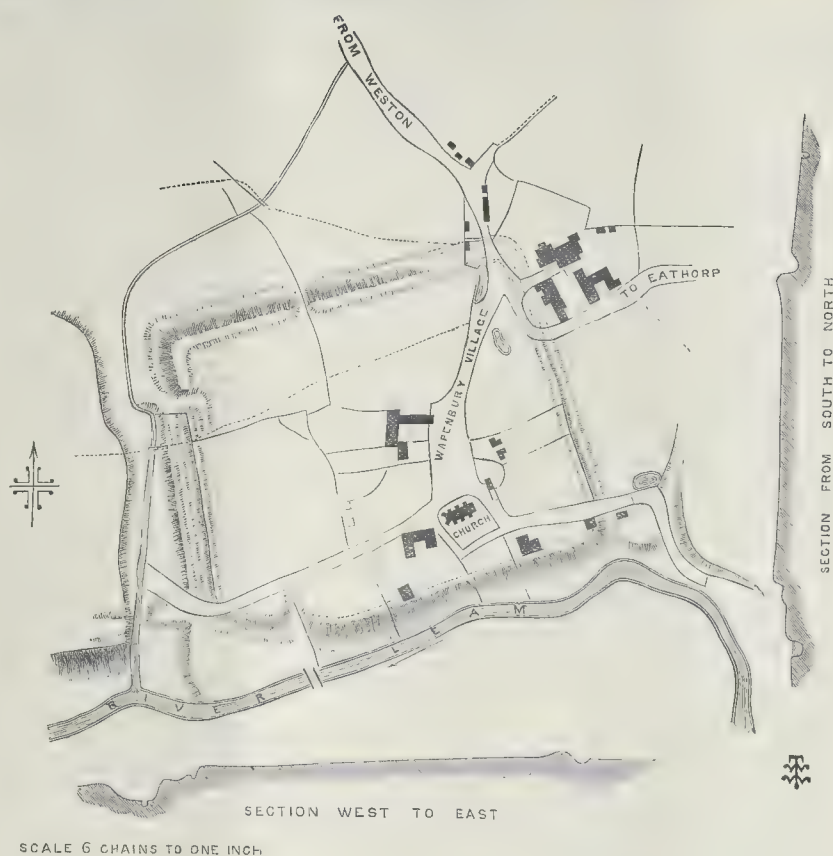
WAPENBURY CAMP.

SITUATE thirteen miles south of High Cross, the Venonis of Antoninus and the centre of Roman Britain, at a distance of half a mile from the Fosse-Way, is the Camp of Wapenbury, which occupies 25 acres within the entrenchments. It is much larger than the Chertiston or Mancetter camps, and its ramparts are more perfect, whilst the ditches are of less width, leading to the conclusion that it was formed during the latter period of the Roman occupation, and restored and kept in order by its Saxon and Danish possessors afterwards. Local antiquaries consider it the Roman fortified station of the district, and place the non-fortified Roman town at Princethorpe. Very few finds of any value have taken place within the camp; amongst them were a Roman ornament, with the head of a bull in the centre and small ornamental Anglo-Saxon fibule; whilst in digging out the brook course to the west several large roughly-rounded sandstones were found, corresponding to the usual missiles sent from a catapult, and in the field to the east pieces of embossed pottery and pattern tiles, in Roman design of blue clay, are found, leading to the belief that a kiln once existed there.

The camp, which bears evident traces of Roman occupation and works, is five-sided in plan, and is enclosed on the north and east sides by a rampart and ditch, the former varying from 7 ft. to 20 ft. in height above the bottom of the latter; these sides are nearly at right angles to each other. There appears to have been an entrance on the north side, and there are indications on old plans that the brook on this side was crossed at the place where the present footway passes it; there may have been an entrance also on the east side, from the Bathorp road, similar to that on the west, but no traces exist, as with this side, "Time hath worn it into slovenry." The north-east angle is also much disturbed. The south rampart of the camp runs parallel with the north from the south-east angle for a distance of nine chains, near which is a sunk cutting, of evident later date than the formation of the camp, when it takes a turn and runs to the south-west corner of the camp in seven chains. The nine chains above consist of one escarpment of about 35 ft. high, along the banks of the River Leam, and upon it is situate the church and churchyard of the village. The escarpment of seven chains as above is formed upon a second escarpment of the natural ground towards the river, which had a ditch and second escarpment for its base, and the first escarpment is here reduced to about 20 ft. On the west face of the camp are considerable remains, and the rampart continues for nine chains from the south-west angle upon the second escarpment, which here runs parallel to it, and at the base of which a small brook flows towards the River Leam. The banks of the camp here are about 6 ft. high, whilst the second or lower escarpment ranges from 10 ft. to 15 ft. There are traces of a roadway which entered the camp near the north-west corner, which has there a stronger rampart from it to the entrance,

* See, on this head, in another column, the remarks of Dr. Dudfield in regard to the necessity of a more rigorous enforcement of the Acts dealing with the condition of lodging-houses and tenements generally.

* See p. 142, ante.



and there are indications of a draw road into the camp, whilst at the south-west angle outside the camp are indications of this road crossing the brook, probably by means of a wooden platform removable at pleasure, and placed from bank to bank as occasion required, running along a ridge of natural formation called "the lanches," and this road appears to have continued its course over the land on this side, which for a considerable extent is level, and would form a capital training-ground for military movements,—until it met the main road from Hiningham to Baginton and Coventry, which bears traces of being a Roman construction. The gap on the west and the meadow and on the north could be flooded in case of any sudden alarm by damming the brook course at the point where these banks exist. The north-west corner of the camp is continued in one rampart, about 20 ft. high, until it reaches the entrance. The camp is on a marly soil, and overlooks the meadows and the Fosse way to the south and south-east; its surface falls towards the north-west, and the church occupies the highest spot.

Of the history of the camp nothing is known before the Conquest. King William gave it with other lands to Geoffrey de Wirce, a native of little Brittany, France. The Survey says:—"The same Goisfrid holds Wapeberie [Wapenbury]. There are 5 hides. The arable employs 5 ploughs. There are in the demesne with 10 bondmen. There are 19 villeins and 6 borders, with 10 ploughs. A mill pays 6s. 8d. Woods are half a mile long and two furlongs broad. It was, and is, worth 110 shillings."

Geoffrey before his death, in 1077, gave by deed dated at Monks Kirby, Warwickshire, to the Monastery of St. Nicholas, at Angiers, in Anjou, France, certain lands and tithes out of his various manors in England, amongst which

were those of Wapenbury, the monks of which monastery sent over a portion of their convent, and taking possession, made Kirby a subordinate cell to that monastery. The deed was confirmed by Geoffrey de Muschamp, Bishop of Coventry, in the time of John, soon after which the monks commenced building a church at Wapenbury, which they dedicated to St. John. Geoffrey de Wirce dying without heirs, his possessions reverted to the Crown, who gave them to Nigel de Albany, the progenitor of the Moubrays; neither Wirce nor Albany appear to have had any personal connexion with the place, but the latter enfeoffed Thomas de Wapenbury. From this time onwards the manor passed to various possessors. The name Wapenbury appears to be Saxon, the first syllable, "wapen," being a place for the collection of arms or weapons, the latter "byrig," a town. It probably played a prominent part in the Danish Saxon wars, being not far from the boundary line allotted to the former people,—the Watling-street,—as it is on the line of King Sweyn's march (A.D. 1013) from Gainsborough to Oxford.

MOTSLow MOUND, STONELEIGH.

The parish of Stoneleigh is very extensive, and consists of several hamlets or parcels, of which Motslow is one. An old inhabitant, whose age is over threescore years and ten, states that at one time "it was accounted a manor of itself, being bounded," says our venerable authority, "by the ford near the White bridge in Stoneleigh village, on the north along the River Sowe to its junction with the River Avon, thence along the latter river to Stare bridge, thence by a line of very old oaks along the fence on the east side of Stare Bridge-lane, to the ford near the White bridge aforesaid. At that time it consisted of three farms in small-sized enclosures, which

have long since disappeared, and are now included in the park."

This mound stands upon an eminence overlooking the village of Stoneleigh, the River Sowe, and lands beyond, and its early inhabitants evidently formed it by cutting off the terminating point of the ridge of elevated land which runs through the Deer Park, adding the material so dug out to form the central mound, and ditching it round where necessary. It is unlikely that the original purpose was sepulchral, as in Saxon times it appears to have been a Royal court, often used for the collection of Crown dues, and the inhabitants, if asked what they know, tell "that the Saxon priests used the mound for the purposes of preaching to the people before the Norman Church of Stoneleigh was built."

The mound is about 40 ft. above the ground on the north, and 100 ft. above the river. It is slightly oval in shape, and about 60 ft. by 100 ft. broad at the summit, which is now surmounted by elm-trees of considerable age. The sides to the west and south are much broken by quarrying, but it is clearly shown that ditches existed there. There was, however, no ditch to the north or river side, whilst the earth to the east was but partially got out. Below, on this side, are signs of early occupation. Upon this mound during the Saxon period rested the round wooden dwelling or *avla*.—

"Where erst the Mercian kings kept ancient court,
The warrior's and the statesman's famed resort;
Held their loud revels, and their boast'rous feasts,
Whilst armour clash'd amid the valorous guests,"

For in Saxon and Norman times Stoneleigh was royal demesne. According to Camden and Dugdale, who obtained their evidence from the ledger-book of Stoneleigh Abbey, a castle called the Holme was standing on a hill opposite the site of the abbey, but was destroyed by Edric,

the traitor, "when the flaming broils of Danish warres, under King Canutus, caught hold of England." Local tradition supposes this to have been Motoslow, whilst some local antiquaries place it in the Deer Park between Cloud and Stars bridges. The Conqueror's Survey states that Edward the Confessor held the Manor of Stoneleigh, and it was entered therein as "terra-regis," containing six hides or about 700 acres of tilled land, with 20 acres of meadow, and woods four miles by two in extent, in which latter there was found pasture for 2,000 hogs, who fed on the acorns and fruit of the forest trees; there were sixty-eight farmers, four cottagers, and two priests, with two mills, besides the bond servants of the king, a population roughly estimated at 400 persons. The Domesday Book also shows that Stoneleigh was, in 1086, one of the hundreds of the county; as such it contained thirty-four manors, but it lost its identity about the reign of Edward I., and has since formed part of the Hundred of Knightlow.

It continued in the possession of the Crown until the time of Henry II., when it paid 17l. 14s. 5d. annually to the king, who then had on the estate two royal houses, one at Motoslow and the other in the woods at Cryfield, between Kenilworth and Coventry. The tenants or "sokemen" were compelled every three weeks to do suit at the king's court at Motoslow, and were persons holding land by tenure of services of husbandry performed for their lord, each paying thirty pence per annum for 1 yard land, viz., one penny per acre, each yard land not to contain more than 30 acres. In Jacob's "Law Dictionary" a yard land is a quantity of land differing according to place or county; in some it was 15 acres, in others nearly 30 acres.

The hamlets of the Stoneleigh manor were 8 yard land only, and each contributed a certain monetary fine payable twice in the year, whilst the king's sokemen were further subject to the following customs and services, first, "That each of them at his death should give an entire heriot, that is to say, horse, harness, and arms, and if he had any, otherwise his best beast; and that the heir succeeding his father should be admitted to the inheritance at fifteen years of age, doubling his rent for a relief, and from thenceforth to be joined with the rest of the sokemen in juries, as also in collecting the king's rents, and answering to processes as if he had been of full age. Second, that they were entitled to estovers (right to cut wood from the forests and homesteads, to repair their houses, buildings, and implements of husbandry, and for fire) in the outwoods by the oversight of the foresters; seil, housebot, heybot, and firebot, and freedom of paunage for their own hogs, but for such hogs as they did buy after the Nativity of St. John the Baptist, to give paunage. Third, that at the bedripe (general reap of the king's corn) in harvest they should all come upon request or notice, with every of their tenants; the sokemen to ride up and down on horseback, with wands to see that they worked well and to amerce those in the court then and there held that made default or laboured idly. Fourth, that they should be in the field at sun rising and work till sunset, not sitting down to breakfast, but each of them eating what he brought with him as they went up and down the lands to their work, and after breakfast to sit down once before dinner, the lord finding them drink, but at noon both they and the sokemen to have meat and drink provided by the lord. Fifth, that the reapers should eat by themselves, every one having a little white loaf, four eggs, and pottage, i.e., gruel, without flesh boiled in it, except the lord would afford them other, with cheese and beer sufficient; and after dinner one sitting down with bread and beer, but the sokemen themselves to be served with better diet according to their degrees. Sixth and lastly, when the king should assess his boroughs and manors with tallage, he to have from the sokemen there the tenth part of their goods."

Soon after this time the manor of Stoneleigh was given by the Crown to the Cistercian Monks, who moved to their newly-built Abbey of Stoneleigh shortly after 1154. Their bondmen held land under the following tenure, each held one mess and one quartone of land, the fourth part of a yard land, 5 or 6 acres, by the services of making a gallowa and hanging of thieves. They were to wear a red clout between their shoulders upon an upper garment, to plough and reap twice a year, to make malt, and do other servile work, and give aid to their

lord at the feast of Saint Michael. No mention appears to have been made of Motoslow Mound or its court at any later date than this.

HILL PARK TUMULUS, COOMB.

To the north of the ancient Cistercian Abbey of Coomb, now the residence of Lord Craven, are the remains of an avenue of large elm trees 50 ft. wide, of great age, but now few in number, which reach from the artificial water made by a former earl to Hill-park, an elevation of slight proportion; the avenue terminates at the summit in a small tumulus nearly oval on plan, with ditch. It is 160 ft. from east to west and 175 from north to south, and is of the kind usually said to be British, and called Druid, barrows, having a raised central mound with ditch around, similar to that on Kenilworth-common, at Kingsbury, and elsewhere. From it the Briuk-lumulus and the rising ground to the north can be seen. The trees surrounding it are not planted in the same circle as the edge of the outer ditch of the tumulus, and are evidently a modern arrangement, and show plantings of two periods. It has lost much of its original height, and has, I believe, never been opened. It lies not far from the so-called British settlement of Smiteton.

It is locally said that the older elms were planted by the monks before the dissolution of the monasteries; but as the best authorities state that the life of an elm tree is not more than 200 years, this is probably an error. Tradition, however, states that the spot was used by the Druids for religious rites, and the avenue will be found marked on the Ordnance maps very nearly due north and south,—and may have been a continuation of a long Druidical avenue before the monastery existed, as that extending on the south side the abbey is lineable with this one, and is called "the twelve o'clock riding," the popular tradition of which is that at twelve o'clock noon the sun is exactly over the same.

KINETON CASTLE AND EARTHWORKS.

At nearly equal distances from the towns of Warwick, Stratford, Shipston, Banbury, and Southam, in the midst of the Hundred of the same name, stands the ancient little town of Kineton, and the site of earthworks traditionally called "King John's Castle," at which he is said to have kept his court. There is, however, little to prove it; but as in that king's reign it was the property of the crown, it may have been a royal hunting-lodge, and one of the courts for the Midland Counties at which the judges in those times sat to try cases and dispense the rough-and-ready justice of King John's reign. It is further stated to have been royal demesne as far back as the time of Edward the Confessor, and the form of the fortifications leaves little doubt that they were erected in Anglo-Saxon times, for mounds appear to have seldom been raised by the Normans themselves, who invariably used the square form for their keeps. Sometimes, however, they erected circular or polygonal ones thereon, as at Tamworth, where they found the mounds handy for their use, and a reason may be assigned in the fact that newly-made foundations would have been unsafe for the placing thereon of the massive Norman masonry required for the square keeps of the period. It may, therefore, be surmised that the Saxon castle was built during the period 547 to 924. It would consist, as at Stoneleigh, of the "aia" or fortified residence, situate on the mound, with the adjoining enclosures protected by strong entrenched ditches, the remains of which we have at the present day. This earthen mound or "burh" was surmounted on the top by a wooden or stone castle, with a bridge thrown over the ditch, which was, in several cases, built of herring-bone masonry, as in the work of Ethelfleda, at Tamworth, and had several enclosed courtyards, or baileys, for cattle, or for houses for soldiers or dependents within the castle area. The remains existing show a large circular mound of earthwork at the top, of about 100 feet in diameter, with foss surrounding it, and a large base-court in the rear, enclosed by a ditch and rampart somewhat resembling, as is sometimes customary in Anglo-Saxon work, a horse-shoe in shape, which latter terminates on one side of the mound, where the hill and mound form the protection, and on the other side dies away in the hill side; the mound stands out boldly in the hill overlooking the valley, brook, and town, and forms a good point of observation for defence. Tradition says that there is a

deep well in its centre, locally called Bentley's well, and from which a spring is said to flow into the valley beneath. In the "Anglo-Saxon Chronicle" instances are often given as to the throwing up of these habitations and defences, and we invariably find the same plan adopted as here; the mound is not placed within a bank, but upon the end of it, so that the banks die away into the same, and if any more profit was required the Bayeux tapestry and the writings of early historians will supply it. In giving this a Saxon origin it cannot, however, be said that there did not exist a stone keep, erected in King John's or other king's reign on the aforesaid mound. It is likely, as locally it is said, that the stone foundations still remain undisturbed; but when the railway was being constructed some masonry was disturbed at a spot 400 or 500 yards from the Castle-hill, where stands King John's well. The walls were, we are informed, of great thickness, and might have been part of the feudal castle of the Segraves, to whom John granted the land in fee farm. The water from King John's well, which is cold as ice and clear as crystal, now supplies the town of Kineton with water, being pumped thereto. Two large elm-trees, of great age, stand near the well, which is of great depth, and never has been known to vary in flow or in the level of the water. Higher up, at the back of this well, on Pitern Hill, is the remaining earthwork of a beacon-tower, which stood there before the closing of the wolds, about 170 years ago, when it was pulled down. It communicated with Edge Hill and the beacons on the hills of the Worcestershire and Warwickshire borderland. The town of Kineton was, tradition says, a large place before the civil wars, having some trade, many inhabitants, and extending over a large space of ground; many of the present houses were built shortly after the Battle of Edge Hill, and the date 1667 is on one of the principal inns. The church is built of local stone, yellow in colour, and has lately been repaired, with evident care to preserve the old details and mouldings outside; but the interior is plain, and capable of great improvement. The Early English west door, with its clustered columns and shafting, is much admired, as also the peculiar-shaped weatherings and corbel tables of the buttresses.

Coventry.

T. W. W.

THE AMALGAMATION OF GAS COMPANIES, AND THE PROTECTION OF THE CONSUMERS OF GAS.

We mentioned last week (*ante*, p. 574) the proposed amalgamation of the Gas-Light and Coke and the South Metropolitan Gas Companies, which must be regarded as a step to the unification of the entire gas supply of the metropolis. The capital invested in the four metropolitan and fourteen suburban gas companies, at the end of 1882, was 13,393,104l. in the former, and 2,073,251l. in the latter, and as we have formerly stated (*ante*, p. 71), a net profit of 10-42 per cent. on the stock and shares of the four metropolitan companies, and one of 9-22 per cent. on that of the suburban companies, was earned last year. The companies, therefore, are in that position of ease, not to say of affluence, which enables them to meet on reasonable terms the natural claim of their customers for a fair division of any further increment of profit; and the main interest which the public will take in the new amalgamation will be to see how far this step is to be taken in pursuance of such common interest.

It is but too little borne in mind that the proceedings of those great associations which, as a special feature of the nineteenth century, supply not only the urban requisites of water and artificial light, but also the chief means of locomotion, are subject to the rigid operation of economical law. Whether the trader be an individual or a corporation, he can obtain prosperity only by the same methods. He may either, under the precarious privilege of a monopoly, conduct his affairs on the principles of exorbitant charge, giving little heed to any facilities to tempt custom; or he may go on the principles of quick returns on the largest attainable amount of business, stimulated by great facilities and low charges. Our railway companies, commencing with the first idea of business, have generally adopted, and in some respects overdone, the second, and now find in the once despised and discontemned third-class passenger the backbone of such prosperity.

as they possess. We think that the gas companies are inclined to take the same path, and we have little doubt that trouble is before the water companies if they adhere to the opposite policy.

That the principle of fair division of the profits accruing from the extension of business between the two parties to the bargain is the only sound one is, we think, indisputable. Profits based on disproportionate charges contain within themselves the seeds of their own decay. That they should be permitted to endure, to any great extent, is due rather to the blindness and want of combination on the part of the sufferers, than to the real strength of the position of the monopolists. This we are fully prepared to show in the case of the water companies. But it must be admitted, on the other hand, on behalf of these companies, that they have been exposed, within the last few years, to a sort of attack which can be characterised in no other way than as an attempt at lunder. The report of the Registrar-General in 1876 gave a signal for this kind of project. Assuming that the paid-up capital of the gas and water companies of the metropolis then amounted to 20,667,555*l.*, on which an average dividend of 9 per cent. was paid, the Registrar-General made the very unaccountant-like suggestion that as the Metropolitan Board could borrow that amount of capital at 4 per cent., "the ratpayers might be supplied by them with gas and water at half the present cost." When men in a quasi-scientific position suggest something akin to robbery, the companies must be excused for being on their guard. This preposterous report was followed by a distinct attack on the water companies, of which our columns bear record; by the futile attempt of the Metropolitan Board to introduce a triple system of pipes; and by the negotiations with the late Government, in which the companies got so much the better of the case, that Bill and session, Parliament and Government, all came to the ground with a rush.

The water question is now again assuming prominence, and, as we pointed out some five months ago (p. 732, vol. xiv.), is one of which the difficulty increases with every year's delay. That there is a solution of this question possible which shall respect the rights of all parties, we unhesitatingly maintain, and are ready to elucidate. In the mean time, both local companies and water-rate payers will do well to study the state of the gas relations of the metropolis. The sliding scale which has been adopted by three out of the four metropolitan gas companies had the result, last year, of adding a profit of 183*l.* per 1,000 cubic feet of gas sold to the standard dividend of 116*l.* 3*l.* 6*d.* per 1,000. This means that there was a saving to the public, out of the increased profits of the companies, of something like 2*l.* 6*d.* per 1,000 cubic feet of gas. This is the sort of arrangement that tends to draw together buyer and seller, and to expedite and improve the course of business. When the gas-makers and the gas-users are thus in partnership, there is neither room nor need for the intrusion of competition, which usually produces a temporary cheapening, followed by a permanent rise of price. From the excellent "Analysis of the Metropolitan Suburban Gas Companies for the Year 1882," which we reviewed on its publication (p. 71, *ante*), it appears that the London Gas Company is the only one out of the metropolitan four, on which the sliding scale is not applied. Of course, the amalgamation can make (or at all events, should be allowed to make) no difference in this respect. Considering all the risks run, including the risk of depreciation of property in consequence of the constant march of scientific invention, we hold that a return of from 7 to 10 per cent. on capital actually laid out ought to be enjoyed by the shareholders of the great companies. That the gas companies should enjoy this, and at the same time be encouraged to lower their charges, we make to be matter for congratulation. We should be glad to see the railway companies on the same; and not only the possibility, but even the method of attaining their end, are pointed out in the Evidence before the Select Committee on Canals. A conflict seems, by a portion of the Press, to be expected with regard to the water companies; but for this to come to a crisis involves the continued difference, on the part of the public, to that full

knowledge of the actual condition of the case which is attainable with perfect certitude. The water companies are no more in a position to impose unfair charges,—provided the ratpayers take good advice,—than the Metropolitan Board, the Government, or any private speculators are in a position to deprive the water companies of their property and statutory rights.

THE LIABILITY OF MEMBERS OF VESTRIES AND LOCAL BOARDS INTERESTED IN CONTRACTS WITH THOSE BODIES.

The business morality of many persons who are concerned with contracts for local bodies, whether they be officers of these bodies or persons who have dealings with them, is not of the highest kind. This arises not so much from any wrong feeling on the part of these persons as from the fact that they act only up to a rule which is in itself not sufficiently high. It is in this manner that the very baneful habit of commissions and presents to agents and others does so much harm and is so strongly pronounced against by the Bench, as we showed in a recent article when commenting on a case in the earlier part of this year in connexion with the Vestry of Kensington.* It is to avoid scandals in connexion with local bodies such as we have pointed to that the Legislature has introduced some stringent provisions on this subject into the Metropolitan Management Act, and into the Public Health Act, as well as into other statutes which we need not further particularise. These provisions, briefly stated, enact that in case any member of a vestry is in any manner concerned or interested in any contract or work with or for a vestry he shall cease to be a member, and any one who acts as a member after he has become in this way ineligible, is liable to a penalty of 50*l.* for each time that he so acts. Likewise the rules in connexion with the Public Health Act are more or less to the same effect.

We advert now to these statutes, and to the principles on which they are framed, because both statutes, to which we have alluded, have been the subject of very recent litigation, which tends to show that their stringency is hardly sufficiently appreciated by those whom they concern, and that the Courts of Justice will show no mercy to those who, from innocent or from wrong motives, continue to act on local bodies when they are interested, however slightly, in contracts entered into by the body of which they are members. The latest of these cases is that of *Hemmings v. Williamson*, which went to the Court of Appeal, and is reported in the October number of the *Law Reports*.

The facts were briefly as follow:—Mr. Williamson's brother, in March, 1882, entered into a contract to do certain work for the Vestry of St. Mary, Islington, and Mr. Williamson advanced his brother some money for the purpose of the contract, and by way of security the benefit of this contract was assigned to him. In the following May Mr. Williamson was elected a member of the Vestry, and attended its meetings. An action for penalties was thereupon brought against him, and a verdict to the amount of 250*l.* was found against him. It was this decision which the Court of Appeal was asked to overrule, but which it, on the contrary, upheld. It was urged in Mr. Williamson's favour that the statute only referred to contracts entered into after a person became a member of a vestry. But this objection was quickly put aside. "A person," said the Master of the Rolls, "interested in a contract ceases to be a member the moment after he is elected. . . The defendant (Mr. Williamson) was interested in a contract with the Vestry; but he ceased to be a member within the statute, and yet, after ceasing, he acted as a member. He, therefore, incurred the penalty." Then it was said that Mr. Williamson having only lent money, and merely taken an assignment of the contract by way of security, was not interested in the contract so as to be liable to the penalties. But, said the Master of the Rolls, it was to Mr. Williamson's interest to promote the fulfilment of the contract so as to get his money repaid, and so here again the objection was overruled. It is obvious that nothing, indeed,—say if a builder doing work for a vestry had obtained advances from a member of it,—could be more

injurious to the public interest than that the lender should remain on the board. Because it would clearly be to his interest to advise that the work should be paid for whether it was done well or badly, and whether or not it was to the interest of the Vestry to pay the full price for it. We do not say that in the case we are now commenting on Mr. Williamson had any wrongful motive in taking his place on the Vestry, but it is quite clear that if a man with no wrong motive is allowed to take his seat, the one who will defraud the public must equally remain a vestryman. In the previous case of *Fletcher v. Hudson*, in 1881, the defendant had done some slight work for the Surveyor of the Grasmere Local Board, and it was said he would make no profit out of the business, and did it to oblige the Surveyor. Here again, however, the Court of Appeal held him to be liable to a penalty. The result, therefore, of these two recent decisions is that any one, however slightly interested he may be in a contract entered into with a local board or vestry, or however slight the work may be, cannot safely be elected a member, or if already a member, remain one. That this rule, stringent in itself, and equally stringently enforced by the Courts of Law, is a wise one, and conducive not only to the public advantage, but to the healthiness of the business tone of local officials and contractors who are connected with them, there can be no doubt. Its severity, and the severity of the judges in administering it, cannot, therefore, be too widely known among all those who have anything to do with local bodies, whether as members or interested parties.

FRENCH AND FLEMISH EXHIBITION.

The winter exhibition at Mr. Wallis's gallery opened this week. It contains two very fine specimens of two very opposite schools of landscape-painting; the "St. Sebastian" of Corot (57), and the "Rhenish Lowlands" of Carl Heffner (132). The latter work is the largest in scale, and the finest, which we have yet seen from this artist, who has made such a remarkable advance in his powers lately. Like most of Heffner's, it is a flat scene a good deal covered with water, which comes up to the foreground, the middle portion of the picture being occupied by a mass of houses and trees, dark against the faint rich light of the evening sky. On the right the eye travels up to the low belt of light on the horizon. The picture, with a certain *soupeur* of hardness, which Heffner never quite gets rid of, is nevertheless an exceptionally fine one, poetic in feeling and very well composed without having too much the look of a composition. Corot's "Martyrdom of St. Sebastian" is a large upright, which has been claimed by many admirers of the late French painter as his finest work. Its *motif* is evidently inspired by Titian's masterpiece, now alas! lost to us, the Martyrdom of St. Peter. There is the same idea of the dying saint beneath a mass of trees, and the cherubs hovering in the upper boughs with the crown and martyrdom for him. But Corot's figures unfortunately will not compare with Titian's. They are larger and more prominent in relation to the scale of the whole than was usual with Corot, and the result is not an advantage to the work as a whole. The grand masses of overhanging foliage are painted in that free style which Corot almost invented for the translation of foliage, and in which all idea of mere paint is lost, as also, it must be admitted, all botanical exactitude. The trees are foliage in the abstract, foliage for the artist, not for the botanist; and we are not sure that they are the worse (from an artistic point of view) for that, though the fashion of criticism runs the other way at present. The Polish element is prominent in the exhibition. A new-comer, Skutetzky, contributes a rather vulgar but exceedingly clever picture, entitled "The New Model," giving a glimpse of the curiously frank way in which the "model" profession (pursued *sub rosa*), and often unknown to her own family, by the English model) is accepted in Italy, where a father, as in this case, will introduce his own daughter to the artist and expatiate enthusiastically upon her advantages. Two other young ladies of the profession, portraits of well-known Venetian models, look on laughingly and with a somewhat critical air at the new-comer; the artist turns round from his easel to attend to the old man's exuberant recommendations; a bit of Venice is seen through the window.

* See *Builder*, vol. xiv., p. 3.

Another Polish artist, Kleczynski, contributes a spirited snow scene, "Hunting in Poland" (94), the hunting being apparently done on a rough sledge covered with straw, behind a team of belted horses. What sort of game is hunted effectually in that way the picture does not tell us, but the horses are drawn with great spirit. Yet another Polish effort, in a much quieter vein, is a painting representing the often-told tale of "Farewell to the World," a poor girl taking the last leave of her relations, and of all sweet human and domestic ties, before going behind the convent gate; this work (143) by Czachorski, is more characterised by efficient and scholastic workmanship than by any marked pathos. Among pictures of the same school as some of those we have been speaking of is de Blass's "During the Carnival: Who is He?" an interior in which a young man in mask and harlequinade costume has entered gaily to present a bouquet, with his hand on his heart, to the daughter of the house; the noticeable point in this work is the expression of the mother of the girl, who takes the matter seriously, and, half risen from her chair, tries with all her eyes to distinguish the personality of the visitor through his disguise; her face is the best bit of expression in the room. Among other works worth notice are "Moisson de Roses" (135), a brilliant flower-piece by René Gosse; "H.M.S. Worcester off Greenhithe" (87), Miss Clara Montalba, a capably-drawn ship; "Sportman's Rest," by Wenglein (71); "Japanese Theatre," (30), by Moreau; "A Freshening Breeze" (34), by Everton Sainsbury, a good half-length figure study; "The Pride of all the Spains" (12), by C. Seiler, a motive caught from Meissonier.

THE DUDLEY GALLERY.

This gallery appears now to be under new management, or at least under a new name, the "Dudley Gallery Art Society." The exhibition of Cabinet Pictures in Oil, the seventeenth in this gallery, and "the first under the new management," includes a good deal of "women's work," some of which we must be ungallant enough to say does not tend to promote the idea of the equal artistic powers of the two sexes. The general character of the exhibition is much what it always has been, a collection containing a good deal of nice work, and nothing very remarkable. Among the noticeable things is "After the Bath, Cairo" (196), a subject à la Gerome, by his American-French pupil, Mr. Bridgman, a prosaic piece of realism introducing us into the recesses of the harem, and including a finely-painted nude study. We may contrast with this the fanciful series of little decorative subjects by Mr. Rooke, illustrating the legend of "The Apple of Life" (401). He is as poetic as Mr. Bridgman is vulgar and realistic, and the colour effect of some of the little pieces, the last in number especially, the genii dropping the apple into the water of oblivion, is delightful; though it must be admitted that this is not so much picture-painting as designing, the work being very conventional in style. "In a Sussex Meadow" (79), by Mr. H. Lemon, is a fine little study, verging towards the Impressionist "persuasion," with very well-drawn cattle; and Mr. Winkfield's "Weighing Anchor" (57) is one of those really individual and original studies of sea which we meet with occasionally, in which the artist has represented a special effect of sea under special circumstances of light and wind in a way which marks it out from the average run of repetitions of every-day effects. Mr. Hemy's "Trammel Net Catch" (83) is not equal to himself in respect of the water, though with a powerfully-treated foreground. "Free Sittings" (92), by Mr. R. Dowling, is a very nice study of two children in church. "A Marshy Coast," by Miss Hilda Montalba, and "Across the Marshes," by Mr. Adrian Stokes (108, 109), are two other transcripts from nature in a really original style. The "Isle of St. Louis, Paris" (266), by Mr. John Varley, is interesting to us as a good architectural subject of rather out-of-the-way type. Mr. T. C. Gotch, in "Hiding from Granny," gives a good realistic study of the backyard of an old house, in the manner of which Mr. Boyce set the example, and his "Cottage Garden" (316) is a good little bit of realistic work of the same type. On the centre table are a couple of models in clay of animal

life, by Miss Barlow, which are very good; and bronze models of a knocker and a pair of sliding door-handles, bearing the name of S. P. Cockerell. We welcome anything good with that name to it, and these are really good, the knocker especially, which is quite in the spirit of good Renaissance art.

THE OPENING CONFERSAZIONE OF THE ARCHITECTURAL ASSOCIATION.

THE Architectural Association on the 26th ult. inaugurated the work of Session 1883-84 by a *confersazione* given in the new art-galleries in Piccadilly belonging to the Royal Institute of Water-Colour Painters. The visitors were received in the Prince's Hall, where the President (Mr. Cole A. Adams, F.R.I.B.A.) took the chair, and the formal part of the proceedings of the evening was commenced by the distribution of prizes, as follow:—

The Association Travelling Studentship.—The President said that the work submitted for this studentship had been so very equal in merit that the judges had had great difficulty in awarding the prize. The Studentship and the Association's Medal had been awarded to Mr. J. G. Sankey. Mr. G. G. Wallace was second in this competition, and Mr. G. G. Woodward third.

Architectural Union Company's Prize (for measured drawings of existing buildings).—The second prize only was awarded in this competition, to Mr. Hall.

Class of Design Prizes.—First, Mr. G. G. Woodward; second, Mr. Brown. Hon. mention made of Mr. B. Haylor.

Elementary Class of Design Prizes.—First, Mr. W. E. Potts; second, Mr. C. C. Bradley. Hon. mention made of Messrs. R. T. Thomson, H. C. Smart, and T. H. Roberts.

Class of Construction Prizes.—First, Mr. F. Ward; second, Mr. E. P. Tucker; a third prize, given by the members of the class, was divided between Messrs. M. Collins and B. Potter.

Class for Study of Planning and Specification Writing.—Two prizes offered. Messrs. W. A. Powell and H. A. Smart were equal in merit, so the prizes were put together and equally divided.

Sketch Book Prize.—Gained by Mr. Sydney Vacher.

Essay Prize.—Hon. mention made of Mr. E. P. Tucker.

Prizes in connexion with Mr. Blashill's Lectures on Construction.—First, Mr. A. L. Hart; second, Mr. A. O. Breda; third, Mr. B. L. Cole; additional prize (given by Mr. Blashill), to Mr. M. Collins. Hon. mention made of Messrs. H. C. Brushfield, M. Fawcett, J. J. Jones, W. H. Moxon, J. E. Newberry, T. H. Roberts, E. H. Selby, and E. P. Tucker.*

The President then proceeded to deliver an address, the first portion of which was devoted to words of welcome and to a recital of the objects of the Association and the mode in which they are carried out on the principle of mutual help. He continued as follows:—

A president's address should, I believe, touch upon those topics and subjects more or less connected with the society or profession he represents. First and foremost then in interest is, perhaps, the great national competition for the new Admiralty and War Office buildings. Since the competition for the Royal Courts of Justice, now rapidly approaching completion, no greater one has taken place in this country. Any architect, no matter of what nationality, may send in a design for these new buildings; and the Government have adopted the plan of asking, in the first instance, for sketch designs, drawn to a small scale, sufficient to illustrate the author's scheme and design. From the designs sent in a limited number will be selected, and the fortunate selected architects will then be invited to send in fresh drawings to a larger scale, with, perhaps, certain modifications, and more in detail. These gentlemen will each receive the sum of 600*l.* for the revised plans, and from the plans sent in one will be chosen and the author asked to carry out the entire work, under certain conditions; the fortunate winner of the prize to receive 25,000*l.* for the entire work, in which the 600*l.* will merge. The designs will be adjudicated upon by a committee, of whom, we are told, one at least shall be an architect. Various opinions exist upon the wisdom and justice of the conditions imposed

* In addition to the classes here enumerated, there is a Class for the Study of Colour Decoration, having for its committee of visitors Messrs. J. D. Crace, E. C. Lee, W. J. N. Millard, and L. A. Shuffrey. We are asked to mention that the Secretary of the Class (Mr. W. A. Pitt, 5, Bloomsbury-square) will be glad to receive the names of members of the Association who may desire to join the Class.

by the Government. It would serve but little purpose were I to attempt to discuss them here. One may perhaps express a regret that so little value appears to be placed upon the necessity of having the experience, advice, and counsel of professional men among those whose duty it will be to adjudicate upon the designs sent in. If any one will only glance at the conditions, he cannot fail to see the enormous amount of labour and the great expense the preparation of drawings will throw upon the competitors, who have, in all fairness, a right to demand that their labours should be judged by those best competent to judge them. And who can be better fitted than those whose lives have been devoted to the science and art of architecture? The assistance of officials well versed in the requirements of public buildings is indispensable; but above and beyond all this is the necessity of the possession of those faculties which long experience and study have developed, giving a grasp and perception of a design, and the power of looking through it as a whole, and conceiving the result likely to follow its erection. The nation will have to pay the bill for these new offices, and has the right to demand that the best possible judgment should be brought to bear, no matter what the cost. Perhaps when we meet together again next year the problem will have been solved, and the design and name of the successful candidate known, as well as those of the few selected for the second competition. Should he, or any of them, come from the ranks of the Architectural Association, great will be the congratulations and rejoicings in consequence. Will the first prize be taken by one who has already won his laurels, and whose work is now before the world, or shall we welcome a new-comer, destined to achieve a mighty success,—one whose name shall rank high in our noble art, with the honoured names whose work and fame are too well known to you to need repeating here?

Curiosity will be keen to know what style will be selected. A few decades back and one might safely venture the opinion that Gothic would win the day; but no one at all observant can fail to have noticed the tendency towards a Classic revival, and the fact that in the public secular buildings recently erected the Gothic style has been conspicuous by its absence. There are many who think that in the Royal Courts of Justice,—that monument to the genius of one, perhaps the greatest master the Gothic revival has produced,—we have seen the close of the effects of it, and that our restless nineteenth-century life clamours for change, change, when so much has been learned, such great progress made, in a style which is ours by right of birth, and which in days gone by was as natural to our forefathers to build in as the clothes they wore and the food they ate. It is the custom with many to sneer at everything modern, and, indifferently acquainted with the art they set themselves up to be judges of, to say that modern Gothic is simply a copy,—and a very bad copy according to them,—of the old work. Such criticism is, unfortunately, only too popular, and, unfortunately, there are many spurious examples of modern Gothic at hand to support the opinion. But in all fairness, is judging of art go to the best examples, and, observing in order the buildings of modern times,—I mean now those erected since the Gothic revival,—notice the progress that has been made by such men as Pugin, Scott, Street, Burgess, Butterfield, Pearson, Sedding, and other masters whose names are familiar to us. These men have produced works which will live, despite the criticisms of to-day; ground has been gained, the stamp of genius is upon what they have done. And now, when a school was rising up, taking note of past failures, gaining daily strength in expressing their ideas, and meeting modern requirements in a common-sense way, does it not seem a thousand pities that all this ground and experience gained in the adaptation of Gothic, our national birth-right, must be surrendered? If, as architects, our enthusiasm has cooled for the style which only a few years ago seized upon nearly every student who entered the profession, and fired his zeal to excel in that and that only, then far better leave it alone, for no good thing could come from the brain of an artist half-hearted in the style he was working in. But one is tempted to ask, What, then, will be the style which shall represent the present school of thought? And echo answers,—what? Queen Anne! one whispers, with almost an apology for men-

tioning the name of that noble lady, whom it has so long been the custom to announce as dead; but the fair queen has had much offered in her name of late, and the "Queen Anne style," as we call it for lack of a better name, has much to commend itself in its piquancy, picturesque-ness, and adaptability to modern wants, domestic purposes, and to bricks and mortar. But what, it will be asked, are the guiding principles of this style? Has Queen Anne any principles? Is the style capable of rousing enthusiasm in the student, and teaching the eternal lessons of truth and beauty? Are we destined to see a Queen Anne Admiralty and War Office? The event will show. It would be waste of time now to speculate further; only I will add that if by good chance, as some think (and I go with them), this great work of the century should fall into the hands of the man whose work, perhaps, of that of all men in this country, exhibits, despite some eccentricities of genius, the finest perception of what is beautiful,—I allude to Norman Shaw,—were he to give his whole mind to the design, then, I venture to think, we should have a building which, despite individual objections, would be the work of a consummate artist,—a building brimful of piquancy, rich fancy, and masterly grouping, and a work that we should as a nation be proud of. In the hands of such a master, no matter, hardly, what style he elects to work in, call it Queen Anne or Norman Shaw, we recognise the stamp of power which lends to its will whatsoever his hands find to do.

Mr. Ruskin tells us, in his book about building entitled "The Stones of Venice," that architects should live among mountains. Perse- nage; certain it is that, though the migration of the whole profession to mountainous regions would doubtless be a very grateful relief to a certain distinguished barrister,—that, great Sir Oracle at whom, when he opens his lips, let no dog bark,—still it would be attended with very serious inconveniences to the general public and the emigrants themselves. I am afraid that the colony would soon break up from internal dissensions and differences of opinion, and that the great question of a style for the future would not be one whit the more formulated, promulgated, and adopted. The art of architecture in this country is not practised now under defined rules; we have no one great school of thought to which allegiance is given, but it is left free to every man to do what is right in his own eyes. The result is endless variety in our buildings, frequently too much straining after effects too often disappointing in their realisation; and in the constant struggle after so-called originality, perfection in style must, under such a system, be unattainable. We avoid dull monotony; we miss the results which would follow the bent of the best amongst us pursuing the working-out of one style. Some critics lay all the faults of modern architecture upon us as architects; but if any one is to blame, the public must take their share. Architecture from all time has been the expression of the wants of the people who practised it. The buildings of antiquity tell us sometimes all that is known of the habits of the men who occupied them; and the New Zealander, looking at what he may find, will say that the people of the nineteenth century were evidently a very prolific race, very eccentric in their habits, very erratic in their ways, most multitudinous in their taste. Any attempt at the classification of buildings and styles he will have to give up in despair; he will find very few houses at all, and he will write it down that the architecture of these extraordinary people was, like their paintings and sculpture, characteristic of the individual artist and of the people he built for,—that his works show he had to serve a restless, hurrying world, who demanded so much and paid so little for it.

Is a national style again possible to us? I cannot venture to answer the question, but I may point out that probably the best way to arrive at such a consummation is, I hope, marked out by the step recently taken by the Royal Institute of British Architects. Now, entry into that body must be by passing an examination, which means that only those men who come up to a certain test of the knowledge requisite to an architect will be admitted. This, perhaps, is a step towards making architecture, like Law and Medicine, a diplomated profession. When one considers the responsibilities thrown upon architects, they have some right to demand that they should be protected against the blame

and odium too often showered upon them owing to the utter incompetence,—in science and art,—of the men who, without any training in the profession, style themselves architects, and cover the land with buildings inartistic, unscientific, and unsanitary. No qualified man shirks his legitimate share of responsibility; but, will-he-nill-he, he must suffer for others. If admission into a profession, second to none in the nobility of its aims and character, meant that the applicant must be a man of education and culture, an *esprit de corps* would speedily spring up, art would be studied on better-defined lines, and science would be pursued as the highway to success. I take it that the tendency of this would be greater unity of thought and action amongst us, and the public would have much the same guarantees of competency in the men they employed as they now have in law and physic.

Before, however, we can have good architecture, modern speculative building as usually practised must receive its deathblow. The greater part by far of London is covered with it. Somebody is to blame,—blame the architects! Ladies and gentlemen, we are not to blame: the blame lies with a public which will have it so, with rapacious landlords, greedy lawyers, and poor builders, who, after paying the ground landlord, the lawyers, and the estate surveyor's fees, and scamping their work,—poor wretches! more sinned against than sinning,—run up house after house under no really efficient control. Sad to say, the streets upon streets of speculative houses are more characteristic of our present national style and of modern society than anything else we have. All know the miseries, the expense, the disappointment, and, too frequently, the ill-health and death which follow the taking, purchase, and occupation of the modern builder's house. Bad taste, bad art, bad building, bad plumbing, bad drainage,—it all comes back to plain matter of fact. We want too much for the money, and the middlemen want too much money out of the builder. The public are, on the whole, content to let matters be as they are, and offer prices quite inadequate to procure good work. Landlords, lawyers, and surveyors exact too much money from the unfortunate builder, whose only chance of profit is to save every penny he can upon the buildings. Should an equitable law be passed which shall make it easier for a man to procure a freehold plot of ground, so that he may be tempted to build substantially, we may yet see buildings which, though less pretentious, shall be well constructed and stamped with the character of honesty and durability.

Until this much-to-be-desired epoch in our history comes, it behoves every one of us who has our art at heart to pursue his way, following in the steps of the great architects who have gone before, striving to grasp the lessons they mastered, and ever seeking to master the eternal principles of truth and beauty found in the best art, no matter what the style may be. True to ourselves, and so true to all men, in the pursuit of the beautiful we shall not forget that architecture to be beautiful must be strong, and that this expression of strength can only be gained by mastering the sciences of mechanics and construction, the nature of the materials we use, and the requirements which the building must fulfil. We must remember that details simply copied from old work, however charming they may be where the student has found them, will, in all probability, look out of place apart from their surroundings and divorced from the spouse they were subservient to. We must study to acquire that too often uncommon sense, common sense. Let us stoop to nothing that is mean or dishonourable, but, endeavouring to the utmost of our powers to lead our employers, and not to drive them, try to serve them with loyalty and uprightness, and to hold the scale of justice in even balance between client and builder; and, in a word, take up the motto long ago adopted by the Architectural Association, and "Design with beauty, build in truth."

Contrary to the usual practice of late years, the President's remarks on this occasion were not followed by speeches from other gentlemen, so that on the conclusion of the President's address the visitors dispersed and ascended to the galleries, where some interesting items of furniture and decorative art were on exhibition, as well as the large number of drawings submitted by the members in com-

petition for the various prizes. Of these drawings and sketches those submitted by Mr. J. G. Sankey, the holder of the Association's Travelling Studentship, deservedly attracted much attention. In the midst of so much evidence of industry and study by young and vivacious aspirants for professional distinction, a sad chord was awakened by a collection of drawings and sketches by the late R. C. Page, who had been for many years one of the most active and kindly helpers in the work of the Association, and who had worthily attained to the position of vice-president before his untimely death, which was recorded, with some particulars of his career, in the *Builder* for September 15, p. 367. Messrs. Jeffrey & Co. exhibited some excellent embossed and flat wall-papers, together with some original designs for papers by the late B. J. Talbot, Mr. W. J. Muckley, and others. Messrs. Jackson & Graham's exhibits included a quaint cabinet designed by Mr. T. E. Colcutt. Messrs. Hart, Son, Peard, & Co. exhibited a number of specimens of ecclesiastical brass and iron work, including a large and well-executed brass intended as a memorial of the late Professor Palmer and his companions, whose sad fate is one of the dark shadows of recent events in Egypt. Messrs. Arrowsmith & Co. exhibited some very good parquetry work, as well as carved oak mantelpiece and other goods; Messrs. Longden & Co. lent some dog and other grates in bright steel and brass; and close by were some beautifully-worked screens executed at the Royal School of Art Needlework. One of these, a four-fold screen, had its panels filled with figures of Juno, Proserpine, Venus, and Minerva. Another well-executed screen was of a floral character, from a design by Mr. William Morris. The richly-worked curtains depending from the doorways between the galleries were also exhibited by the Royal School of Art Needlework. The Coalbrookdale Company exhibited some well-executed cast-iron chimneypieces and over-mantels, suited for interiors in the present mode. A series of figures for a reredos at Gateshead-on-Tyne was lent by Mr. J. S. Westmacott; and near at hand was a collection of articles in Doulton ware, lent by the well-known firm of potters whose name it bears. Messrs. Cox, Sons, Buckley, & Co., exhibited several articles of church furniture and adornment; while Messrs. George Trollope & Sons displayed a reproduction of sixteenth-century tapestry, woven in their looms at Halkin-street, Belgrave-square.

During the evening the band of the 2nd Life Guards performed in the galleries, and there was a vocal and instrumental concert in the Prince's Hall. Nearly two thousand persons were present, and all would have gone well but for the flagrantly-defective arrangements for the reception and delivery of hats and coats.

METROPOLITAN SANITARY ADMINISTRATION.

We extract the following passages from the address of Dr. Duffield, at the opening meeting of the Society of Medical Officers, referred to in our issue of last week:—

The need of unity, Dr. Duffield observed, could not admit of question, when it was considered that the care of public health in this greatest of cities was committed to some forty separate authorities, created, it was true, by, and deriving many of their powers from, the same Act of Parliament, yet practically independent, each in its own district, having no bond of connexion enabling them to combine for the common good, and rarely holding communication with one another, except for some special and local object. The metropolis stood alone in this respect, being the only city that was not at unity in itself. In every other large centre of population there was but one authority, deriving power under codified laws, and dealing with every branch of public health and ordinary sanitary administration. The ill effects of sanitary disunion in London were not far to seek. As regarded questions of public health, affecting the public at large, and excepting in the case of an emergency, such as an invasion of cholera, when special legislation was called into operation, there were no means of combining the governing authorities for the common defence. No, not even for so necessary a purpose as concerting measures for preventing the spread of a loathsome infectious disease, such as small-pox. An epidemic might break out in one district, and prevail for many days, without

the fact becoming known to the authorities in adjoining districts, and hence no combined measures could be taken for checking or preventing its spread at the onset, when alone a successful result was possible. It might be said, indeed, that lacking "compulsory notification" powers, the authority of the district first invaded might itself remain but too long in ignorance of the outbreak. This, however, only proved the need of unity; for Parliament would assuredly give all necessary powers to a strong central authority, however unwilling to entrust them to numerous minor and disunited sanitary authorities.

It was a curious feature in sanitary legislation that while the most complete provision had been made for preventing the spread of animal infectious diseases, by notification of illness, by isolation of the sick, and by disinfection rigidly carried out, no such provision had been made against the spread of human infectious diseases. They had no power to enforce notification; isolation was well-nigh impossible, except by voluntary removal to hospital, whilst disinfection was only efficient, so far as it was efficient, because sanitary officials, with the consent of sanitary authorities, but without legal obligation, had largely taken the matter into their own hands. Given the necessary powers, a great increase upon the not inconsiderable success of sanitary authorities in preventing the spread of infectious diseases would be attained; but those powers would hardly be conferred until there was a strong central sanitary authority by which the action of the several local sanitary authorities could be combined for the common good. Even under existing legislation such an authority would be able to confer great benefits on the metropolis, not to be expected so long as sanitary power remained scattered and divided.

Reference was made to questions certain to be dealt with by such an authority, as for instance provision of healthy dwellings for the poor, viz., by universal and stringent exercise of the powers contained in the 35th section of the Sanitary Act, 1866, dealing with houses let out in lodgings; baths and wash-houses; mortuaries; disinfecting chambers, public urinals and water-closets for both sexes, &c.—sanitary wants very inadequately supplied after more than a quarter of a century of divided sanitary government. A central sanitary authority alone could make adequate provision of these institutions suitably located for general use, without reference to local boundaries.

The question, "How unity may be brought about" was next considered, and it was said that two courses were open:—The existing sanitary authorities might be swept away, and an entirely new central authority created to rule over an undivided London; or, the present local machinery being retained, a central Board might be established to take charge of all great questions affecting the metropolis as a whole, to lay down the principles on which sanitary administration should be carried out, by framing by-laws, &c.; and, generally, to exercise a supervisory control over the work entrusted to the Vestries and District Boards by the Local Management and other Acts. The central Board, so to say, would be legislative in its functions, the local Boards executive, and thus substantial unity in principle, with uniformity in practice, would be attained with a minimum of charge. Preference was expressed for the second course, and it was assumed that the manner in which some such scheme could be brought into practical working might be expected ere long to engage the attention of the legislature, it being difficult to believe that a system which had worked so well, and had conferred so many benefits on the metropolis, would be cast aside in order to give trial to a new, a vast, and a doubtful experiment, such as was involved in the adoption of the first course.

The central authority being thus provided, and unity in sanitary administration brought about, the "probable benefits to be expected from such unity" were considered. Codification of sanitary laws was put in the forefront; next, compulsory notification and provision of hospitals; the latter being regarded as the more important, because hospitals almost infallibly led to voluntary notification, whereas even compulsory notification without hospitals was robbed of great part of its value. The fact that hospital provision would soon be adequate was referred to, and an opinion expressed that the hospitals should come under the control of the Central Sanitary Authority. For a year, at

least, under section 7 of the Diseases Prevention (Metropolis) Act, 1883, the nominal stigma of pauperism would not attach to the hospitals, and the Society should make an effort to get those provisions made permanent, the opportunity being too good to be let slip, seeing that the President of the Local Government Board was with them, he having in 1878, and again in 1879, introduced a Bill "To remove Disqualification by Medical Relief for Infectious Diseases." By every means the sick should be encouraged to enter the hospitals,—often the only means of securing isolation,—even as the Hospitals Commission put it, "by the bribe of gratuitous treatment." Increased powers of compulsory removal were necessary in case of persons not able to be "safely isolated" and "properly treated" at home. The ambulance system was, or shortly would be, perfect. A riverside wharf was in course of being acquired; an ambulance steamer already existed; ship and land hospitals, too, and soon a great convalescent home, would be taken in hand. Such were some of the benefits *qua* infectious diseases already conferred by a single authority, or to be expected with the advent of the new Central Sanitary Authority.

A FLOWER MARKET FOR THE THAMES EMBANKMENT.

In July of last year, long before the Mid-London Market Scheme was published, a private client asked me to find a site for a building much needed by Londoners, namely, a market where they could go in cleanliness and comfort to purchase flowers and "table" fruit and vegetables such as they could carry away or their footmen could take to them in their carriages. After seeing two or three sites, he at once preferred this,—at present,—melancholy waste at the foot of Adelphi-terrace, which is screened from the Embankment Gardens by a raised bank; for, by throwing this open to the gardens, its position for a flower-market would be most appropriate. Upon making due inquiries, there was reason to hope that there would be no difficulty in making the approach from the one to the other, but that, on the contrary, such an arrangement would develop the resources of the beautiful gardens.

The approaches from the Strand exist already, but, alas! they are a standing disgrace to London, being nothing more nor less than the notorious "dark arches of the Adelphi." Here, then, was an opportunity of bringing good out of evil, and the next part of the undertaking was to pave and whiten and thoroughly light up these haunts of iniquity, and thus convert them into pleasant and respectable approaches to the market.

The question of access and departure of great traffic was also considered, and consisted chiefly of a return to the very purpose for which these dark arches were built by the brothers Adam, in July, 1768, according to a print in the British Museum, which shows the busy riverside wharf (the site now in question), with laden carts approaching by the easy gradient from "York Buildings," and the empty carts departing by the steeper gradient towards the Strand. There would be no interference with the privacy of Adelphi-terrace, while the inhabitants of that select locality could have their own approaches, guarded by lock and key, down to the market. Neither would there be any of the nuisances connected with Covent-garden Market and its nauseous street litter, for the goods would be sold from the stalls only, and be too precious to admit of waste or refuse. These stalls would face on to a covered avenue on the ground-floor, and on to terraces over them, these upper stalls being again surmounted by a second terrace, open only to Adelphi-terrace, and commanding perhaps the finest view in London, while a fountain would plash in the centre, and impart a pleasant freshness to the whole. The freeholder, however, demurs to his land being used for the purpose, and so the matter rests.

The preparation of this design naturally led to incidental suggestions for the improvement of the Embankment gardens, &c., which might or might not have followed in course of time:—

1. The erection of fountains thereon, one of which was actually proposed by the Board of Works some years ago, but afterwards abandoned.

2. The restoration of York Gate to its original purpose as a thoroughfare, and the revelation of its buried base, which might fairly stand in a basin of ornamental water,

3. The erection of a shelter for a band, to be used in the evenings only, so as not to disturb busy people during office hours.

4. The miserable wooden stairs to Charing-cross foot-bridge would surely give way to a more dignified double flight of stone steps.

Lastly,—The dangerous condition of the Embankment, which holds out no chance of rescue to a drowning person, has suggested the double row of heavy chains, one within reach at high-tide and the other at low-tide, thus giving some employment to the lions who have held the mooring-rings in their mouths all these years, and must have been wondering when we should find a use for them.

EDWARD J. TARVER.

A BOUDOIR IN THE RENAISSANCE STYLE.

ONE of the most beneficial results of the artistic development which has taken place in recent years in the various departments of German industry has been the independence exhibited in art joinery and the other trades engaged in the decoration of the interior of houses. This tendency contrasts favourably with the formerly prevailing dependence upon French taste, which had taken the place of the forms of the Italian Renaissance, first adopted in Germany by the masters of the fifteenth and sixteenth centuries. That movement gradually died out, and domestic art sank to the level of mere imitation of French patterns. A salutary change was brought about in a great measure by the efforts of Semper, who did much to revive the use of Renaissance forms in German architecture. The industrial exhibitions of the last few years have shown how far this taste has extended to the manufacture of furniture. Amongst the places which at all times fostered the handicraft of art joinery and the related trades, Mainz takes first rank, and her products have always received due recognition. The illustration of a boudoir furnished in the Renaissance style, which we give in this week's *Builder*, is an example of the progress made by the German art furnisher. The boudoir in question proceeds from the manufactory of A. Bembé, of Mainz, and gained a prize at a recent German exhibition. The element of colour is, of course, absent in a woodcut; but the view we give shows the character of the design in a very effective manner. We are able to give the following notes as to the colour scheme. The covering of the chairs and lounges is a blue silk; the wall hangings are red, framed in by borders worked in gold and silver. The furniture, panellings, and door frame, are in ebony inlaid with ivory; fauteuil, divan, chairs, and little tables are besides decorated with bronze work. The centre panel of the ceiling, richly decorated with bronze and intarsia, is filled by a painting by Ludwig Leacker, of Munich, illustrating "Poetry inspiring Art."

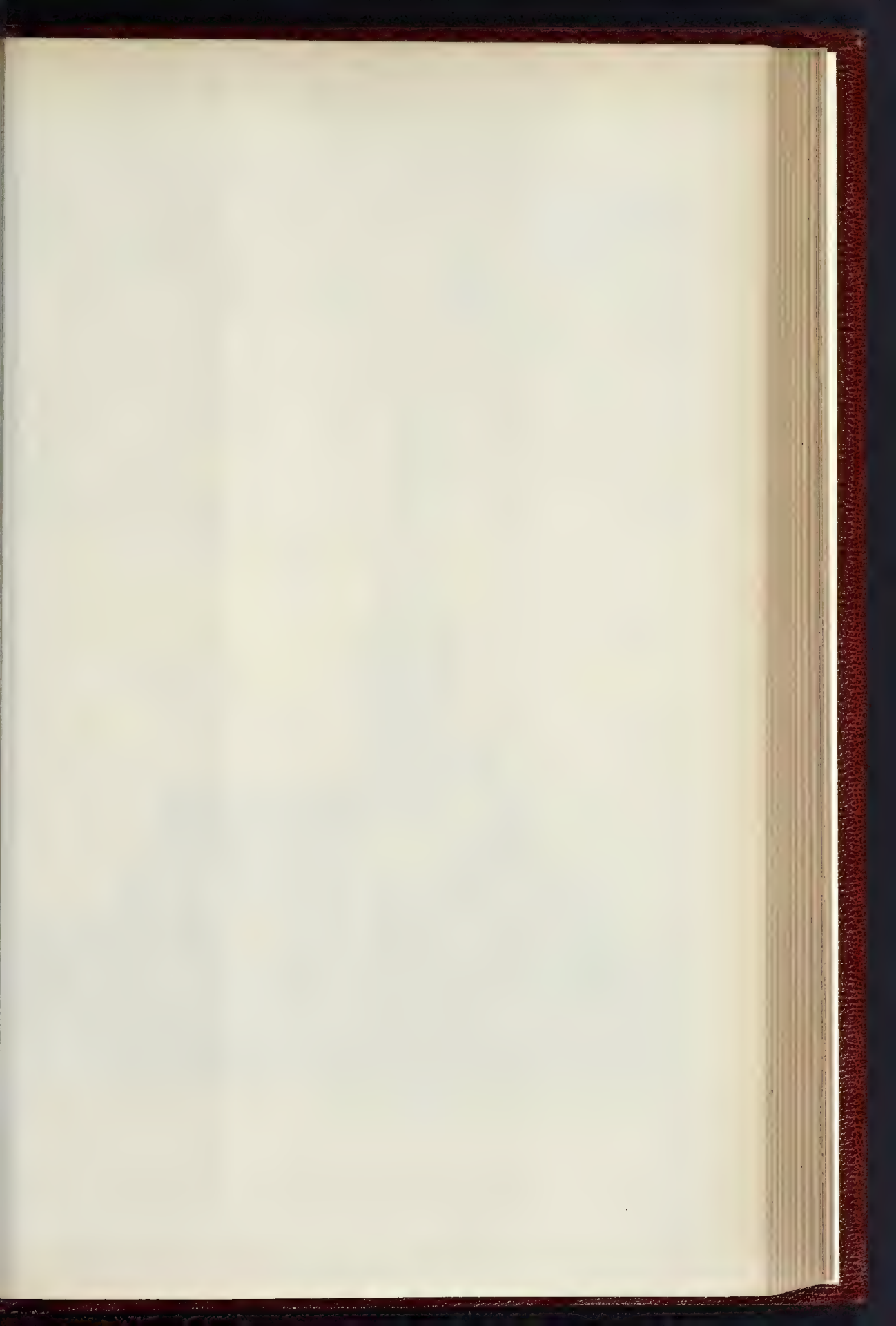
HOUSE, PRESTEIGNE.

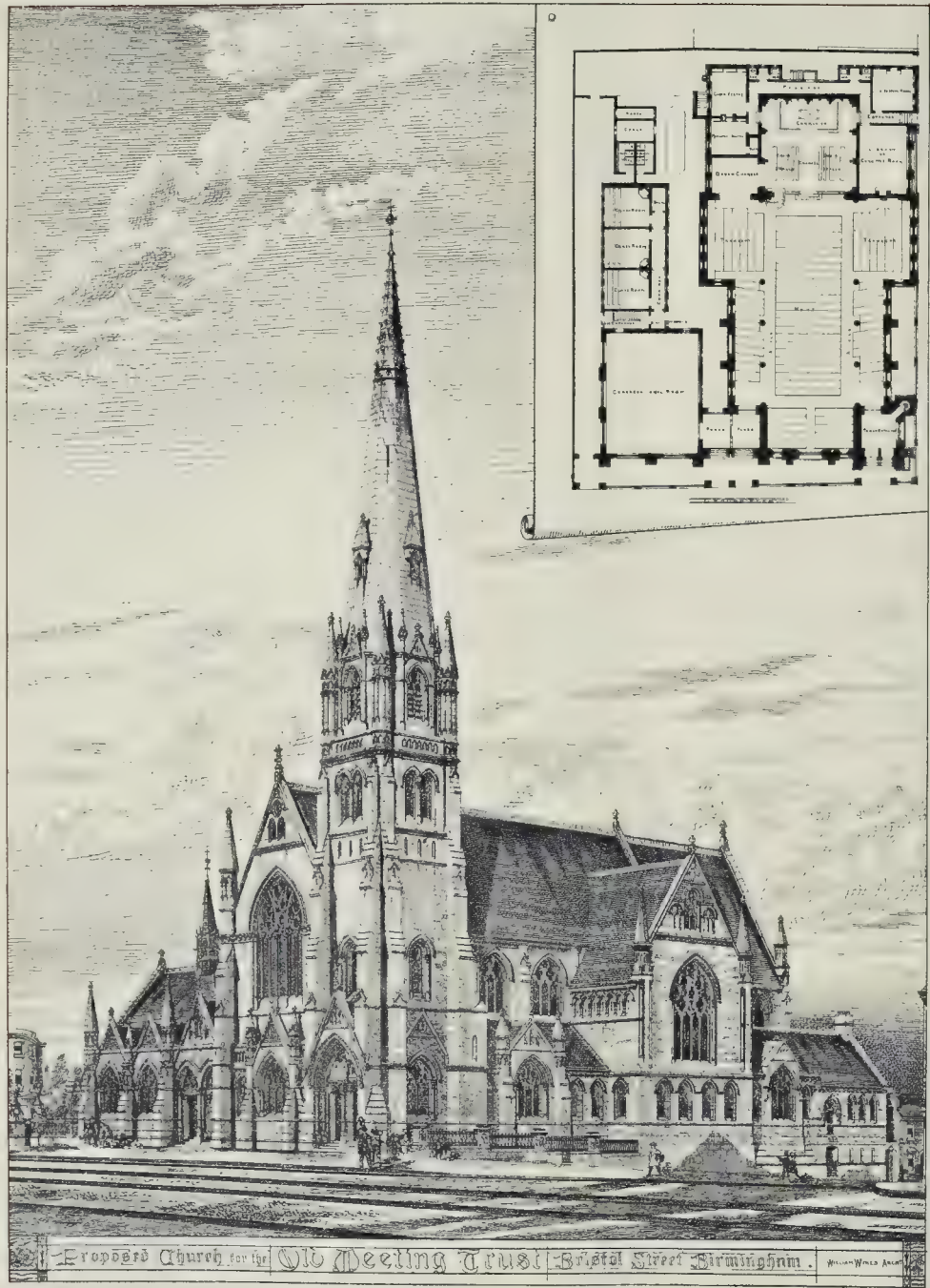
The house of which we give the south-west view is now being built on a very favourable site, outside the town of Presteigne. Lovely views of the hill country are commanded from the windows of the principal rooms, which are also equally fortunate in their aspect.

The walling is of local stone, which has a dark blue-grey colour, and the dressings are of Leeston stone, procured in the neighbourhood, warm and rich in tint and appearance. The upper stories of the house are to be partly half-timbered and partly tile-hung, and the roofs covered with Broseley tiles.

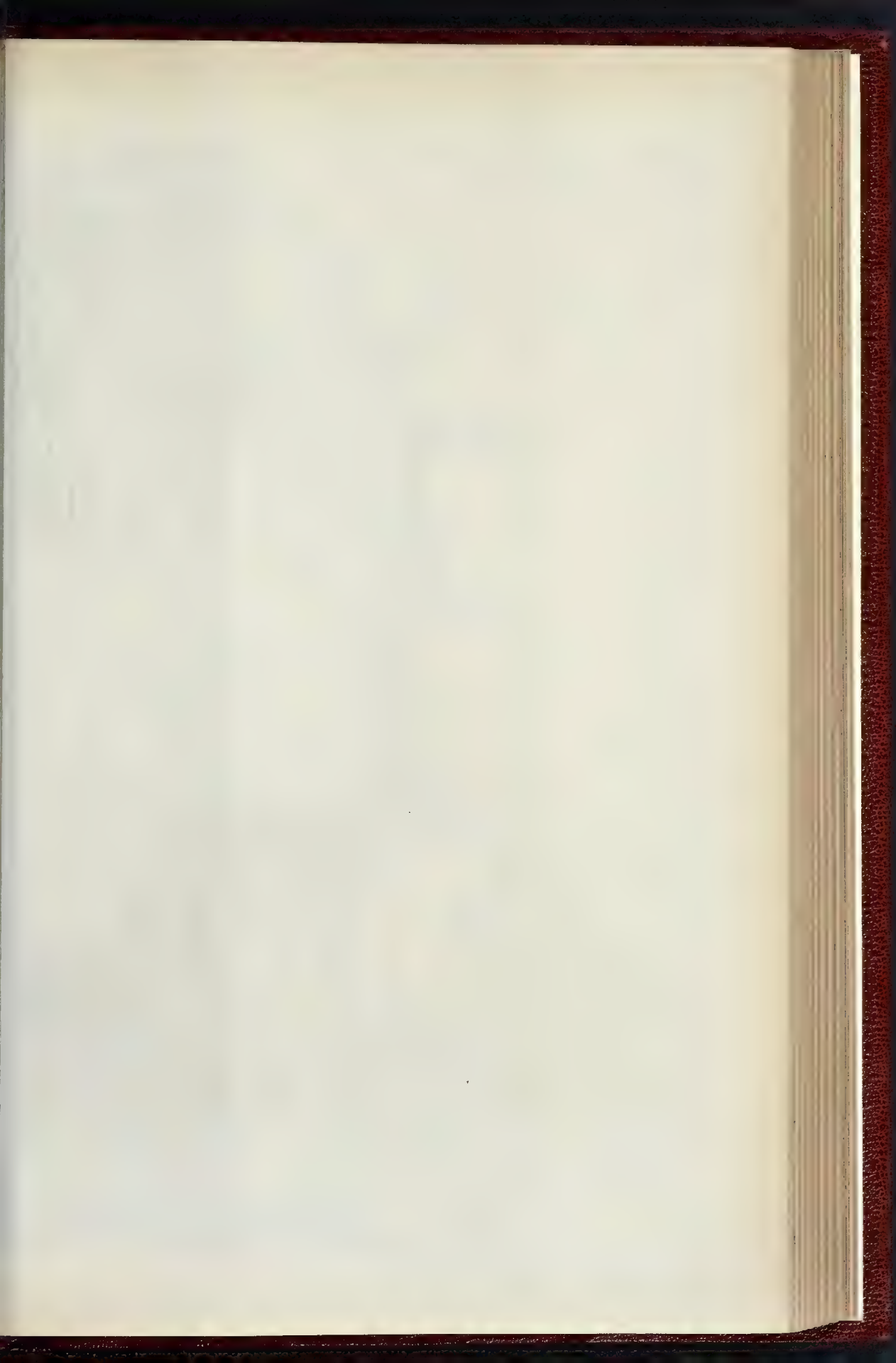
Mr. Cole A. Adams is the architect, and Mr. Collins, of Tewkesbury, the builder.

Mr. Edwin Long, R.A., has almost completed the important picture, of large dimensions, upon which he has been occupied during the past eighteen months. It represents a Scriptural subject, which has afforded a theme to many of the greatest artists, both ancient and modern; but it has been treated by Mr. Long in an absolutely original manner, pregnant with the most suggestive contrast and incident. This picture has been painted for Messrs. Fairless & Beoforth, by whom it will be exhibited in Bond-street in the course of the next few weeks.





Vincent Brooks, Day & Son, Photo-litho.

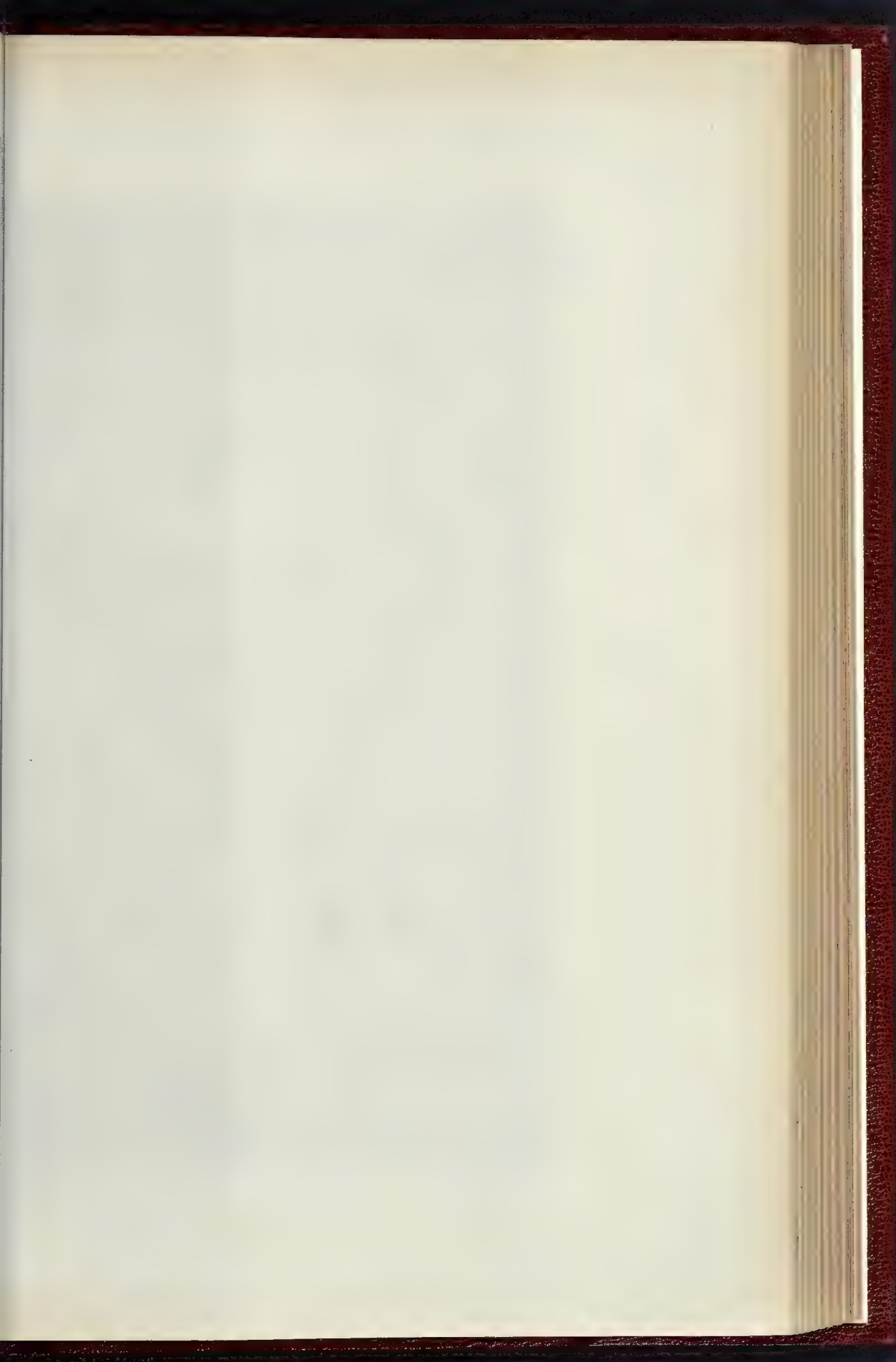


New House near Presteigne,
for Miss Greenly.

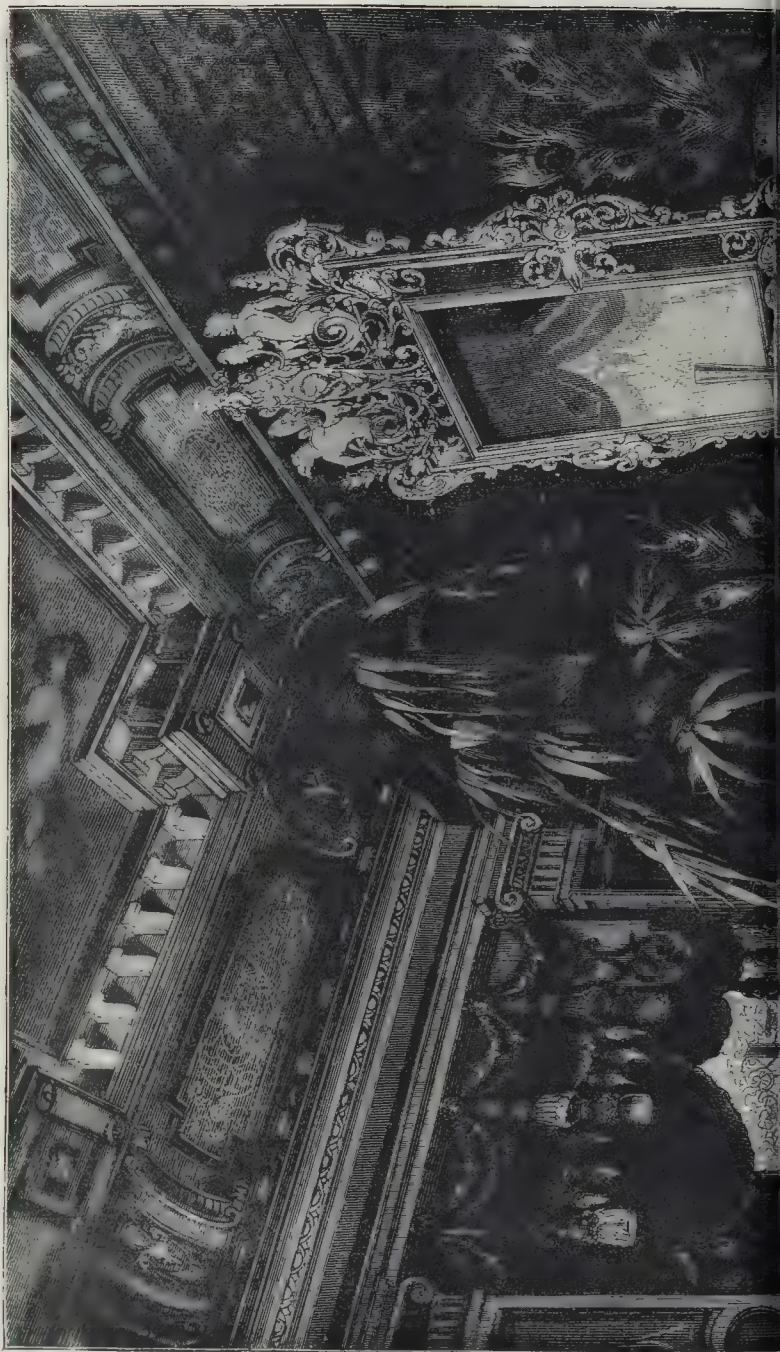


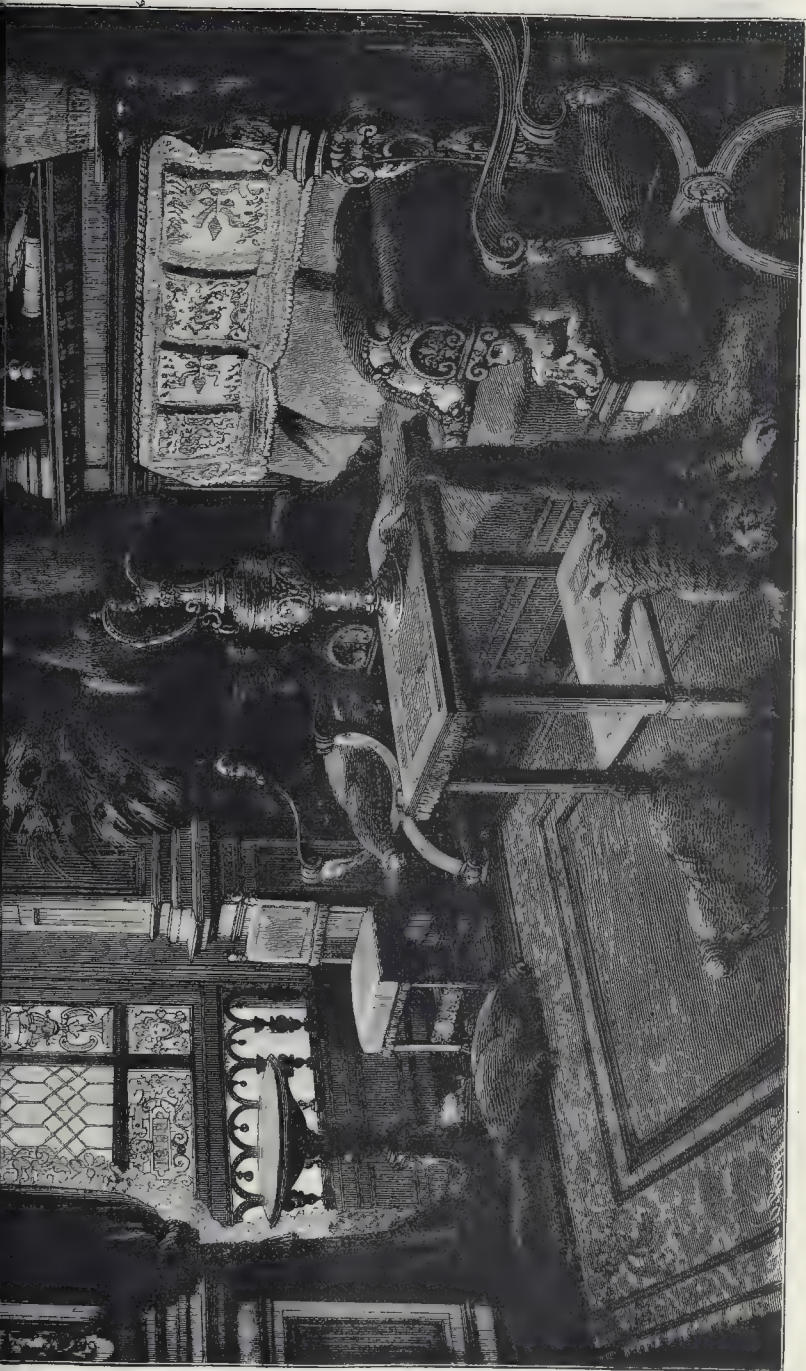
See Standard



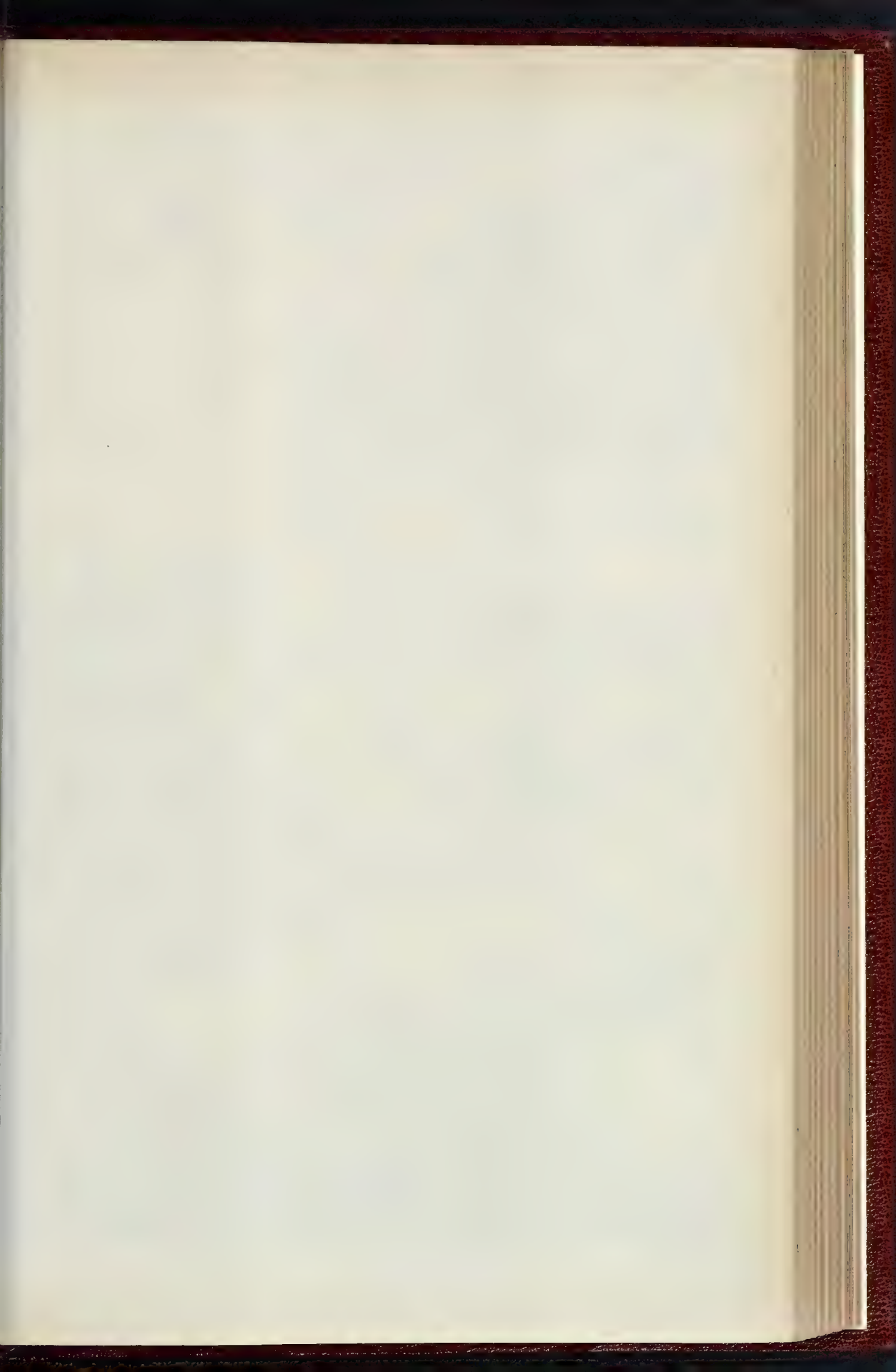


THE BUILDER, NOVEMBER 3, 1893.



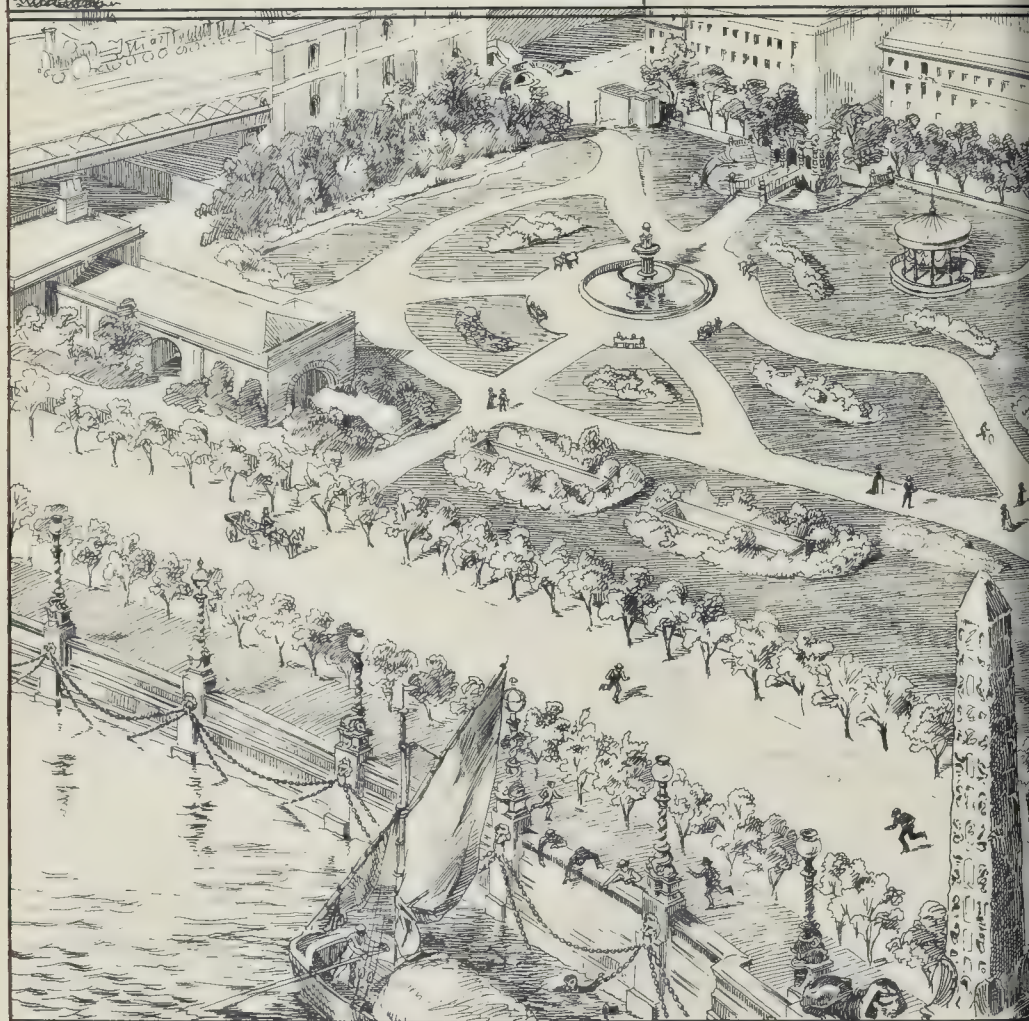


A BOUDOIR IN THE RENAISSANCE STYLE. - DESIGNED BY A. BEMÉ, OF MAINZ.





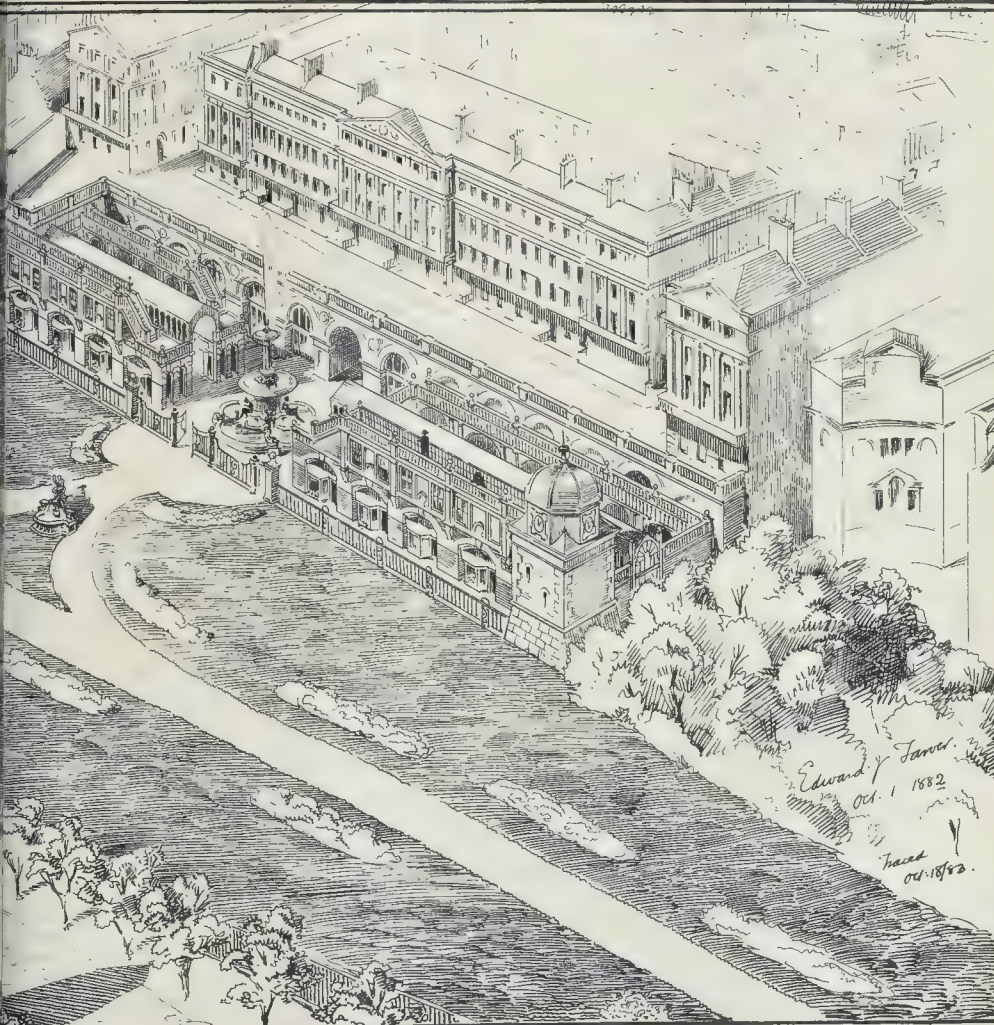
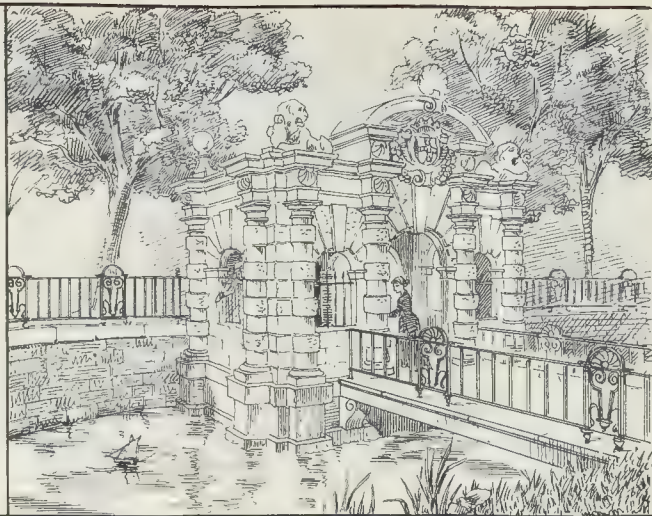
A DESIGN
MA
 FOR THE SALE OF
 OFFERED
 ON THE VACANT FOLD
 ADELPHI
 AND FACING THE VICTORIA
 for the improvement of which,

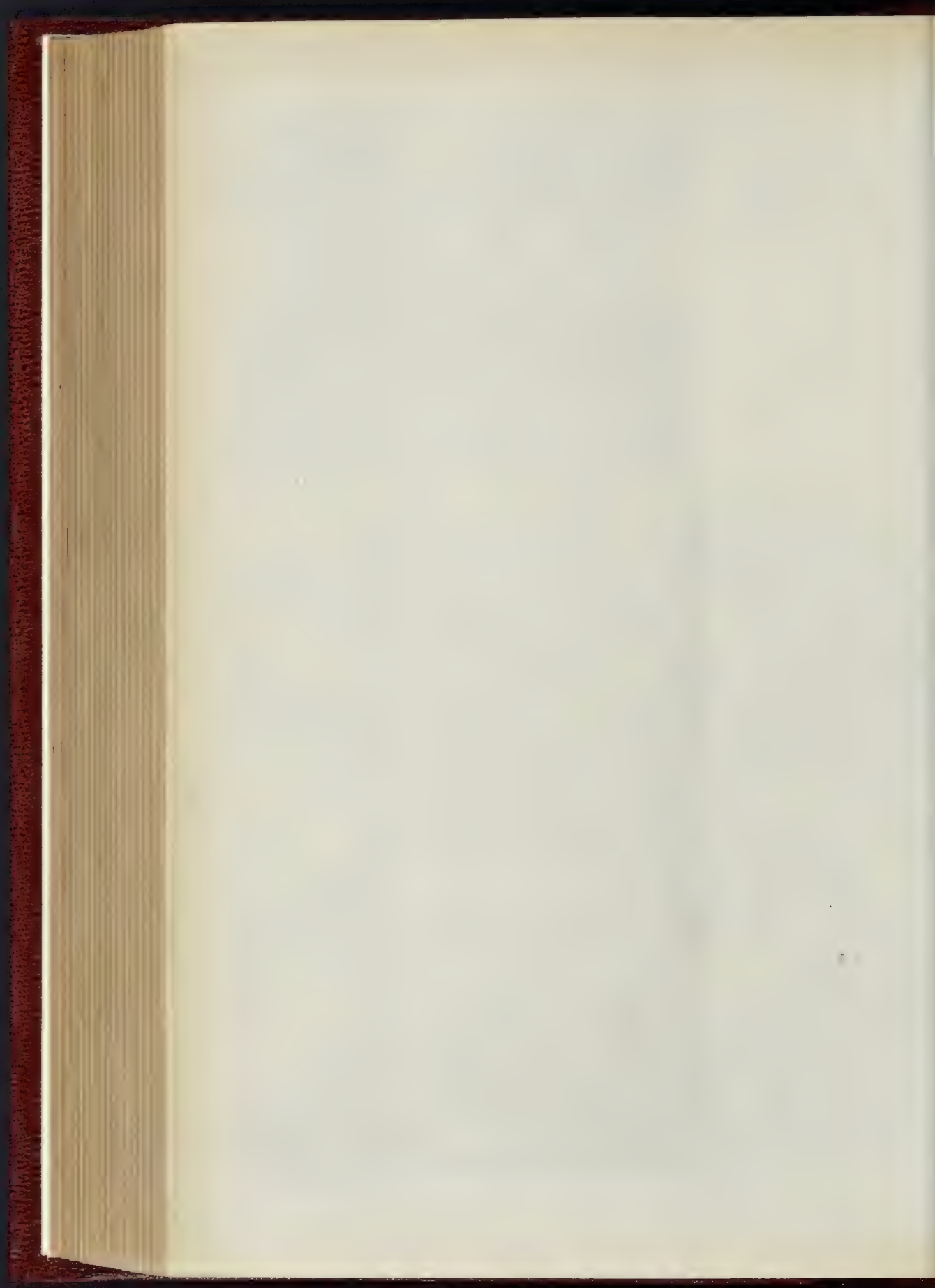


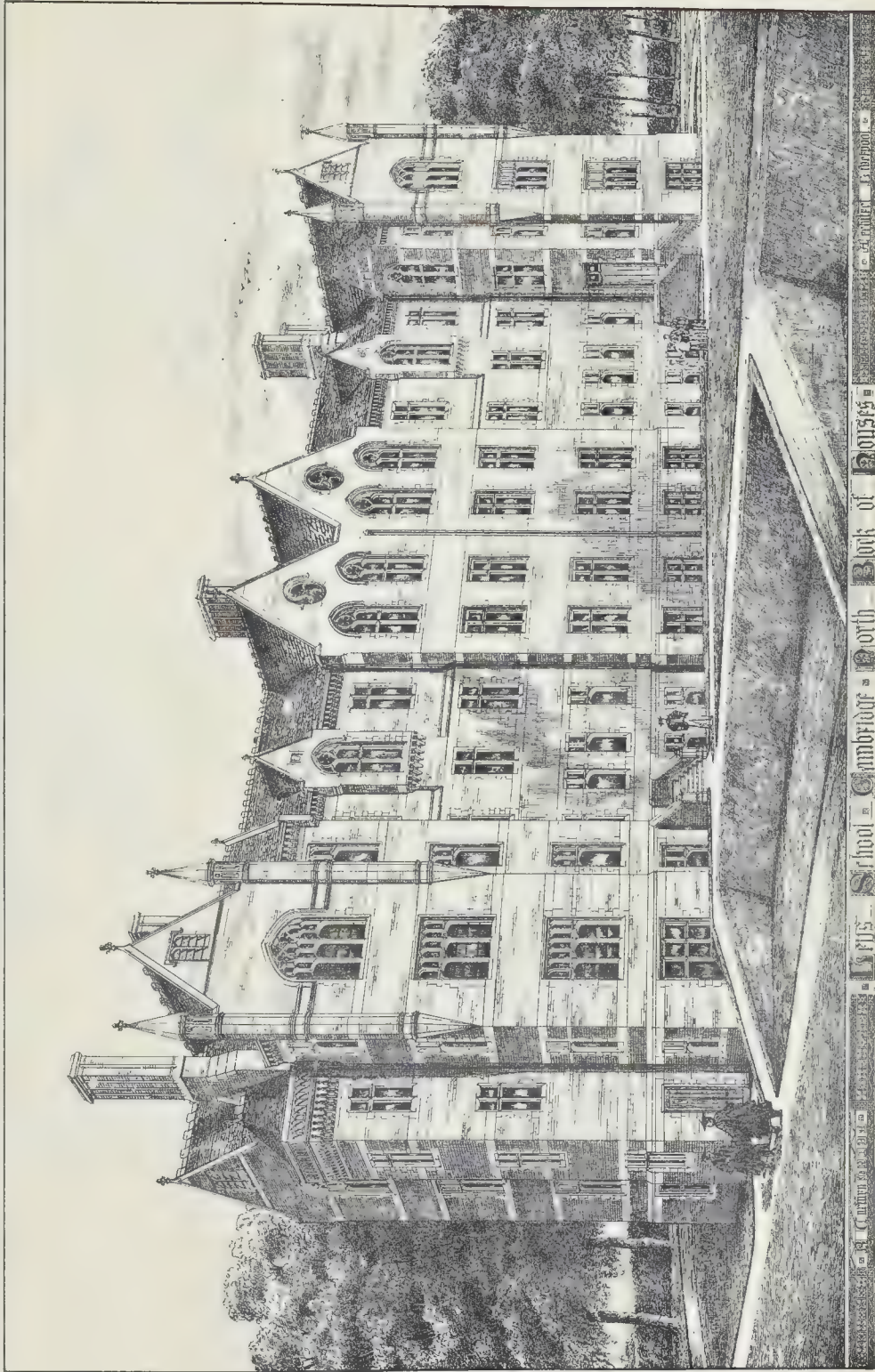
Wynn & Sons Photo Litho

PROPOSED
T
OF FLOWERS,
MILT
AND ADJOINING
RRACE
BANKMENT GARDENS
are also herein included.

F







W. Marshall & Sons Photo-Litho

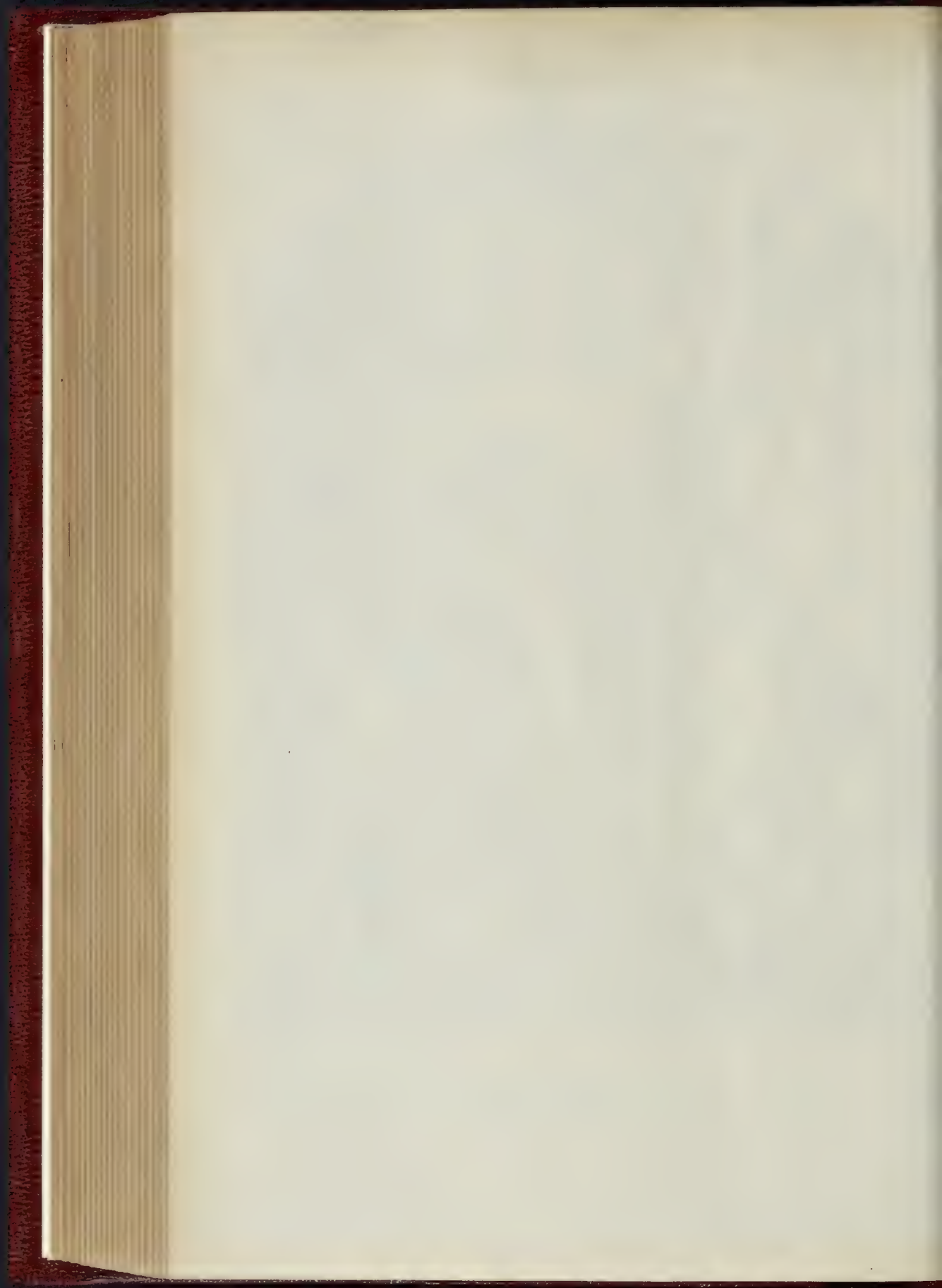
St. John's School, Cambridge. Block of Houses. 20, Queen St. London, W.C.



Proposed Church for the Old Meeting Trust Bristol Street Birmingham

WILLIAM WYKES ARCHITECT BIRMINGHAM MAR 1883

Vincent Brooks, Day & Son, Photo-litho.



THE LEYS SCHOOL, CAMBRIDGE. NORTH BLOCK OF HOUSES.

A GENERAL description of the Leys School buildings was given in the number of the *Builder* for Oct. 13 (p. 482, ante), when the interior of the dining-hall was illustrated.

The block of houses shown in our illustration to-day has been recently completed. Accommodation for eighty boys is provided in four large dormitories, each 55 ft. long by 23 ft. 6 in. wide. Two large sitting-rooms are provided on the ground-floor, and twelve studies for the use of the prefects. There are lavatories and baths in the basement. The end wings contain sitting-rooms and bedrooms for the masters, offices, and servants' rooms. There are also sick-rooms for invalid boys, entirely cut off from the rest of the building, and approached by a separate entrance and staircase. The walls are faced with red Haverhill bricks, the dressings are of Bath and Ketton stone, and the roofs are slated. As before mentioned, the architect for these buildings is Mr. Robert Curwen, of Palace-chambers, Westminster.

COMPETITION DESIGN FOR CHURCH FOR THE "OLD MEETING TRUST," BIRMINGHAM.

This design, though not among the premiated ones, attracted, and we think, deservedly, the favourable notice of a good many who saw the drawings. As our readers may remember, some question was raised through a letter (one of several addressed to us), printed on page 63 ante, as to the justice of the award. We declined to express any opinion on a matter on which the representations which reached us were *ex parte*, and in regard to which we are disposed to feel confidence in the judgment of the professional referee (Mr. Worthington). But the present design, by Mr. W. Wykes, is a good piece of work, and worth further publication than unsuccessful competition designs usually obtain.

FOREIGN NOTES.

Statue of Bach in Eisenach.—The model of the colossal statue of the great musician, Johann Sebastian Bach, which is to be erected at Eisenach at the festival to be held there next year in celebration of the bi-centenary of his birth, was recently completed by Professor Donndorf, of Stuttgart, and is now at Howaldt's foundry at Brunswick, ready for the casting. Herr Donndorf represents Bach in the act of composing. In the right hand he holds a pen, while the left hand rests lightly on a desk at the side. The figure of the musician is tall and stately, and is enveloped in one of the long closely-fitting coats fashionable in the first half of the last century; while the lower extremities are in knee-breeches and buckled shoes. The details of the execution are spoken of by competent judges in the highest terms.

Munich.—In addition to voting a sum of 100,000 marks (5,000l. sterling) towards the cost of erecting the new Künstler-Haus, or Artists' Institute, at Munich, the municipal authorities of the city have likewise granted to the new Institute a piece of ground to enlarge the site given by the King of Bavaria near the old Maxburg.

Excavations in Rome.—On the site of the recent excavations in the Forum in Rome, the new connecting street has been laid down which joins the Via Bonella near the Mamertine Prison with the Via della Consolazione below the Tarpeian Rock. This road consists of a simple terrace, which, it is said, does not in the least spoil the effect of the new lines produced by the demolition of the former extensive stone viaduct. It begins behind the Arch of Septimius Severus, crosses the unadorned front base of the Temple of Concordia, and leaving the Temple of Vespasian and the Portico of Consent on the right, finally turns round a curve above the Vicus Jugarius and Basilica Julia into the Via della Consolazione. Though the road is adapted for vehicular traffic, it is at present only regarded as provisional. In any case, it is a better solution of the problem how to connect the parts of the city previously separated by the Forum than was presented by the original project of an iron suspension bridge. The view obtained from the new road of the neighbouring ancient monuments is said to be very grand. With regard to the excava-

tions on the Palatine, the work, which is under the constant supervision of the Minister of Education, is making good progress, and the plan of connecting the Forum with the Palatine will be long before completed. The road that had hitherto run from the Church of Santa Maria Liberatrice to the Arch of Titus has already disappeared as far as the Portal of the Vignola. The Church of St. Maria Liberatrice will soon be pulled down. Access to the Palatine is of course, in consequence of the excavations, no longer possible on the north side, but it can for the present be approached near St. Teodoro.

FOREIGN COMPETITIONS.

Vienna.—In the competition for sketches for the decoration of the Festal Saloon of the new Vienna Town Hall, all three prizes have been taken by academic painters belonging to the Austrian capital. The first prize of 3,000 florins was awarded to Herr L. Mayer for his project with the motto "Vindobona"; the second of 2,000 florins to Herr A. Groll; and the third of 1,000 florins to Herr J. Schmidt, while the jury have recommended that a fourth set of drawings, with the motto "Time is short, art is long," should be purchased. According to the conditions the authorities will engage the winner of the first prize to execute the paintings.

Berlin Museum.—The competition for designs for the new edifice which it is proposed to erect as an extension of the old museum on the Museum Island at Berlin promises to be one of the most interesting that has taken place in Germany in recent years. Upwards of 350 copies of the programme of conditions have been sent for, and this alone indicates that the competitors will be unusually numerous. The suggestion that a conference should be held between intending competitors and the chief authorities of the Museum in order that the latter might explain any points which the former might have found obscure in the details of the programme took place on the 22nd ult., and was numerously attended. Altogether there were thirty-two questions put by the architects present and answered at once and fully by the representatives of the Museum. A complete report of the queries and replies was drawn up and published in an official organ, so that on the intentions and desires of the authorities every competitor, whether he attended the meeting or not, is able to obtain the fullest information. In important competitions this example of holding an explanatory meeting to clear up obscure points in the terms of the programme is one that will probably be found deserving of imitation.

Chemnitz.—It is announced that in the competition for designs for the Church of St. Peter at Chemnitz, fifty-eight sets of drawings were sent in. From these the judges selected eleven for further examination, and finally awarded the first prize, of 3,500 marks, to Herr Hans Eger, of Leipzig; the second prize, of 2,500 marks, to Herr Fernando Lorenzen, of Berlin; and the third prize, of 1,000 marks, to Herren Flugge and Nordmann, of Essen an der Ruhr.

Magdeburg.—The municipal authorities of Magdeburg offer three prizes, respectively of 1,500 marks, 1,000 marks, and 500 marks, for the best designs for a monumental fountain in honour of the memory of the late popular Chief Burgomaster of the City, Herr Hasselbach. The plastic models are to be of one-tenth the actual size, and all designs are to be sent in by February 15th, 1884. The fountain itself is not to cost more than 60,000 marks, or 3,000l. sterling. The programme of conditions, with drawing of the site, may be obtained gratis, on applying to the "Stadt Baubureau Johannis-kirchhof, Nos. 5 and 6, Magdeburg."

The Raffaele Movement.—It is announced from Rome that out of more than one hundred competitors for designs for the Raffaele Monument the three prizes have been awarded to the following artists:—The first prize to Signor Ludovico Belli, of Turin; the second to Signor Ubaldo Lucchesi, of Florence; and the third to Herr George Kiss, of Pesth.

Illuminated MSS.—Mr. Clapton Rolfe has lately investigated some disputed questions in regard to the colouring of early illuminated manuscripts, and has written an article on the subject which appears in the November number of the *Antiquary*.

THE ECCLESIASTICAL AND SCHOLASTIC EXHIBITION AT ISLINGTON.

THIS exhibition, opened on Monday last, presents, it must be confessed, a somewhat odd assortment of things. The exhibitors of articles properly coming within the description "ecclesiastical" may be counted on the fingers of one's hands. Gas stoves, pianofortes, and domestic furniture hardly come under that designation merely because they are used in clergymen's houses. Some of the exhibitors, to do them justice, ingeniously seek to bring their goods (nominally, at least) within the scope of the title of the exhibition. Thus we see a suite of library furniture which might be used without incongruity equally by a lawyer, a doctor, or a clergyman, labelled "The Vicarage Library Suite"; and, close by is another suite of furniture dubbed "The Deanery Drawing-room." In "scholastic" exhibits the exhibition is much stronger, and the exhibitors of school furniture, apparatus, and other requisites have brought together something more than the nucleus of what, we should think, might easily have been made a large and comprehensive exhibition of educational appliances and requisites. The ground-floor of the hall contains a good deal of vacant space.

But though the collection is somewhat heterogeneous, there are many exhibits well worthy of notice, and some which it would be worth while going specially to see. Mr. Henry Bassant (Stand 3), exhibits specimens of some very well made parquet flooring and dados. Messrs. H. & G. Edwards (4 and 5) exhibit school fittings and furniture in great variety. Two of the firm's specialties are a new folding seat and desk (the seat entirely detachable from the desk), and Cook's "patent screen-seats or impromptu class-rooms." Kindergarten requisites also are shown by this firm. At Stands 7 and 8, Mr. G. Spencer has a good display of gymnastic apparatus. Messrs. Redmayne, May, & Co. (Stand 15) exhibit a number of very good school-desks, including the "High School" desk and the "Improved Hallamshire" convertible desk. At Stand 17 Mr. William Bowden exhibits a number of Indian fabrics and *objets d'art*. Among the contents of this stand we may make special mention of two pieces of so-called "Rangoon Tapestry." It consists of a kind of *appliqué* patchwork, a large number of little pieces of cloth, velvet, and even paper, cut to various shapes, and in a variety of colours, being arranged to form a design,—half pictorial and half geometric,—and sewn on to a background of cloth. The effect is very brilliant and animated, for figure subjects are introduced, the features and anatomy being brought out by means of the brush. The same exhibitor shows an exceedingly useful American walnut revolving bookstand, capable of holding from 180 to 200 volumes on the four sides; for containing works of reference in requisition by literary men, barristers, clergymen, and others, this article of furniture should prove invaluable, as the user can revolve the stand without rising from his seat, and select the work to which he wishes to refer. At Stand 22 Mr. W. Ward shows a very good church font in serpentine. Mr. Thomas Jones (Stand 31) exhibits the organ built by him for the new German Church at Sydenham. This instrument consists of two complete manuals, for great and small organs respectively, each extending from CC to A, with separate pedal organ extending from CCC to F. Mr. Alfred Newman (Stand 36) has a very good display of artistic wrought ironwork for churches and public buildings. We have on a previous occasion referred to the excellence of Mr. Newman's work. At Stand 37 the Educational Supply Association (Limited) exhibit some useful school desks and furniture, of which they have several specialties, including the "Holborn" folding desk. Kindergarten requisites, drawing-models, school-books, and specimens for object-lessons, are among the many other items comprised in this exhibit. Messrs. Troughton & Co. (Stand 47) have on view a variety of school desks, including their "Reversible," forming desk, table, and back of seat (either way, to prevent turning round); they also show their "Improved Folding," forming a desk and table, with movable seat. The North of England School Furniture Company (Stand 48) make a very good show, their exhibits including Glendinning's patent adjustable desks, with Dr. Roth's hygienic seats (which have been already described in our columns); Dr. Roth's

hygienic chair, the "Kensington art-table," the "Kensington art-essel," and Ablett's glass plane for teaching the elements of perspective and solid geometry. Mr. Thomas Murby (Stand 52) shows a number of school books, science charts, diagrams, &c., besides a patent American folding desk, with book-rest and locking book-box. Stands 55, 56, and 57 are occupied by Messrs. Cawley & Co. with some well-executed oak cabinets, two of them having carved panels after pictures by Teniers. These panels are carved with much spirit, and in most cases the expression of the features of the figures has been admirably reproduced. These panels, we were informed, are the work of Belgian wood-carvers.

We have no space to make mention of further exhibits, but we may remind intending visitors that the Exhibition will close on the 10th inst.

NEWHAVEN HARBOUR WORKS.

A DESCRIPTION of the Newhaven Harbour Works, upon which from 600 to 700 men and several steam-engines have been employed continuously, weather permitting, for more than four years, appeared in the *Builder* two years ago.* At that time the works presented a chaotic appearance, and almost baffled description. Heavy new works were in progress at points remote from each other, and heavy old works were in process of removal. Since then great and intelligible progress has been made, and the visitor may now form an accurate conception concerning the complete design, and be able to appreciate its magnitude and its merits, that are worthy of each other. Excepting the breakwater, the works on the sea-front are now completed; this front lies nearly east and west, the eastern end being a point north, and the western as much south of "due"; the harbour lies north from the coast line at nearly a right angle. The finished works include the eastern sea-wall, 900 yards long, of concrete, and 4 ft. thick. It completes the enclosure and protection of the company's property by the return of a portion of the wall inwards from the beach, near the tidal mill where the front commences. The mill and the mill-race have been appropriated for the harbour works, which will include a dock with a water area of twenty-four acres, but this has not yet been commenced. It will be an irregular oblong of four sides, no side, end, or angle being equal to any other; the side nearest the sea will be nearly parallel with the sea-wall. The mill took its power from a cut that tapped the harbour about 800 yards from the harbour entrance; it had, of course, supply during the time it took the tide to rise and fall above and below the level at the upper mouth of the cut. Several strong groynes have also been put in on this part of the beach, to intercept the drift shingle. The entrance to the harbour, with a lighthouse at each angle, is an important feature in the finished work. The former entrance was 150 ft. wide between two parallel piers. Almost the whole of the old works at the entrance have been removed, and replaced by a strong timber structure of open work, through which the sea passes. The lighthouse tower at the end of the pier is also of wood framework, roofing, and covering. The principal works remaining to be completed are the proposed dock, the breakwater, and a portion of the harbour quay, which is in a forward state. About sixty men are employed upon this part of the work in pile-driving by steam and windlass machines. They put in about twelve piles a day. They are from 50 ft. to 60 ft. long, 14 in. on the sides, and are driven, chiefly through alluvial deposit, to a depth of 30 ft. below the bottom to which the harbour will be dredged.

At the harbour entrance, the former western pier has been replaced by a concrete wall, 120 yards long, that forms a junction at the seaward end with the western sea-wall, with which it forms a right angle at the harbour mouth. These walls are on the boundary of an area of which about 7 acres have been reclaimed from the foreshore. The space was levelled up with chalk taken from the face of the cliff, which has been neatly dressed from the base to the top. A quantity of soil was also taken from the top of the cliff, at the western end of the fort, and opened a range for its guns to the west and south-west,

formerly intercepted by the high ground now removed. The fort has been improved in another important respect by the harbour works. A wall of Purbeck stone, built at Government expense, to arrest the encroachments of the sea at the base of the cliff under the fort, has been superseded by the much more trustworthy sea-wall, 400 yards in length, that has been erected in front of it. This wall is 4 ft. thick at the top, and 24 ft. deep. The batter of the sea-walls and of the breakwater is 1 in 8 throughout. The wall on the western side, at the harbour entrance, is protected by a fender of piles. The lighthouse tower on the western pier-head, which marks the point given on the old maps as "Barrow Head," in front of Castle Hill, is of concrete, and is virtually a monolith of artificial stone, having been erected continuously with the material in a plastic state. The tower is circular, and 30 ft. diameter at the base, in which five rooms are provided, for the use of the light-keeper, pilots, and the harbour authorities. Above the ground-floor the tower tapers from 10 ft. 6 in. to 8 ft. 6 in. diameter. The height is 42 ft. from the floor to the centre of the lantern. The total height is about 55 ft. The lights are from dioptric lanterns, and are seen from a distance of twelve miles. The eastern light shows white uniformly; the western light shows white, red, and green, the colour shown denoting the depth of water in the harbour. The lights are surrounded by polished plate glass, inserted, without putty, in iron frames. The roof of the concrete tower is a copper dome upon iron ribs.

In the account of the works given in the *Builder* two years since, it was stated that about 270 yards of the breakwater had been erected. Progress with a work of this nature is necessarily slow, from the continuous regular interruptions by the tide, and from the more formidable intermittent interruptions by wind and weather. The succession of violent storms from the west and south-west that have at intervals applied their unchecked fury upon the works, and the complete success with which the assaults have been resisted, furnish notable evidence of the enormous strength of properly made, cleverly manipulated concrete, as a building material, and induce the confident belief that the breakwater will prove invulnerable against any future attack. With a south-wester blowing even half a gale, the unbroke rollers dash with great force against the work, and even at low water, as we have seen, send clouds of heavy broken water fully 20 ft. higher than the highest part of the breakwater, which is 40 ft. above low water at ordinary spring tides, and 20 ft. above high water at the same tides. The memorable gale of Sunday, September 2nd, tried the works severely. Immense masses of water were thrown to the top of the sea-wall at the shore end of the breakwater, and displaced and washed inwards many tons weight of heavy shingle, but the concrete wall passed through the ordeal uninjured. The heavy timber work, used at the seaward end of the breakwater for raising the concrete superstructure above low water, was torn in pieces and washed ashore in splinters, but the "set" portion of the concrete work sustained no material injury.

The progress made in the work, and the success with which it is being executed, are attributable in a great degree to the care and skill applied to the selection of materials used in compounding the concrete, and the dexterity with which the materials are mixed and deposited. The proportions are five of shingle, two of sand, and one of Portland cement. Every parcel of cement taken for use is severely tested for tensile strain and resistance to crushing weight. Two concrete-mixing machines are in use on the works. They are on the principles patented by Messrs. Carey & Latham. The larger machine, which is stationed in the harbour near the entrance, is for preparing the concrete used for the foundations of the breakwater. It has been in use from a short time after the works were commenced; the other, a portable concrete-mixer, has been introduced more recently. The foundation below low water is laid in bags. The prepared material is shot from the machine on the bank into the sack-lined hopper of the barge that has been built for the special use to which it is applied, and that lies alongside the quay for its load. Having received it, the barge steams out to the end of the breakwater, and in obedience to cleverly contrived "sights" and signals on the barge

and on the breakwater, by a single blow the man in charge opens the hinged bottom of the hopper, and the load sinks into its place at the bottom of the sea. The contents of the bag become, if it lands fair and clear upon an even bottom, a solid block, 42 ft. long, 8 ft. by 6 ft., weighing 104 tons, and worth 40l. The saving in time is very great, and in money is about 3l. 5s. upon each block prepared by the machine, as against hand-labour. When everything is favourable, one of these immense blocks can be prepared in seventeen minutes. The portable concrete-mixer is constructed upon a different principle to the hopper filling machine. It is automatic in action, and on the dredger-elevator principle lifts to the upper mouth of an inclined cylinder the precise proportions of the different materials employed, measuring the water also, and adding it at the proper stage after the materials have been thoroughly dry-mixed. The machine is worked near the seaward end of the breakwater, and is shifted forward as the work progresses. The cost of the machine-made concrete is 7d. per cubic yard, against 1s. 1d. per yard actually paid for it when produced by hand-labour before the machine was employed.

The completed breakwater will shelter a large area of water, and provide a wide and safe entrance to the harbour. The works have been designed by Mr. Fred. D. Banister, M.Inst. C.E., engineer-in-chief of the London, Brighton, and South Coast Railway Company; and are being carried out under the able superintendence of Mr. A. E. Carey, M.Inst. C.E., as resident engineer.

DINNER TO SIR ROBERT RAWLINSON.

ON Saturday evening, the 27th of October, at the Café Royale, Regent-street, the members of the Engineering Staff of the Local Government Board entertained at dinner the head of their department, Sir Robert Rawlinson, C.B., in celebration of his recently-conferred knighthood. The party, which numbered eight, consisted of Sir Robert Rawlinson, C.B., Mr. Arnold Taylor, Mr. John Thornhill Harrison, Major Hector Tulloch, Captain R. C. T. Hildyard, Mr. Samuel J. Smith, Mr. Thomas Codrington, and Mr. Stephen H. Torry.

The health of Sir Robert and Lady Rawlinson having been given by Mr. Arnold Taylor, Sir Robert briefly replied, thanking his colleagues for this token of their goodwill and esteem. He alluded to the length of his official connexion with Mr. Taylor, dating as it did from the time of the Crimean war. Sir Robert then drew attention to the vast national importance of the work of sewerage and water supply, &c., annually carried out under the sanction of the Local Government Board, involving yearly some 600 inquiries throughout the length and breadth of England and Wales, the works thus sanctioned affecting for good not only the present generation, but, as he hoped, many generations to come, and undoubtedly improving the general health of the community, as is shown by the decreased death-rate, amounting to 4½ per cent. of the total number of deaths per annum in the decade ending 1881, since the carrying out of the powers of the Public Health Act. Sir Robert next referred to the beneficial results which had been attained during the Lancashire Cotton famine of 1863 by the relief works which were carried out at that period. By these works employment was found for many thousands of people who would otherwise have become paupers. Towns were sewered and supplied with water; bridges were built; rivers were regulated; roads were paved, flagged, and surface-drained to the extent of a total mileage of 400, and an area of 800 acres. The total expenditure was 1,850,000l., nearly all of which has been repaid by equal annual instalments. The administration charges on these works amounted to the small sum of 3s. 6d. per 100l.

Before the party broke up, it was decided that the dinner should be an annual one.

Female School of Art.—The drawings to which prizes have been awarded in this school were on view for two days last week at 43, Queen-square, Bloomsbury. They showed a great deal of good work, particularly in decorative and lace design. Some of the specimens of the latter showed much refinement of taste and a good deal of inventive power.

TIMBER IN ALGIERS.

In the colonised portions of Algiers it appears, by an official return, that the woods contain only about fourteen million trees. Of these, 6,010,011 are large forest trees, and 8,373,565 are mulberry, resinous, or ornamental trees. According to the official reports there are 278,325 hectares covered with cork oaks, 605,622 with evergreen oaks, and 42,742 with cedars. The rest of the woods comprises Aleppo fir, thuya, wild olive, eucalyptus, pistachia, locust bean, and other varieties. Most of the cork oaks are in the province of Constantine, on the coast line of La Calle and Bougie. Here, too, grows the Zea oak, a variety like the white oak, and peculiar to Algiers. The leaf is like that of the chestnut. Some of these trees, particularly on the Tunis frontiers, grow to an enormous size, and are well adapted for shipbuilding. The chestnut flourishes in the forest of Edough, near Bona, while the plains near the coast are covered with elm and ash, and the valleys along the river sides with willow, alder, and poplar. On the lower portions of the Atlas Mountains grows the evergreen oak, intermingled with the sweet acorn oak and broom. On the upper reaches of the mountains we find the Aleppo fir, the thuya, and maple, the latter, however, being limited to the Aures hills and the neighbourhood of Bathma, where cedars cover the summits of the hills. Near the coasts of the Province of Algiers are the forests of Sahel and Mazafran, the latter containing numerous ash trees, up which the wild grape grows. The real forest region is, however, on the sides of the Atlas Mountains, where the forest of Ak-Fordoun is distinguished for its lofty Zea oaks, and that of Beni-Menassar for its wild olives. Thuya and Aleppo fir grow in abundance in the Ournessien Forest, while the forest of Toniet-el-Haad is remarkable for its venerable cedars, from 15 ft. to 45 ft. in girth, and from 45 ft. to 100 ft. high. Oran, which is usually represented as treeless, is by no means poor in timber, especially in the high plains from Mascara to Sebon.

THE PERIODICAL EXAMINATION OF WATER-PIPES.

This subject was treated at the recent Frankfurt Architects' and Engineers' Congress,* and the following rules were adopted for the guidance of those engaged in the periodical investigations then contemplated:—

1. The trials are intended to discover the resistance by friction in the inner walls of iron pipes in use for water supply and drainage purposes during the flowing of the water through them, due regard being paid to the successive increase of the resistance in consequence of the gradual alteration of the internal surfaces.

2. The trials are to be made on pipes,—

(a.) The length of which in proportion to their diameter is sufficiently great to reduce as far as possible the influence of faults in observation.

(b.) Which, within the portion selected for testing are of equal width, and are carefully laid in a straight line in the usual manner, jointed with socket and nozzle or with flanges.

(c.) The internal diameter and length of which are accurately known, as well as their vertical and horizontal situation.

(d.) In which no accumulation of air takes place, and in which any side issues can be closed during the trials.

(e.) Respecting which it can be assumed that they will, for a number of years, continue available for periodical investigations, and will not be exposed during that period to any important changes in their arrangement or employment.

An internal examination of the pipes is desirable after the trials, when such an inspection is practicable.

3. The examinations are to be made at regular intervals (of about three years) and in the various trials uniform methods, controlling appliances, and assistance are to be employed. The original internal diameter of the pipes is to be ascertained in as exact a manner as possible, either by measuring two diameters, which cross each other, or by cubic measurement.

The length and the longitudinal section of the pipes to be examined are to be arrived at by measuring and levelling.

The quantity of water flowing through is to be ascertained, if at all possible, by cubic measurement; otherwise by a Poncelet overflow.

In case the height of the pressure is to be measured by open glass tubes, metal, or quick-silver anemometers, these instruments are to be subjected, before and after the trials, to an accurate examination, and are to be used under the due observance of all precautionary measures.

The quality of the water in the pipes is to be defined by chemical analysis.

4. The results of the observations are to be grouped together according to a prescribed form, and are to be accompanied by plans of the situation, longitudinal sections, graphic representations, &c.

The points to be reported on are:—

1. *Description of the Pipes examined.*—Locality, length of the portion examined; material of the pipes (whether cast or wrought iron); internal diameter, with explanation of how ascertained; length and manner of joining the separate pipes; original preparation of the internal surface, whether with tar, asphalt, lime, &c. Condition of the internal surface at the time of the trials, whether affected with heavy or light deposits, lumps, complete incrustation, &c.; mode of employment of the pipes and their age; circumstances which have an influence upon the growth of the incrustation.

2. *Description of the Water in the Pipe.*—Whether for use or for sewerage purposes, chemical analysis, temperature during the observations.

3. *Description of the Trials.*—For this purpose a tabular form is appended to the recommendations, in which the quantity of water flowing through and the corresponding height of the pressure at six stations are to be recorded, together with other details respecting the method in which the trials have actually been carried out.

THE BERLIN HYGIENIC EXHIBITION BUILDING.

ATTENTION is now being given at Berlin to the question of the ultimate disposal of this building. The want of a permanent structure for exhibitions of various kinds is fully recognised, and since the preservation of the building has been seriously under consideration, various proposals have been set on foot for its utilisation next year. It has been estimated that the cost of the entire work was about 20,000*l.*, while the decorations and fittings which will remain are computed to represent a further sum of 7,500*l.*

NEUSCHWANENSTEIN.

NEUSCHWANENSTEIN is the name of the most recently erected castle of the King of Bavaria, which that monarch has had built far from the turmoil of public life, in mountain solitude, upon an isolated rock opposite the well-known royal seat of Hohenschwangau. In its general plan the new castle is designed without regard to expense, and is compared by the *Deutsche Bauzeitung*, in that respect, to some of the princely edifices constructed for English noblemen.

The castle rivals in its dimensions the most extensive structures of the kind on the Continent; and the history of its erection dates back to the earliest years of the king's reign. It was originally to have been a Gothic building, but in compliance with a change of taste on the part of the king, it was finally carried out in the style of the early Italian Renaissance. The massive foundations were partially removed in order to allow of the modified sketch being carried out. The king took an active part in the architectural portion of the work, it being a known fact that he has himself on other occasions drawn sketches for buildings which he contemplated erecting.

The castle is six stories high, and is ornamented with numerous balconies and turrets. A high watch-tower allows of a magnificent view from its summit over the mountainous districts of Bavaria. All the prominent architectural portions are of granite. A notable feature is the entrance portal, decorated with carved work in which various allegorical emblems are introduced. The visitor finds himself in a cortile surrounded by columns, and giving access to a magnificent staircase with gilded railings. The walls are surrounded with frescoes by leading Munich artists. The flooring of the rooms is

partly in mosaic work, and partly in different kinds of parquet work, in which various descriptions of wood are employed.

Electric lamps are used for the purpose of illumination. The rooms which are intended to be devoted to the reception of a large library and collections of armour, &c., are on the second and fifth stories. The king's apartments consist of a workroom, a library, a bedroom, and a reception-room. In the workroom are marble busts of persons who are high in the king's esteem, and a picture representing a scene from Wagner's "Rheingold."

The building was erected (like all the new royal palaces) by the Court Building Administration, at the head of which is Herr von Dollmann.*

THE SOUTH WALES UNIVERSITY COLLEGE.

THE Council of the College have made great efforts to keep faith with the undertaking made with the Government upon Cardiff being selected as the site for the building, that the College should be in working order by October, 1883. It was at first intended to make temporary use of the new Science and Art Schools recently erected at Cardiff from the designs of Messrs. James Seward & Thomas, but the sanction of the Science and Art Department to this measure could not be obtained, and as the new Glamorgan and Monmouthshire Infirmary was just being completed (by the above-named architects), the Council made arrangements for renting the Infirmary building lately vacated, for College purposes. This building occupies a central position, and as renovated and altered by Messrs. James Seward & Thomas it is likely to afford accommodation for the new College for several years to come, and the necessity for erecting a new College is for the present obviated. The building was opened by Lord Aberdare, first President of the College, on the 24th ult., a key of solid gold from a design of Celtic character, designed by Mr. Edwin Seward and manufactured by Messrs. Chubb & Sons, being used for the actual unlocking of the entrance doorway.

LEEDS AND YORKSHIRE ARCHITECTURAL SOCIETY.

THE opening meeting of this Society was held in the rooms in Albion-street, Leeds, on Monday evening, when the medals and prizes offered through the Society were presented to the successful students. The various drawings prepared in connexion with the competitions were exhibited in the room. Great interest was taken in the measured drawings of Bolton Percy and Sherburn churches, sent in competition for the Society's Silver Medal. The medal was awarded to Mr. James Hardman. Mr. Todd's and Mr. Burrow's drawings were very good. A special prize (a bronze medal) was awarded to Mr. Alfred Whitehead for drawings of Sherburn Church, and he also obtained a prize for a drawing of the rood-screen at Methley Church. Mr. C. E. Tye was the recipient of two prizes, the first being for pencil-sketches of objects of local interest, and the second for a design for a lych-gate. Mr. Joseph Hall was successful in winning a prize for the design of a street frontage in Burmantofts faience; and a prize was given to Mr. J. H. Rodhouse for his design for a villa residence.

The prizes having been awarded, The President, Mr. Edward Birchall, F.R.I.B.A., read his opening address, in the course of which he said the society would be glad to receive, as honorary members, artists, sculptors, and other art-workers. After suggesting various ways by which young students might improve themselves in connexion with their training in architecture, he gave a general review of the most interesting occurrences of the year. Referring to the rapidly-increasing number of telegraphic and telephonic wires which are being carried over buildings, he urged that these wires should be carried underground. Channels might be constructed along the kerbstones, which could also be adapted to other requirements as to sewer expense, and the municipal authorities might be remunerated for their use by means of rents.

A vote of thanks to the President was proposed by Mr. J. Barlow Fraser, who at the same time tendered his thanks to the society for their efforts in connexion with his return at the head of the poll to a seat on the Council of the Royal Institute of British Architects. The vote was seconded by Mr. Thorpe, and adopted. A vote of thanks was proposed by Mr. G. Corson, and seconded by Mr. G. F. Danby, to Mr. W. H. Thorpe, for his services as past honorary secretary, and as one of the original promoters of the society. The vote was unanimously adopted.

* Some further particulars of this palace will be found in our last volume, p. 377.

* See pp. 444, 480, ante.

BUILDING PATENT RECORD.*

APPLICATIONS FOR LETTERS PATENT.

- 4,979. A. French, Birmingham. Castors for furniture. Oct. 19, 1883.
 4,989. J. Baker, Penge. Preventing draught in chimneys, &c. Oct. 19, 1883.
 5,005. T. Smith, Birmingham. Rollers for window-blinds, &c. Oct. 20, 1883.
 5,019. E. Newton, Hitchin. Securing glass in greenhouses, window-frames, &c. Oct. 22, 1883.
 5,022. F. Parker and W. Parker, London. Hinges for furniture, &c. Oct. 22, 1883.

ABRIDGMENTS OF SPECIFICATIONS.

Published during the week ending October 27, 1883.

- 1,100. C. A. Wheeler, Swindon. Weather-bar for the exclusion of rain at the foot or sill of doors, &c. March 1, 1883. Price 6d.

A metal plate is attached to the bottom of the door, and is fitted with a piece of cloth to keep the air out. Another metal plate is attached to the sill, and the edges of the two plates come close together. Above the plate an angular drip-plate is attached to the door, projecting forwards to exclude rain.

- 1,131. J. B. Adams and J. Telford, Liverpool. Apparatus for balancing, securing, and fastening sliding window-sashes. March 2, 1883. Price 6d.

The sides of the sashes have toothed racks the whole of their length, which gear into pinions mounted in the sashes. On each side of the window are sliding toothed racks which gear into the opposite sides of the pinions, one sliding rack belonging to and balancing each sash. The sashes are secured by keys, which engage and lock the teeth of the pinions.

- 1,153. A. Varal, Sheffield. Attaching door-knobs to their spindles. March 3, 1883. Price 4d.

The square spindle having been passed through the door, a screw-collar is first screwed on, and four pins on this collar enter corresponding holes in the knob when that is put on. A flanged ring round the neck of the knob is afterwards screwed on to the collar.

- 1,154. R. E. Cox, London. Smokeless stoves, &c. March 3, 1883. Price 6d.

Plates are laid on the bottom bars to decrease the space through which air can pass. The gas-pipe passes round the bottom, and the grate is filled with coke, which is burned without smoke by the gas-flames.

- 1,174. J. Rowley, London. Paving roads and ways with wood, stone, and other materials. March 5, 1883. Price 2d.

On the concrete foundation are laid transverse beams of wood or metal, &c., which have ribs that project upward between the blocks of wood, &c., that are laid on and supported by the beams. (Pro. Pro.)

- 1,191. W. G. Hudson, Manchester. Construction of chimney or other flues, &c. March 6, 1883. Price 6d.

The bricks are made with three rectilinear sides, while the fourth side is curved in such a manner that when four of these bricks are placed together a circular flue is constructed.

- 1,213. F. Bradford, Manchester. Apparatus or fittings to be applied to baths. March 7, 1883. Price 2d.

The hot and cold water are mixed in a chamber, in which the jets thereof intermingle as they issue through their respective roses. The mixture then passes to the baths. (Pro. Pro.)

THE ADMIRALTY AND WAR OFFICE COMPETITION.

Sir,—That the passion of architects for fame should be taken advantage of by an economical Government can be readily understood.

It is not surprising that, even with Sir C. Barry's treatment before their eyes, architects can be found to compete publicly for Government work. The knowledge that even the common starvation pay will not be given them will probably not deter architects from competing, for there is public applause for the unsuccessful; and the successful one may console himself with visions of fame while eating his dry and bitter bread. But that cynical politicians should believe architects to have that sublime devotion that will be satisfied with virtue being its own reward seems as incredible as it is flattering. Surely the instructions should have been headed, "Dulce et decorum est pro patria mori." "It is a sweet and becoming thing to ruin yourself for your country." Those self-denying men who compete are not even promised to have their names engraved in Westminster Abbey. No, Government only binds itself to conceal their folly. Five months of gratuitous labour must await not only its reward, but even its recognition, in a

better world. Yet this apparent crime, to be so carefully concealed, may be patriotism, and can at most be but folly. Is not even publicity due to the architects for their gratuitous labour? Nor amusement and instruction to the public for its payment?

Every end to be gained by a second competition would be equally gained by the first if one boy of the front to a large scale were added, and a large scale view.

Competition is theoretically good, but practically it is a failure. A good draughtsman is not necessarily a good architect, but even if such were the case the courage to test the result is generally wanting.

With the exception of St. George's Hall at Liverpool, by Elmes, I can recollect no large and excellent building in England carried out by an unknown man.

If public competition is so excellent, why not put up the next vacant judgeship to this ordeal, with twelve non-legal M.P.'s to decide and a judge for assessor?

Few great capitals in Europe are more in want of architectural magnificence than our own. We have not the reputation of being a poverty-stricken nation, and it might be thought that our statesmen would use every effort to secure architectural grandeur; that, like the Florentines of old, they would desire to see each new public building surpassing in excellence and magnificence the buildings of all other nations and all other ages; that porphyry and granite, marble and bronze, would be the materials; that positive wealth and honour would be the reward of the successful architect; and that the statesman's greatest pride would be that a noble building had been built during his sway,—but no: his only pride is how little he can pay the architect. Yet he would hardly drink wine bought on these terms.

Of those great men who stamp their age and country with the impress of intellectual greatness, the poets, historians, orators, musicians, painters, sculptors, and architects, none localise its greatness like the architect; nor do the others' works attract such a perennial revenue to the place of their birth as magnificent buildings, from the time of the completion to their extinction in decay. G. ARCHIBUSON.

THE PREVENTION OF FIRES IN THEATRES.

Sir,—In your issue of October 20 you described, in a short paragraph,* a German invention to be applied to theatres. It consisted of a number of woollen cords placed about the theatre, which, upon being burned, would release weights and perform wonders in the way of opening doors, letting down iron curtains, and giving fire alarms. The paragraph referred to ended by saying that the question had been raised whether such complicated mechanism would remain in working order for a number of years. I have my serious doubts as to how it would work at all, but, of course, we are unable to judge, not having seen, and never being likely to see, a theatre fitted up with such a contrivance.

We are much indebted to your journal for the information it conveys in its columns, from time to time, upon this important subject. The many notices you have been lately able to give of inventions, of more or less practical use, for the prevention of fires in theatres shows how, at last, the subject is becoming one of great public interest.

To one conversant with the mode of working and managing theatres, and the peculiar class of business carried on in them, it would appear that many of these emergency appliances are very nearly useless. Everything in and about a theatre, to be of the slightest good, must be of the simplest form and used at every performance. Emergency and alarm appliances, to act after the house has become well alight and full of smoke, as would probably be the case before the invention described above could act, would be of little service to the then struggling and terror-stricken audience.

It seems self-evident that the only certain way to prevent fire to any serious extent in this class of building, where the risk is perhaps greater than in any other, is to build the house at the first outset with such materials as will not feed the fire. This can be done, and is now being carried out in London. A great deal of

mischief might be avoided in a theatre if the various departments were more isolated, and the risks from fire confined to smaller dimensions. This is becoming more and more the practice, as the improved arrangements of our more modern theatres show; but the system of carefully planning and building each section as a separate fire risk, has not reached that state of perfection that it might, and in time doubtless will do.

Many automatic appliances for the extinction of fire have lately been brought before our notice, but such inventions are liable to get out of working order, through not being in constant use. The provision of plenty of water, with a certain supply at high pressure, to numerous hydrants, distributed in favourable positions about the house, in the hands of a staff of able firemen, is the only method by which the fires that occur from time to time in theatres can be lessened and extinguished. A bucketful of water would put out a small fire up, when, if we depended upon some complicated apparatus that would only work (?) upon the fire reaching such proportions as to melt a fusible plug or burn a woollen cord, there would be every chance of the audience being in a state of excitement or panic before the presumed good effect of the invention would be felt.

ERNEST A. E. WOODROW.

CHIMNEY CONSTRUCTION.

Sir,—Will you kindly allow me to ask if any of your contributors can give particulars of the chimney shaft at Messrs. Pratt's Chemical Works, Newton, said to be 207 ft. high; also, that of Messrs. Dixon's Cotton Factory, Shaddington, near Carlisle, 305 ft. Very likely some readers of the *Builder* may remember having seen an account of one or both, and I shall be obliged if they will refer me to the same. F. J. BANCROFT.

501, Caledonian-road, Holloway, N.

THE LINE OF SIGHT.

Sir,—I have just returned from abroad and passed through Brussels, where the new Palace of Justice has just been opened. The architecture is a question of opinion; but I was much distressed to find that so expensive a building should not have been placed square with its intention, which is obviously to look on the statue in the Place Royal and the Park Gardens. Standing at the statue it is 3 yards to the right to bring the head of the statue over the entrance in a line with the central window. From the Park Gardens the misfortune is the more apparent. Why did not the architect prove his ground lines? F. WILSON.

ENGINEERING WORKS IN AND ABOUT OXFORD.

The Widening of Magdalen Bridge.—This work is now rapidly approaching completion, the arching and walling, and the parapet on the south-west side, being finished, as are also the retaining walls and boundary railing of the approaches at either end. The permanent carriageway and footways will be respectively 32 ft. 6 in. and 7 ft. wide. It was found desirable some time since to secure the foundations of the river piers and abutments of the old part of the bridge by inverted arches, and subsequent examination has shown that very extensive repairs were needed to the land arches and walls, on account of the numerous cracks and other signs of subsidence and displacement. It has been found necessary to incur a considerable extra expenditure in underpinning the abutments of the centre land arch and cutting away and repairing much of that and the other arches. Some of the stones are so dangerously rotten that it will be necessary to open down from above and put in entirely new ones. A large quantity of the ashlar facing of the walls has also to be renewed. The works have been efficiently carried out by the contractor, Mr. G. Moss, of Liverpool. Mr. Grafton, of Ballingdon-road, has executed the carved work, and Mr. E. Edwards is the clerk of works.

Prevention of Floods.—Considerable works are in progress in different parts of the rivers Thames and Cherwell, with the view of mitigating floods and improving navigation, the Conservators of the Thames having entered into an arrangement with the Thames Valley Drainage Commissioners to execute and complete the works, at an estimated cost of 33,700*l.* The widening and deepening of the Cherwell has been entrusted to Mr. George

* Compiled by Hart & Co., Patent Agents, 188, Fleet-street.

* See p. 635, ante.

Moss, of Liverpool, the contractor for the widening of Magdalen Bridge, and operations began by the driving of three substantial dams across the eastern branch of the river and the connecting stream near the Botanical Gardens, the space so enclosed being about a quarter of a mile in length. The work of pumping out the water was then commenced by two portable steam engines driving two of Woodward's patent centrifugal pumps, from Messrs. Ruston & Proctor's Works, Lincoln. These pumps are capable of lifting 2,000 gallons of water per minute to a height of 15 ft., and the entire length of river dammed off was pumped out in about thirty hours from the commencement of operations, excepting a few pools where the river is exceptionally deep. Many thousand cubic yards of earth are being removed and deposited on the adjoining fields, the turf being first carefully taken off to be replaced on the new surface, but the recent heavy rains have considerably interfered with the work. The excavation for the new river-bed will be taken down to an average depth of 4 ft. below the present bed. There will be a width of 17 ft. at the bottom, and the new banks will be cut to a slope of 2 ft. horizontal to 1 ft. vertical, which will give a width of about 40 ft. on the top. The banks at the windings of the river are being re-shaped, so as to give a free passage to the water at flood time. Mr. Fielden, C.E., is acting engineer for Sir John Hawkshaw & Son, of Westminster; engineers to the Thames Valley Drainage Commissioners. Mr. Jacob Bennett is superintending the works on behalf of Mr. G. Moss. At Sandford a new weir, 36 ft. wide, has been made alongside the old weir, and the crest of the tumbling bay at the monument has been lowered, and the channel above has been deepened and dredged. A large amount of excavation has been made between Sandford and Nuneham in the channel of the river, upwards of 30,000 cubic yards having been taken out. A new weir is in course of construction at Abingdon similar to the one at Sandford, and also at Sutton Courtney, and both of these are in a forward condition.

CHURCH-BUILDING NEWS.

North Petherton.—The fine parish church of St. Mary is now undergoing a restoration of its interior. The funds have been raised mainly through the exertions of the Vicar, the Rev. J. W. Robinson, assisted by a committee of parishioners. The church is a fifteenth-century building, though the lofty western tower and the chapels at the ends of the aisles bear traces of being somewhat later additions to the main body of the church. It consists of nave, with clearstory, north and south aisles, north and south porches, the Huntworth and Melcombe chapels at the east ends of the aisles, chancel, vestry to the east of the chancel, and western tower. The western gallery has been removed, as it sadly interfered with the moulded pannelled jambs of the tower arch, and the view of the stone vaulting over the lower stage of the tower. The high seats are being replaced by open benches of wainscot oak, and a number of Jacobean bench-ends, which have been lengthened on a former occasion, are to be reduced to their former dimensions, and affixed to the new benches. The pulpit, an oak one of fifteenth-century workmanship, has been taken from its lofty pedestal to be placed on an oak base in character with the upper part. The font is to be placed near the south doorway. The staircase to the roof-loft has been opened out, the two doorways at the foot and at the former gallery level being in a very complete state. The staircase seems to have been continued originally beyond the upper doorway, and, instead of being finished externally under the battlement of the north aisles, as it is now, was probably carried up to the same level as the battlements, so as to form an approach to the roof. The new floor of the church is being laid at its original level, which is some inches lower than the floor lately removed. This has the effect of giving a step at the west end of the chancel where there was not one before. The passages are of flagstones, and all the memorial slabs are being exactly replaced. The whole of the piers, arcades, windows, and all internal dressed stonework, are being carefully scraped and freed from successive coatings of whitewash, and the Hamdon-hill and Douling stones brought into view. An oak screen is being placed between the nave and the tower.

The Huntworth Chapel, belonging to Lord Portman, has been re-seated comparatively recently, and the Melcombe Chapel, belonging to Mrs. Kinglake, is about to be treated in the same way. The south porch is disfigured by an upper floor, which barely clears the mouldings of the doorways, approached by a very mean-looking staircase; a projecting gallery has been thrown out in the aisle, and an archway formed in the wall of the aisle connecting the gallery with this upper floor. As this erection is of long standing, and secured by faculty, its removal, though desirable, is hardly to be expected. The position of the vestry to the east of the chancel, of which there are several other examples, is perhaps unique with regard to its entrance, the only one being through the sacristy. The church is built mainly of local rag-stone with Hamdon-hill and Douling dressings; some blue lias occurs irregularly in the walls. It probably was the material of which an earlier church was constructed. The roof of the chancel, which is plainly plastered, is to be taken in hand; the other portions of the chancel were put in order some years ago under the direction of Mr. Scott Champion, architect. The roofs of the chapels and portions of the aisle roofs, have plainly plastered ceilings, while the nave roof is poor, but more funds are needed before a complete restoration can be made. The tower, one of many in which this part of Somersetshire is rich, also requires attention, several of the minor pinnacles on the buttresses and other decorative features having been entirely destroyed by time. The present contract has been taken by Mr. H. J. Spiller, of Taunton, builder, and the work is being carried out from the plans and under the direction of the architect, Mr. J. Houghton Spencer.

Kensington.—The Palace Gardens Church, The Mall, Kensington, was re-opened on Sunday, after undergoing a thorough overhaul, and being repainted and decorated. The work has been carried out under the superintendence of Mr. Alex. Payne, architect, Storey's-gate, Westminster, the decorations being by Messrs. Geo. Dobie & Son, of Edinburgh. The walls have been painted a soft greenish blue, and enriched with a pannelled frieze immediately below the cornice. In the colouring of this frieze a considerable amount of orange and brown has been introduced, as well as in the borderings round the windows and above the wall lining, thus forming a very pleasant contrast to the wall colour. The decoration of the ceiling consists of a broad ornamental border and centre ornament, the latter surrounding the sunlight. The reredos behind the altar is treated in a rich yet subdued manner, preserving that feeling of repose so essential for that part of the church.

Llandudno.—Mr. Edwin Turner, architect, Llandudno, has submitted plans for the enlargement of the parish church (St. George's). The plans having been approved, the work is to be proceeded with at once. The chancel will be enlarged, and a new clergy vestry and an organ-chamber provided. An additional accommodation of about eighty-four sittings will be the result.

Bilsington.—The parish church of Bilsington, Kent, has been re-opened, after restoration. This parish is named in Domesday. The fabric of the nave of the church is believed to date from soon after that period. The church stands apart from the village, and, like the neighbouring church at Bonington, is approached by a "church path" out of the main road. It consists of a chancel, 30 ft. by 21 ft., which seems to have been extended in later times; a nave, 45 ft. 6 in. by 31 ft.; a western tower, with an upper wooden structure capped, and a south porch. The chancel is of the thirteenth century, but the eastern portion, for about 8 ft., seems to have fallen at some time, and then to have been rebuilt. All traces of the original treatment of the east end have disappeared. The roof was modern. No vestige of the ancient pavement seemed to exist. The former levels were destroyed, unless the chancel-floor was on the same level as that of the nave. The nave is wide. The original windows on the north side had been removed, and a two-light window (temp. Edward III.) inserted nearest the chancel. This window is very perfect, and there exists in the quatrefoil tracery of the head a fragment of painted glass, of much interest. The subject is the Deity seated on the sepulchre, holding in his lap the Son, representing the Resurrection. A second

window inserted nearest the west end, and very perfect, was probably of the time of Henry IV. In the sexfoil head of the tracery of this window is a fragment of glass, not so perfect as that in the other window, representing the Blessed Virgin Mary and Our Lord. The state of the church prior to its restoration was very lamentable and even dangerous. It has now been restored, as well as the funds permitted, to its former state, under the direction of the Diocesan architect, Mr. Joseph Clarke, F.S.A. The works of the chancel have been carried out at the expense of Mr. W. H. Halliday, the lay rector, who inherits the surrounding property. The end walls have been rebuilt and extended to the original lines, with the triplet lights at the east end restored. A new roof has been put on, and the stalls, sedilia, and credence restored, the floor paved with Minton's tiles, and the walls re-plastered. A window removed has been replaced on the north side. The walls have been strongly restored, and new buttresses built. The ancient glass has been carefully reinstated. A new roof has been put on the nave, the walls re-plastered, and the outlines of the Norman windows discovered shown. The church is re-seated with plain open benches, with the font and pulpit refixed. The whole of the work has been carried out by Messrs. Steddy, Joy, & Steddy, of Ashford, under the architect's direction.

PROVINCIAL NEWS.

Leek.—The Leek Branch Bank buildings of the Manchester and Liverpool District Banking Company were opened for business on the 24th ult. They have been erected from the plans and under the superintendence of Messrs. W. Sugden & Sons, architects, Leek. A double-page view and a description of the building were published by us last year (see *Builder*, vol. xliii, pp. 460, 464).

Birmingham.—A new building has been erected by the Council of the Moseley and Balsall Heath Institute on the Moseley-road, at a cost of about 3,500l., a portion of which only has been guaranteed, and the object of an effort now being made is to remove this incubus, and to enable the founders to further extend the usefulness of the institution. The buildings front and occupy a prominent position on the eastern side of the Moseley-road, between the Brighton and Trafalgar roads, and include a lecture-hall at the rear, with a stage and suitably-arranged retiring-rooms. Beneath the lecture-hall is a lofty gymnasium, and under the stage and one of the retiring-rooms are spacious store-rooms, and an arched chamber below the other retiring-room contains the heating apparatus. The hall will accommodate about 600 persons seated, and its acoustic properties are reported to be excellent. Connecting the lecture-hall with the front buildings is an ante or crush room, having three wide and draped archways opening into the lecture-hall on one side, and a wide double swing-door from the entrance vestibule on the other. The front buildings contain a central vestibule and lobby, approached by a bold flight of steps from the main road. Right and left of the vestibule are two cloak-rooms, with lavatories, and nearer the hall is a ticket-office, which is fronted by the stairs leading to a second lecture-hall. This hall has an open-timbered roof of an average internal height of about 24 ft., and occupies the whole of the frontage on the first floor, and is lighted by three wide and lofty triplet windows. The style of the front buildings is Gothic, founded on the Early English period, but modified to suit modern requirements. The heads of the windows and entrance are embellished with carving, those to the first floor being filled with foliage, and those to the ground-floor with figure groups representing Science, Literature, and Art on the left of entrance, and Music, Poetry, and Drama on the right. Circular panels on either side of the entrance will contain carved representations of the heads of Michelangelo and Shakespeare, while over the doorway will be a group typifying Industry as being the keystone to the whole. The back buildings are of a plain character externally, but internally the style has been adhered to as far as a pannelled and coved plastered ceiling in the large hall will permit. This form of ceiling is generally associated with a Classic building. The architect was, however, induced to adopt it for acoustic reasons, and he has specially

designed it with pointed arches and mouldings and enrichments to accord with the Gothic work. The buildings have been erected by Mr. John Bowen, of Balsall Heath, from the designs and under the superintendence of Mr. William Hale, architect, of Colmore-row, Birmingham, and the hon. secretary, Mr. Sam. Owen, has assisted in arranging for the fittings. The carving is by Mr. Rowney, of Birmingham.

Oxford.—It is intended to establish, in the open space adjoining Jericho House, a "market" for north Oxford, by the erection of a wooden building 65 ft. in length by 25 ft. in width, which will be capable of being extended to double the size. Twelve stalls will be available for the sale of meat, fruit, fish, and vegetables. Mr. Barrett, builder, St. John's-road, will carry out the work, the plans for which have been prepared by Mr. Cowley. The southern wing of the Hospital for Incurables, Cowley St. John, has been extended by the addition of sixteen rooms, carrying out part of the original project from the plans of the late Mr. Buckridge, of London. Messrs. Symm & Co. were the builders employed.

Walsend.—A mission chapel has just been completed at Walsend from designs by Mr. J. J. Lish, architect, Newcastle-upon-Tyne. The building is built of brick with stone dressings, and is seated throughout with open benches.

Burton-on-Trent.—The new Market Hall at Burton-on-Trent was formally opened by the Mayor (Mr. G. H. Allsopp), on Wednesday, the 24th ult. The front portion is two stories high, and comprises four shops, superintendent's office, and market and office entrances, on the ground-floor, with a suite of three offices and room for the caretaker on the first floor. The new Market Hall is at the rear, and has a floor area available for stalls of 1,090 yards super. Opening into and on three sides of the hall are twenty (one-story) shops, for butchers and general purposes, with flat roofs, which form a continuous gallery and an available space for the sale of goods. There are six entrances from the several new streets which surround the building. The roof is of iron, in three spans, glazed, on the north side only, with Rendle's system of glazing, and supported on iron columns and girders. The style of the architecture is Renaissance, and in the pediment over the principal entrance is a sculptured panel representing King John in the act of granting a charter to hold a market at Burton to a former abbot. This and the whole of the sculptured work and carving have been executed by Mr. Roddis, of Birmingham. The contracts entered into approach 12,000l. Messrs. Chamberlain Bros. have been the general contractors, and have carried out the work in a very satisfactory manner, the sub-contractors being Mr. Mason, for the joinery work; Messrs. Gough & Felgate, for ironwork; Mr. Ryle, plumber and painter; all of Burton. Messrs. Cordingley, of Bradford, carried out the concreting. Mr. H. J. Corser has acted as clerk of works, under the architects, Messrs. Dixon & Moxon, of Barnsley, whose plans were selected in competition two years and a half ago.

Books.

Le Céramique. By JULIEN FOY. Paris: Librairie Générale de l'Architecture. FRANCE, amidst all her vicissitudes,—religious, political, social,—is unwavering in her steady devotion to art and literature. Much of her art is no doubt morbid and unhealthy, and much of her literature had better not have been; but when all reasonable deductions have been made on that score, there is left a residue of honest, careful, excellent work, in both kinds, such as no other nation can show.

Our own country lags hopelessly behind, and German art and German literature, though copious and careful, lack the airy charm and brilliancy of the French. So far as England is concerned, the paucity of artistic literature is entirely due to the public, from whom there is no demand for works which find a wide appreciation and ready sale with our neighbours. Although England at the present moment produces more ceramic ware of all sorts than the other European countries put together, there is, so far as we are aware, no book in our language which treats so exhaustively of this particular manufacture and the allied arts as the one now under notice. This may be in some degree accounted for by the fact that

with us the manufacturers of special forms of ceramic ware shroud in mystery the means by which they achieve success, and guard all access to the knowledge of their secret with jealous care.

The preface to the catalogue of the specimens in the Museum of Economic Geology deals with the historical and artistic aspect of the question in a masterly manner, and special portions of the subject are treated by other writers possessing all the requisite knowledge and ability. But M. Foy has brought within one pair of covers a treatise of the art under all its aspects, and it is the completeness and comprehensiveness of his work which is its distinguishing merit.

The writer divides his subject broadly into two sections. The first treats of the ceramics of construction, the second of decorative ceramics. The whole is further subdivided with a precision and method characteristically French. We have no word comprehensive enough to cover all that is covered by the French *céramique*. "Terra-cotta" would be etymologically exact, but its sense has been limited by custom, and it is not now applicable, and "pottery" is not wide enough to embrace all the multitudinous productions of the ceramist.

The potter's art takes rank as the oldest in the world. It leads us back to the very dawn of human history, and was a perfect art with the most ancient races of whom we have any direct knowledge. Assyrians, Egyptians, Greeks, and those nations who were as ancient to the Greeks as the Greeks now are to us, were all experts in this beautiful art. The Assyrians had the secret of enamelling bricks in various colours, as the remains of their buildings testify to this day. Amongst the very earliest of man's instincts we can trace the desire to embellish and adorn the utensils which even his primitive way of life rendered necessary; and, as civilisation progresses, the desire is intensified and the result keeps pace with the desire.

The Greeks were, unfortunately perhaps, hampered by their want of chemical knowledge in their endeavours to decorate the lovely vessels which they designed. The dull red and black of their incomparable vases marked the limit of their resources, in point of colour, and within these limits their work was of marvellous beauty. The fuller application of colour to baked earth is due to the Arabs, who carried their use of it to a perfection never surpassed for decorative purposes. From their lavish employment of ceramic decoration in the thirteenth century in Spain it found its way into Northern Europe, but the secret was kept. The range of colours obtainable by the English potters in the succeeding century was very narrow, and the use of the art was almost wholly confined to the encaustic tiles with which the floors of our cathedrals and parish churches were paved.

Meanwhile the art had taken root in Italy and flourished, as all arts at one time flourished in that congenial soil. The application of faience and majolica to architecture was becoming general when the popular taste, from causes often explained, inclined to the colder beauties of the quasi-classical Renaissance.

In France, and under the direct patronage of Francis I., a great effort was made to apply majolica to external architecture, and the *della Robbia* for three generations were engaged in the work. The now destroyed Chateau de Madrid was encrusted with masterpieces from the hands of these artists, and the profusion with which they employed the form of decoration which goes by their name led to the chateau being commonly known as the Chateau de Faience.

But in France also a determined adoption of the severe forms of a pseudo-Classical style, which was at one time universal throughout the kingdom, put an end to the system inaugurated by Francis I., and the stately buildings of the succeeding era disdained the gauds in which he found delight. It will be remembered that within these thirty years a school of architects in this country endeavoured to enliven the exteriors of our buildings by the application of decorative friezes, panels, &c., in coloured and glazed earthenware. The remains of these attempts are still visible, and the results cannot be considered as satisfactory. The contrast between the dead surfaces of brick or stone and the glitter of majolica in any form is not pleasing, and the attempt has been abandoned by common consent.

M. Foy says in his entertaining work that the

application of majolica to architecture has received a new impulse from the experiments tried at the Exposition of 1878, and he looks forward to the gradual evolution of an iron and majolica style which shall have a special relation to the wants and opportunities of this century, and which has a great and splendid future before it. We cannot say that we share these sanguine expectations. The necessity upon economic grounds of endless repetition of parts; the impossibility of dispensing with a vast number of joints destroying all breadth of effect; and the dazzling glitter of the surfaces, will always be in the way of its application to external architecture; while for interiors the public restaurant and dining-room have already marked the manner for their own, and rendered other application of it impossible, or at least inexpedient. As articles of decorative furniture, and as a means of beautifying articles which are useful or necessary in the domestic arts, the work of the ceramist has an almost infinite scope.

M. Foy addresses himself at great length to the chemical constituents of the earths used, and the mechanical processes involved in their manufacture, and he follows the complications of the subject with patient analysis and the clearest exposition,—from the rude earths which go to the making of our common stock bricks to the highest efforts of Sèvres or Worcester. No less care is bestowed upon the important question of the furnace and the kiln,—the relative merits of hand and machine making,—the nature and composition of the various glazes employed, and the countless considerations involved in the practical manufacture. Several of the plates which illustrate the work are devoted to brick-making machines, but there is not a single English machine amongst them, at which we are surprised, for elsewhere there are evidences of a thorough appreciation of the advanced position which our country holds in the ceramic art.

The articles on roofing-tiles and tile-making are especially interesting. The author is probably indebted to the researches of M. Viollet-le-Duc for much of this part of his matter. The inquiry into the relation of the thicknesses of ancient bricks to the matrix of lime mortar in which they were set is very valuable. The Roman brick,—in thickness but little more than that of a modern tile,—was liable to fracture. To obviate this it was embedded in mortar which showed a joint equal to the thickness of the brick. In France the later brickwork was arranged in a similar way, but on other grounds. There the brick was of so porous a nature as to absorb all the moisture from the mortar, and thus interfere with its proper setting. The Tudor brickwork, as seen at Hampton Court and elsewhere, followed the plan of a wide bed and joint, though probably from other reasons than those which prevailed with the French architects. But whatever the reason the artistic result is most happy, and gives a grey tone to the whole which contrasts favourably with our modern close-jointed work. The author should give his authority for the statement that brickwork was not seen in England before the ninth century. The Romans used brickwork very freely, and their Norman successors used up the legacy of bricks which the ruins of the Roman buildings provided for them. The general use of brick as a building material in England dates from the time of Henry VI., and we still have extant examples of the artistic use of the material, in combination with a finer moulded terra-cotta, which are probably superior to anything which France itself can show.

It may be remarked in passing that on p. 21, the author makes a mistake which should be corrected in any future edition. He gives as a day's work for a brick-moulder the work which could only be done in a week,—by a moulder working twelve hours a day. This is a slip of the pen, no doubt, but it is a serious mis-statement, and it may be a kindness to point it out.

M. Foy has laid an obligation upon all those who are interested in the beautiful art of which he treats so fully and so well, and his book will probably take its place as a standard work. The illustrations are confined to the manufacture of ceramics and not to the artistic results achieved. This was no doubt inevitable, and we must turn to other authors for examples of the artistic capabilities of the material, and thank the author for the best connected and most comprehensive treatise on ceramics with which we are acquainted.

Miscellaneous.

The Engineering and Shipbuilding Industries in New South Wales.—Morr's Dock and Engineering Works, about two miles from Sydney, form the most extensive undertaking of the kind in the Australian colonies. The dock is about 390 ft. in length, and can receive vessels drawing 21 ft. of water. Adjoining it there are workshops covering an area of five acres, in which, when at full swing, 700 hands are employed in the iron and brass foundries, boiler, locomotive, engine, and ship-building works comprised in this important concern; and many of the locomotives supplied to the Government in the colony have been turned out of this establishment. A fine steamer, *Governor Blackall*, of 500 tons, was also constructed and fitted out in it for the Queensland Government; also two other steamers, *Thetis* and *Ajias*, for the New South Wales Government. The works and patent ship of the Australasian Steam Navigation Company occupy 64 acres, and also employ hundreds of men. The fleet of the company is now so large that the works are always busy. There are many other rising foundries, such as those of Vale, Chapman, Davey, and Lutton & Sons. The increase in the number of iron, brass, and copper foundries since 1871 is forty-four. The building of the larger class of vessels is carried on in the rivers on the coast. In 1871 there were built in the colony twenty vessels, with a total of 1,798 tons, and in 1880 the number was forty-one vessels, of 2,709 tons. Only eighty-one ship and boat builders, employing 416 hands, are returned for 1880, against eighty-six establishments in 1871, but the productive resources of the smaller number have become largely increased.

Public Pleasure Grounds.—We have always insisted on the hygienic and therapeutic value of well-regulated exercise. Rest without it is idleness and depression; with it, recreation. In these days there is much enthusiasm for mental culture, and much utilitarian worship of profitable labour, but often proportionately little care for the maintenance of a sound physique, without which neither brain nor muscle can remain efficient. We therefore hail with satisfaction every movement of public opinion which aims at giving the body, especially in childhood, its due share of consideration. The gymnasiums and playgrounds which have lately come into being in Drury-lane and elsewhere are hopeful signs of the times. Especially it is well that among these there are gymnasiums for girls, who nearly as much as boys require and benefit by the gymnastic method. Fresh air is in no less request than muscular training. There is now many an odd corner in London and other large towns which might be utilised as a breathing-space for the poorer inhabitants. Acres of streets are being remodelled by the Metropolitan Board of Works. It is to be hoped that here and there an open grass-plot, or a gravelled square for children's games, will replace the squalid court of former days. Many an old burial-ground has received its last tenant long years ago, and now lies open to the sun, and to nothing and no one else. If such a spot were cleaned and planted and made public, it would lose none of its original consecrated sanctity by its being devoted to the common good.—*Lancet*.

The Outlook in the Iron Trade.—For some months past, production in nearly all the great centres of the iron trade seems to have outstripped the demand. Hence the receding values of iron, and the discouraging reports now reaching us. Generally speaking, the profits of iron-making are reported as altogether incommensurate with the capital employed, and were it not for the present easy rates of discount, and the confidence felt in the future of the trade, serious financial complications might be expected, as the natural result of so much money being wholly or partially unproductive. So far, the present year, notwithstanding low prices, has been remarkably free from failures in the iron trade, and there is no reason to suppose anything more serious will result from our declining markets than diminished profits to ironmakers. Cheap money and good credit may be expected to carry manufacturers over the difficulties of their present position until a sound re-adjustment has once more been made between the wants of consumers and the means of supplying them.—*Martineau & Smith's Hardware Trade Journal*, October 31st.

The New Drainage of Mentone.—The *Lancet* observes that the municipality of Mentone is determined to build sewers without having first mastered the principles on which sewers should be laid. A main sewer along the Rue Longue and the Avenue Victor Emmanuel receives the sewage from smaller streets on either side. The secondary sewers measure 1 m. 20 c. by 80 centimètres; others are a metre and a half high, which is an enormous size considering the small volume of water used in the houses. The untrapped pipes conduct into these sewers, where, as a natural result of their size, and the paucity of water, solid deposits are sure to accumulate. Externally the town will improve in its appearance; but the danger to public health will be increased, not lessened. Each house will draw up the foul emanations of the sewers, for which no other means of ventilation are provided, and these sewers are certainly not self-cleansing. Under such circumstances, the dangers of an epidemic are not reduced, but increased, by these so-called sanitary improvements.

Pilkington & Co. (Limited).—We have received the prospectus of this company, which is incorporated under the Companies Acts, 1862 to 1880. The capital is 12,000l., divided into 1,150 shares of 10l. each, and five proprietors' shares of 100l. each. The first issue will be of 6,000l. only, in 550 shares of 10l. each, and five proprietors' shares of 100l. each. The chairman of directors is Mr. John Brogden Moreland. The company has been formed to purchase the well-known business of Messrs. Pilkington & Co., asphalt manufacturers, which has been carried on since the year 1838. The present proprietor will continue the management of the business at a salary. Messrs. Pilkington & Co.'s asphalts have long been in good repute, and they have been largely used in many important buildings. The demand for them will no doubt continue, and hence the new company should prosper.

City and Guilds of London Institute.—The Holl Scholarship, tenable at the Technical College, Finsbury, has been awarded for the first time this year. The student who has gained it is Charles Priest, aged 15, a pupil of the United Westminster Schools. The value of the scholarship is 20l. a year for two years, with free education. The fund which provides this scholarship was bequeathed by the will, dated 1838, of Mary Ann Holl for the benefit of a school she had established at Genoa, and was transferred by direction of the late Master of the Rolls, to the "Official Trustees of Charitable Funds" for the establishment of a scholarship in connexion with the City and Guilds of London Institute. The amount of money transferred not being sufficient to provide a scholarship of 20l. a year for two years, the Council of the Institute supplemented it out of their corporate funds.

The Late J. H. Chamberlain.—An influential meeting, presided over by the Mayor, was held in Birmingham on Wednesday, to decide upon a method of commemorating the services rendered to the town by the late Mr. J. H. Chamberlain. Mr. J. Chamberlain, M.P., who warmly eulogised the personal qualities and public work of the deceased gentleman, moved a resolution that a subscription list be opened and a committee appointed to consider the form which the memorial should take. The resolution was carried, and 1,136l. was subscribed in the room.

Liverpool Engineering Society.—The twelfth meeting of the society was held on Wednesday, the 24th ult., at the Royal Institution, Colquitt-street; Mr. H. Bramall, president, in the chair. A paper entitled "Joints and joint-making" was read by Mr. T. Duncanson. The author described the various joints in use for pipes, and the best modes of making them,—under the heads of spigot and socket joints, flanged joints, screwed joints, and soldered joints. He also treated of the circumstances in which each form of joint is most suitable, and illustrated his remarks with diagrams and sketches.

Derby Co-operative Society.—This society have appointed Mr. Wills, of Derby, as their architect, and building operations are being carried on by them in several parts of the town, including a new grocery and provision store in Leman-street.

Lord Mayor's Day.—We are asked to mention that the firm of Messrs. Defries & Sons have been entrusted with the decorations for the Cornhill Ward on Lord Mayor's Day.

Gosforth.—Mr. J. J. Lish, architect, New-castle-upon-Tyne, has been entrusted with the designing of a Wesleyan Methodist Church for Gosforth. The church will seat 750 persons, and the plan arrangement will consist of nave, aisles, and transepts, with an apsidal recess for the organ, and large vestry accommodation. There will also be a residence for the chapel-keeper, the whole communicating with schools in the rear of the main buildings. At the south-west angle will be a lofty tower and spire.

Clapton.—The large west window of All Saints', Clapton, has lately been filled with Munich stained glass, by Messrs. Mayer & Co. There are five compartments, each containing subjects appertaining to the Resurrection, the work being in memory of departed friends and relatives of the contributors.

The Late Mr. John Payne Collier.—A full bibliography of the works of the late John Payne Collier, who began to write at eighteen and was still writing at ninety, has been prepared by Mr. H. B. Wheatley, and the first part appears in the November number of the *Bibliographer*.

The Nineteenth Century Art Society.—The private view of the first exhibition of this Society will take place to-day (Saturday). The Society has been founded "in order to give greater facilities for the exhibition of the works of recognised and rising artists of the English and foreign schools."

Sun-burners.—Six of Storde & Co.'s patent sun-burners, with large outer ventilating shafts, are to be fixed at the Houses of Parliament, Capetown, of which Mr. Whichcote is the architect; and the same firm have fixed three of these burners, specially designed by Mr. Eddis, in the new hall-room at Sandringham.

A Memorial Brass.—Messrs. Matthews & Hodgson, of 113, Regent-street, have just completed a brass as a memorial of the officers and men of the 42nd Highlanders (the "Black Watch") who fell in Egypt, and will have it on view for a short time.

Royal Institute of British Architects.—The opening meeting of the Session will be held at the Institute Rooms, 9, Conduit-street, at 8 o'clock on Monday evening next, when the President (Mr. Horace Jones) will deliver an address.

TENDERS.

For rebuilding premises destroyed by fire, for Mr. May, Northcote-road, Battersea Rise. Mr. J. Smith, architect. Quantities not supplied.—

Wickham	240 0 0
Maxwell & Co.	320 0 0
Turtle & Appleton ..	315 0 0
T. Warren	305 0 0
W. Johnson	285 0 0
E. Dornier	285 10 0
Richens & Mount (accepted) ..	288 0 0
E. H. Maplesden, Battersea Rise ..	240 10 0

For the erection of nurses' day-room at the Wandsworth and Clapham Union. Mr. T. W. Aldwinckle, architect. Quantities not supplied.—

Jewell	2475 0 0
Airs	464 0 0
E. H. Maplesden, Battersea Rise ..	445 0 0
Fala	438 0 0
R. Aire, Putney	410 0 0
Turtle & Appleton, New Wandsworth ..	395 0 0
Desa	350 0 0
Lorden & Son, Balham	347 0 0
W. Hancock, Battersea Park-road ..	255 0 0
Hammond, York-road (accepted) ..	245 0 0

For repairs and decorations to Oban House, Wandsworth Common:—

E. H. Maplesden, Battersea Rise (accepted).

For repairs and alterations to roofs of Albert and Victoria Houses, Wandsworth Common:—

E. H. Maplesden (accepted).

For repairs and additions to Nos. 44 and 48, Mallinson-road:—

E. H. Maplesden (accepted).

For rebuilding Oscar House, Lewisham, for Mr. T. Bollen. Messrs. Hudson, Son, & Booth, architects:—

Spencer & Co. (accepted).

For alterations to 89, Brompton-road, for Mr. W. F. Bates. Mr. George Edwards, architect:—

Green	2437 0 0
King	475 0 0
Reading	364 0 0
Stimpson & Co.	342 0 0
Scharien & Williams ..	281 0 0
Rayment & Son (accepted) ..	270 0 0

For finishing 39 and 41, Epirus-road, Walham-green, for the Middlesex Land Company, Limited. Mr. George Edwards, architect:—

Rayment & Son	2339 0 0
Reading	800 0 0
Scharien & Williams ..	635 0 0
Blore & Farry	580 0 0
Long	549 0 0
Green (accepted)	545 0 0

For rebuilding No. 36, Grosvenor-square, for Mr. C. H. Wilson, M.P. Mr. George Davey, architect:—

Smith & Co.	£17,768 0 0
Adams & Dover	17,745 0 0
Telephone	17,343 0 0
Fish, Prestige, & Co.	16,890 0 0
Thorn	16,786 0 0
Higgs & Hill	16,580 0 0
Messon	16,293 0 0
Shepherd	15,885 0 0

For building factory at Tufnell Park Mills, Holloway, for Mr. S. Townsend. Mr. C. H. Flack, architect:—

Wilson & Eaton	£4,463 0 0
Scott	4,443 0 0
Fish, Prestige, & Co.	4,387 0 0
Downs	4,327 0 0
Harris	4,108 0 0
Ford & Son	4,060 0 0

For new coffee-alcove and workmen's dining hall, for Messrs. Robey & Co., engineers, Canwick-road, Lincoln. Quantities not supplied:—

H. S. & W. Close	£1,525 0 0
J. M. Harrison	1,498 0 0
W. Wright	1,407 0 0
Martin & Sims	1,454 0 0
J. B. Harrison	1,440 0 0
Crosby & Sons (accepted) ..	1,365 0 0

For new workshops for Messrs. Foster & Co., engineers, L. 10111. Messrs. Goddard & Son, architects. Quantities supplied:—

G. Morgan	£7,800 0 0
H. G. H.	6,817 0 11½
Martin & Sims	6,700 0 0
Cowen & Lansdowne	5,920 0 0
J. Burns	5,963 0 0
Close & Co.	5,676 0 0
Crosby & Sons	5,646 0 0
W. Wright	5,588 0 0
J. B. Harrison	4,919 0 0
Offer & Broughton (accepted) ..	4,887 0 0

For drainage works Great Yarmouth. Mr. J. W. Cockrill, Borough Surveyor. Quantities supplied:—

W. D. Harbert, Great Yarmouth ..	£2,200 0 0
W. J. Butterell, London	2,129 0 0
W. Wood, Chelmsford	1,904 0 0
Cork & Beech, Yarmouth	1,908 5 0
J. Hayward, Eastbourne (accepted) ..	1,757 0 0

For alterations to the Britannia Theatre, Hoxton, in accordance with the requirements of the Metropolitan Board of Works, for Mrs. B. Lane. Mr. H. Lovegrove, architect:—

R. Conder	£1,400 0 0
-----------------	------------

For alterations to the Standard Theatre, Shoreditch, in accordance with the requirements of the Metropolitan Board of Works, for Messrs. J. & R. Douglass. Mr. H. Lovegrove, architect:—

R. Conder	£897 0 0
-----------------	----------

For new warehouse, Bloomsbury, for Mr. Heston. Mr. R. Norman Shaw, R.A., architect:—

Colls & Son	£3,100 0 0
L. L. L.	2,365 0 0
Ferry & Co.	2,370 0 0
Elliott & Co.	2,378 0 0
G. Green	2,330 0 0
Martin, Wells, & Co.	2,300 0 0
Lawrence & Son	2,270 0 0
Rider & Son	2,278 0 0
R. Conder	2,095 0 0

For gardener's cottage, &c., at Berechurch, Colchester, for Mr. Bart. Rous. Mr. E. Stark Wilkinson, architect, No. 14, Furnival's-lane:—

Gray & Sons, Colchester	£128 0 0
A. Chambers, Colchester	321 0 0
Thos. J. Ward, Colchester	321 0 0
F. Dupont, Colchester	322 0 0
C. H. Oldridge, Colchester	321 0 0
Geo. L. L. Colchester	350 0 0
H. Everett & Son, Colchester	319 0 0
Win. Shaw, Berechurch	310 0 0
E. Eade, London (accepted) ..	269 0 0

For the erection and completion of a pair of semi-detached villa residences, New Town-road, Newbury, for the Rev. W. H. Booth. Mr. James H. Money, architect, The Broadway, Newbury. Quantities supplied by Messrs. Curtis & Sons:—

R. & W. Harrison, Newbury (reduced estimate) (accepted) ..	£1,320 0 0
--	------------

Accepted for alterations and additions to property in Tumbling Hill-street, Bradford, for Messrs. C. Beverley, Jun., & Co. Mr. William J. Newton, architect, 185, Undercliffe-street, Bradford:—

Erection of, Masonry, and Brickwork.
Wm. Hird, Bradford.
Carpentry and Joinery.
M. Eland, Stanningely.
Slutty.
A. Hill, Bradford.

For alterations and additions to property at Laisterdyke, Bradford, for Mr. B. J. Mackie, Mr. William J. Newton, architect, Bradford:—
W. Verity, Bradford (accepted).

For alterations and additions to The Cedars, Strawberry Hill, Twickenham, for Mr. Gibbs. Messrs. Bray, Webb, & Co., architects:—
Harris, Old-street (accepted) £550 0 0

For preparing and fitting up new pitch-pine counter and fittings at the Hackham public-house, Brompton-road, S.W., for Mr. B. Burkin:—
Scharien & Williams (accepted).

For finishing alterations to 33, Old Broad-street, for Mr. F. S. Hobson. Mr. R. E. Tyler, architect:—
Spencer & Co. £1,850 0 0
Shurmer

To Contributors and Correspondents.

ALL LETTERS AND COMMUNICATIONS referring to LITERARY AND ARTISTIC MATTERS must be addressed—

"To the Editor of THE BUILDER,
40, Catherine-street,
Covent Garden, W.C.,"

And not to any individual by name.

IF R. P. H. T. C. D. A. W. F. S. cannot see each other, it is not the fault of the Editor. W. C. T. S. W. (see G. G.)—G. B. (last) were sent to the same way as others, apparently bona fide; we are not responsible.—R. T.—"Emigrant" (see our "Miscellaneous" column of this week and last week).—J. H. M.—W. G. J.—C.

Correct accounts should address the Editor, and not the Publisher, except in cases of business.

All statements of facts, lists of tenders, &c. must be accompanied by the name and address of the sender, not necessarily for publication.

We are compelled to decline pointing out books and giving addresses.

NOTE.—The responsibility of signed articles, and papers read at public meetings, rests, of course, with the authors.

NOTICE TO ADVERTISERS.

Persons advertising in the *Builder* may have REPLIES ADDRESSED TO THE OFFICE, 46, Catherine-street, Covent-garden, W.C., FREE OF CHARGE.

Letters will be forwarded if addressed envelopes are sent, together with sufficient stamps to cover the postage.

CHARGES FOR ADVERTISEMENTS.

SITUATIONS VACANT, PARTNERSHIPS, APPRENTICESHIPS, TRADE, AND GENERAL ADVERTISEMENTS.
Six lines (about fifty words) or under 6s. 6d.
Each additional line (about ten words) 0s. 6d.
Terms for Series of Twelve Advertisements, also for Special Advertisements on front cover (Collegiate), by Contract, Sales by Auction, &c. may be obtained on application to the Publisher.

FOUR Lines (about THIRTY words) or under 2s. 6d.
Each additional line (about ten words) 0s. 6d.
PREPAYMENT IS ABSOLUTELY NECESSARY.

* * * Stamps must not be sent, but all small sums should be remitted by Cash in Registered Letter or by Money Order, payable at the Post-office, Covent-garden, W.C. to DOUGLAS FOURDRINIER, Publisher.

Advertisements for the current week's issue must reach the Office before THREE o'clock p.m. on THURSDAY.
The Publisher cannot be responsible for DRAWINGS, TESTIMONIALS, &c. left at the Office in reply to Advertisements, and strongly recommends that of the latter COPIES ONLY should be sent.

TERMS OF SUBSCRIPTION.

"THE BUILDER" is supplied gratis from the Office to residents in any part of the United Kingdom at the rate of 12s. per annum, *Postpaid*. Subscriptions payable to DOUGLAS FOURDRINIER, Publisher, 46, Catherine-street, W.C.

Best Bath Stone.

WESTWOOD GROUND,
Box Ground, Combe Down,
Corsham Down,
And Farleigh Down.
RANDELL, SAUNDERS, & CO., Limited,
Corsham, Wilts. [Adv.]

Bath Stone.

Facilities for selection and quality unequalled, having upwards of
350,000 Feet Cube
In Stock of all known descriptions.
PICTOR & SONS, Box, Wilts. [Adv.]

Doubling Freestone and Ham Hill Stone of best quality, in blocks, or prepared ready for fixing. An inspection of the Doubling Quarries is respectfully solicited; and Architects and others are CAUTIONED against inferior stone. Prices, delivered to any part of the United Kingdom, given on application to CHARLES TRASK, Norton-sub-Hamdon, Dorset. Somerseset.—Agent, Mr. E. WILLIAMS, 73, Charlotte-street, Portland-place, W. [Adv.]

Doubling Freestone. Of best quality, supplied from their own Quarries and Kilns by **STAPLES & HANCOCK, Dorset.** Agent, Mr. H. MITCHELL, 8, Augustus-road, Hammersmith, London, W. [Adv.]

Asphalte.
Soyssel, Patent Metallic Lava, and White Asphaltes.
M. STODART & CO.
Office:
No. 90, Cannon-street, E.C. [Adv.]

Asphalte.—The Soyssel and Metallic Lava Asphalte Company (Mr. H. Glenn), Office, 38, Poultry, E.C.—The best and cheapest materials for damp courses, railway arches, warehouse floors, flat roofs, stables, cow-sheds and milk-rooms, granaries, tun-rooms, and terraces. [Adv.]

Immense quantities of
DRY WAINSCOT,
DRY MAHOGANY,
DRY WALNUT,
in all thicknesses.

B. J. HUDSON & SONS,
Whitfield-st., W., and Great Peter-st., S.W. London. [Adv.]

MICHELMORE & REAP,
Manufacturers of

CHARLES COLLINGE'S PATENT

COLLINGE'S PATENT HINGES,
LEVER, SCREW, & BARREL BOLTS,
Self-Acting "FALL DOWN" GATE STOPS,
and IMPROVED GATE FITTINGS of every description.
36A, BOROUGH ROAD,
DISCOUNT TO BUILDERS. LONDON, S.E.

IRON CISTERNS.

F. BRABY & CO.

LONDON, LIVERPOOL, GLASGOW.

VERY PROMPT SUPPLY.

LARGE STOCK READY.

CYLINDERS for HOT-WATER CIRCULATION.

Particulars on application.

Chief Office: 360, EUSTON ROAD, LONDON.

The Builder.

VOL. XLV. No. 2327.

SATURDAY, NOVEMBER 10, 1955.

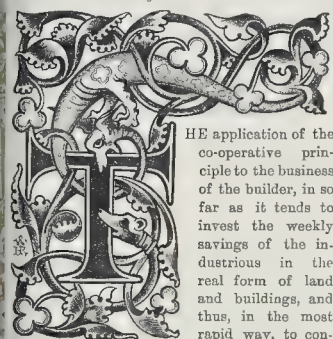
ILLUSTRATIONS.

Concrete Groyne, opposite Paston Place, Brighton.—Designed by Mr. P. C. Lockwood, C.E.	618
"Wayside Memorials and Crosses" (Double-page Photo-Lithograph)	621
Wesleyan Church, Addiscombe, Croydon (Double-page Photo-Lithograph).—Mr. Fred. Boreham, Architect	622
Examples of Oak Woodwork	624
Oak Staircase, Park House, Englefield Green, Egham	625
Doorway: St. Mary-le-Bow, Cheapside	631

CONTENTS.

Building and Builders	609	Examples of Carved Oak Woodwork	623	Apparatus for Testing Air	637
A New Work on Heavenly Cellul	610	"Wayside Memorials and Crosses"	623	The Planting of Trees in Cities	637
Graphic and Analytic Stat.	611	Edinburgh Air Industrial Association	624	Look to your Drains	637
Opening Meeting, Royal Institute of British Architects	612	Birmingham Architectural Association	624	The Late Fire at Haggerston	637
Lancashire Inn Fields and the Metropolitan Board of Works	613	Society of Engineers	624	W. Hord Church	637
Demolition in Gray's Inn Road	614	The Position of the Sanitary Inspector: Association of Public	624	Launceston	637
The Severn Tunnel	615	Society of Inspectors	624	Oil: all Interest in Contracts	637
Edinburgh	615	Shame Abatement	625	Drainage of Property situated without the District of a Local	637
The Royal Courts of Justice	616	The Practice of To-day	626	Board	638
Concrete Groyne, opposite Paston Place, Brighton	616	An Exhibition of Works in Wood 1841	626	Dissecting Church St. Luc's News	638
Wesleyan Church and Schools, Addiscombe	616	The New Alhambra Theatre	626	Compensation Cases: Isaac v. The Commissioners of Sewers	638
Entrance Doorway, St. Mary-le-Bow	616	Gerrard House, Soho	627	Miscellaneous	638

Building and Builders.



THE application of the co-operative principle to the business of the builder, in so far as it tends to invest the weekly savings of the industrious in the real form of land and buildings, and thus, in the most rapid way, to convert labour into ownership, is a matter of no little interest. The subject has, indeed, a literature of its own. Various societies exist. Various principles are adopted in detail. There is a special journal devoted to the subject. And the Legislature has so far recognised the importance of building societies as to subject their management to special administrative inspection. For our own part, we have only to say that the Building Society question is eminently one of those of which the leading principles are clear and truthful, but of which the application, in each particular case, is in an unusual degree rendered advantageous or disadvantageous by the special character of the management. Not that any wonderful amount of ability is required; but that the adoption of sound business rules, and their inflexible application with regularity and common sense, is the real secret of the welfare of the associates.

The main advantage of the application of the co-operative system in the form of the building society,—as in many other cases,—consists in the elimination of the risks that tend to diminish the profits of the ordinary builders. Thus the loss of rent arising from either the absence of tenants or their failure to pay according to their agreements, may be said to be altogether avoided. Together with this, the weekly receipt of the subscriptions and the weekly conversion of the amount of labour which they represent into a substantial form, unite the profit of the banker to that of the house-owner and the house-builder, and offer multiplied advantages to those who know how to make use of them.

There is, however, some reason to fear lest the building society movement in the metropolis has been rather overdone. And overdoing in this case involves danger, as it can only arise from abandoning the truly co-operative principle, hedged about by its own inherent self-protection, for some form of speculation. The *Building Societies and Land Companies' Gazette*

has, in fact, recently sounded "a note of warning." The enormous growth of suburban London, this journal remarks, and the impulse given to speculative building by the action of financial agents, commanding a large amount of investable capital, are bringing about a state of things demanding much caution on the part of those who control the large accumulated funds of the various building societies.

Some twenty years ago building society funds were advanced to a most dangerous extent on property in new neighbourhoods, and frequently on houses in course of erection. The consequences were such as to accentuate the distinction which we have before indicated to exist between co-operative and speculative building. At the time to which we refer a season of over-building set in, which was attended by disastrous consequences. Many societies suffered heavy losses and great anxieties, and the results are far from having been entirely obviated even by this time. It is now suggested that the circumstances which brought some large and prosperous associations to the verge of bankruptcy are again cropping up, and that if there is any yielding, on the part of the managers of the building societies' funds, to the temptation of large nominal profits, held out to them for such a use of their capital as is not within the four corners of the absolute security afforded by the co-operative system, embarrassment is likely to follow.

The difference between the action of an association which aids the thrifty man to purchase his own residence in the most ready mode, and that which promotes the construction of houses on speculation, is cardinal. And it will be seen that, even apart from the important question of the solidity of the builder who seeks advances, there is a mathematical reason for this difference. The rapid turning over of money allows of a great reduction in the charge for interest, without loss to the owner of that money. The history of a five-pound note, of a sovereign, a shilling, and a penny,—were it written by a man who possessed at once a complete knowledge of the principles and practice of trade, and the pen of a ready writer,—would be both a fascinating and an instructive work. Our currency, including not only notes and cash, but that comparatively new unit of transfer which allows both notes and cash to lie in the strong box, while they are represented by an order to deliver them,—the cheque,—has an activity which is probably inversely as its money value. The penny, we apprehend, will change hands more frequently than the shilling, the shilling more frequently than the sovereign, the sovereign more frequently than the bank-note. But each change, roughly speaking, represents the earning of a profit. If we put this profit, for the sake of illustration, at five per cent., a penny that is turned over twenty times has earned,—or has been the symbol of transfer which has facilitated the earning of,—its own value.

And if the penny has changed hands twenty times, while the silver sixpence has only changed hands twice, the smaller coin has been the factor in earning a penny, while the larger coin has only earned little more than half that amount, or 0.6d. Thus the turning over of weekly instalments has a monetary or banking value of a very high order, to which, indeed, it is not easy to fix a limit. A very sharp limit, however, is fixed to the safety of this rapid circulation of capital. And precisely as the circulation becomes more rapid in the hands of the speculative builder, does the danger of loss accrue. To lend, on the security of a house that is raised to the first floor, the money that is requisite to raise it a floor higher, is a most risky proceeding. If all goes on well, if the builder can count on loan after loan at the proper moment (proper for him) until his work is complete, he may drive a roaring trade. But it is a dangerous one. Money tightens. A man with an unpleasant aptitude for liking to have things certain says, "Don't you think Mr. Scamper has rather over-built Belvidere-row?" or "Don't you think that you are really turning the General Loan and Accommodation Bank into a Building Company?" Then comes a pause,—a check,—an arrest of progress, a black Saturday night. And then, perhaps, a forced delay of a comparatively short time in the completion of a set of houses is enough to afflict them, for the short term of their leasehold lives, with what is akin to chronic rheumatism in the human subject.

It is this danger in the haste to turn over money which is obviated by a sound co-operative arrangement. When a house is begun under this régime it is matter of calculation to a week or two when it will be completed, and the occupation will date from that very day. If, therefore, the basis of the association be broad enough to meet these calculable liabilities to the hour,—and a margin over,—the quicker the money is turned over the better for all parties. The danger attending on the quick-return system, if the expedient of borrowing be a part of the arrangement, is obviated. The risk of waiting for rent, or what is the equivalent of rent, in the general scheme of account, is obviated. And the profit earned by the nimble ninetynence is assured.

Another advantage possessed by the co-operative method relates to site. It may be said, indeed, that in our remarks as to certitude of occupation we have discounted, so to speak, this value. But whether we regard it by itself, or as part of the general arrangement, it deserves a word or two. It is of the essence of the co-operative system, if properly carried out, that the sites selected should be appropriate. The man who looks forward to the ownership of the house that is to be built in part by his own savings, will take care that he only so subscribes for a house in a locality that will suit him. Thus the owners and occupiers

of the houses will themselves be the selectors of the sites; and the value of such a selection it is hard to overrate. With the speculative builder it is just the reverse. His object is to develop a neighbourhood where he happens to have command of building land. But there may be good reasons why that neighbourhood should not be developed,—at all events, for some time.

Those who can afford to wait no doubt may do well; as any one may see who will take a drive along the new lines of road and residential property now occupying what, a few years ago, was the site of the fir wood extending from Bournemouth towards Hengistbury Head, to which a contributor not long since referred in our columns. The mode in which the extension of the metropolis is determined by accidental circumstances of this kind, rather than by the real proportionate value of site, is very remarkable. Apart from such an explanation, such a map of London as may be found in M. de Ranco's "Water Supply of England and Wales" (which we reviewed on its publication) presents an almost insoluble puzzle. The London of 1560 was an intelligible unit of abode, lying compactly between the Tower and Charing-cross, with a slight prolongation along the north bank of the Thames, both to the east and to the west, and a strip on the southern side in the Borough. By 1745 this nucleus had extended all round, chiefly in the westerly direction, where it was bounded by Park-lane. Towards Bethnal-green, however, a distinct horn protruded in the direction of the Mile End-road. The growth to 1813 was of the same character. Thence to 1831 the great increase was on the south of the Thames, reaching as a mass of building to about the line of the Surrey Canal, and pushing boldly along the Brixton-road, as well as along the south bank of the Thames, from Rotherhithe to Greenwich. Woolwich, also, though quite disconnected from London, first assumes importance in this period. Down to 1867, together with a broad fringe all round the part formerly built over, the advance of building along the main lines of converging road forms the most characteristic feature of the period. Along the stage-coach and omnibus roads to Tooting, Streatham, and Gipsy Hill, on the south, bands of building extended to a distance of six and seven miles from Ludgate-hill; while towards Tottenham, Highgate, and Hampstead, on the north, the same kind of formation extended for a mile or two less. Towards Acton, on the west, the bands of building extended for about 6½ miles from Ludgate. From 1867 to 1881 the course of building has mainly been due to filling up the spaces between the lines of road built along in the preceding period.

The most remarkable gap in this great web of streets and roads is to be found between Putney and Wandsworth on the Thames, and on the high and beautiful hills partly covered by Putney Heath, Wimbledon Common and Park, and Wandsworth Common. In this last vicinity, however, a great outburst of building has very lately occurred, as may be noted by any passenger on the London and South-Western Railway. But there is a green space, partly wooded, to the left of the Kingston-road, which has not attracted the active operations of the builder, owing partly to the high prices asked for land, and partly to the distance from railway stations.

This latter peculiarity, however, hostile as it is to the rapid increase of cheap houses, attaches a residential value of extreme importance to this pretty neighbourhood, which is comparatively but little known. Although within less than six miles from the Houses of Parliament, the trees and vegetation in this district are as fresh as if they were thirty or forty miles from London, and show no signs of that smoke-caused paralysis, to which not only the elms of Kensington, but even the noble cedars and fir-trees of Chiswick Park, are yearly falling victims. It requires a man of the stamp of the builder of Belgrave-square to step into this vacant Eden, before the further branching of the railways invites the attention of the speculative builder. A residential quarter of good houses, standing in their own grounds, and tenanted by persons who, as a rule, will prefer being conveyed by their own horses to London in forty minutes to scrambling for a few minutes less at the railway stations, may, in that case, arise here. Nor do we at the present moment recall any spot, either within our own shores or on the Continent, which would so richly repay a well-designed and well-supported effort to supply

the great desideratum of a group of good houses with private grounds, in country air, and easily accessible from London. It is of no small importance to the metropolis that this area should be rescued from a dense suburban growth of small houses.

A NEW WORK ON BENVENUTO CELLINI.

THERE are, it may be said, few names of famous Italians more familiar, even to those uninterested in artistic matters, than that of Benvenuto Cellini, whose singularly wild and stirring life, written by himself, has found, in every country of the civilised world, readers otherwise far from acquainted with the great contemporary names of Italian art. Benvenuto Cellini's autobiography, though at all times regarded as somewhat an exaggerated picture, has been so far generally accepted as to have rendered apparently unnecessary, since its publication, any further research respecting the interesting Florentine master, except on the part of the novelist and the musical composer. But famous as he has thus rendered himself, his position as one of the typical Renaissance group of artists has at all times been so high as to have led to no small amount of misstatement respecting his powers. This aspect of his career, in fact, affords a large field for study, and one which has recently been taken up by M. Plon in his sumptuous work on Benvenuto Cellini. To M. Plon the artistic world already owes an invaluable life of the Danish sculptor Thorwaldsen, which has most properly received the honour of translation into English. M. Plon's new work is not exactly of the same character, and it will doubtless remain untranslated; for, as the author modestly urges, the autobiography of the artist so completely fulfils all its conditions that no new biographical study of Cellini is practically necessary. Modern research having shown in many instances the truth of some of the Florentine's apparently more exaggerated statements, M. Plon's work is more directly artistic, and, in a measure, technical, dealing, as it does, with each individual specimen in existence of the many works attributed to Cellini. Aided by a profuse series of illustrations, not one of which has done duty before, etchings, heliogravures, and "process" drawings, a complete catalogue raisonné has been prepared of all the works the authenticity of which can be insured by facts, and of those numerous other works which have only tradition in support of their authorship.

In these days, when it is one of the constant tasks of artistic criticism to set right the errors of past generations, such a work as this merits a foremost place among the books of reference of all interested in art matters. The most attractive portion of the volume is, however, embraced in the sketch of the artist's life which precedes the above-mentioned catalogue. Thanks to the recent researches of students among the seemingly inexhaustible archives of the many Italian libraries, and particularly through the labours of the Marchese Campori and Sig. Bertolotti (to whose work reference has been made in these pages), M. Plon has been able, documents in hand, to follow the artist through the whole of his career, and we are shown how many of Cellini's self-related tales and wonderful escapades are fully confirmed by legal and other documents recently brought to light; the interest, therefore, that has at all times attached to Cellini's Memoirs as a picture of the life of the sixteenth century is thus largely increased.

It was, it will be admitted, a singular stroke of good fortune for Cellini, with his artistic temperament, to have been born in that voluptuous capital of art and refinement, Florence,—so to speak, in the midst of the great art movement which made his native city such an active centre of refinement. Michelangelo, the year that Cellini was born (1500), was, though but a young man of twenty-five, already a giant; Raffaello was still in the workshop of Perugino; Leonardo was at the height of his fame; Titian had barely reached the quarter of his long and industrious life. The century of Leo X. was brilliantly ushered in, the tradition of the preceding generation sturdily upheld,

by a crowd of artists, among whom Cellini fairly takes a foremost place. His soon actively-commenced life he himself has told in his Memoirs, his early studies with the goldsmiths of Siena, Bologna, and Pisa, wandering from shop to shop acquiring all the secrets of an art which had as yet lost none of that cunning handed down from Classic times through the "Gothic" days to those of the brilliant Renaissance.

It was but natural that the young student should be fascinated by the genius of his great townsman, Michelangelo, and it was, Cellini tells us himself, but the accident of hearing Torrigiano boast of his famous and brutal quarrel with the great sculptor, that prevented young Benvenuto from following Torrigiano to our shores, where, as readers of Walpole's ever-delightful anecdotes are aware, that artist was actively employed by Henry VIII. Cellini therefore remained in Italy to continue that singular life, the details of which he has so minutely described in his Memoirs.

Cellini's career may be divided into three periods,—his first visit to Rome, and his employment under the popes Clement VII. and Paul III., from 1523 to 1540; his journey to France, and patronage by Francis I. from 1540 to 1544; and his return to his native town, where he remained till his death in 1571. At Rome it was chiefly as a goldsmith and jeweller that he was engaged, engraving also medals, seals, and mint dies, worthily rivaling in each branch of his art such contemporaries as Caradosso, the great Milanese medalist; Amerigo, the Florentine enameller; Luca Agnolo, the goldsmith; and Laurino, of Perugia, the seal-engraver. During his stay in France, while not neglecting his numerous other talents,—it was for Francis that the famous salt-cellar, now at Vienna, was designed,—he was more especially engaged as a sculptor, the "Nymph of Fontainebleau" * being one of his most celebrated, if scarcely his most creditable, performance. At Florence his ambition led him to turn his attention even more particularly in the direction of sculpture; though here, again, he did not neglect his creative powers in the goldsmith's delicate art, practised by so many other famous artists of his period.

As we have already stated, documents recently discovered have thrown a singular light on many of the incidents related in Cellini's Memoirs. Among these it is gratifying to learn that the artist stands largely exculpated of the accusations, so freely brought against him, of dishonesty while in the Pope's service. Signor Bertolotti has been able, by his researches among the legal archives of Rome, to elucidate many of the singular adventures related by Cellini, among these the death of Cecchini, the incidents of the siege of Rome, and the escapade in which his rival Pompeo was killed. Signor Bertolotti has actually found the remission of Cellini's punishment, signed by Paul III., which entirely confirms the autobiography. In M. Plon's sketch of the artist's life, we are thus able to follow him through the whole of his chequered career, his youthful days, his journey to France, and all the amusing incidents of the establishment in Paris, of his workshop crowded with French, Italian, and German workmen; the Odyssey of Cellini's woes in face of the jealousy of his numerous countrymen then in France; his eventual return to Florence; the ever-memorable and exciting adventures which attended the casting of the Perseus, of the beautiful wax model for which, one of the treasures of the Bargello Museum, M. Plon gives an exquisite etching. To those interested in scandal, the author devotes a curious chapter to the numerous love affairs of Cellini, with other chapters on his general character, his death, his will, and the interesting inventory of his workshop. The artist's funeral was, as may be remembered, imposing. With all the strange contradictions in his character he was so true an artist that friends and foes alike united in honouring the memory of life was, it must be noted, only in keeping with the stirring period in which he lived.

His autobiography, curiously enough not commenced till he was 58 years of age, and discontinued in 1562, nine years previously to his death, was only published in 1728. Dr. Thos. Nugent's English translation appeared in 1771. Roscoe, it may be remembered, re-translated the

* The little house in the Via Chiara di San Lorenzo bears a simple marble tablet announcing that "in questa casa nacque Benvenuto Cellini, l'1 Nov. 1500, e vi passò i primi anni." In the Via Pergola is also marked by a tablet the house in which Cellini "modelled and cast" the Perseus, and in which he died, 1570-71.

* Now in the Louvre, and of which a good copy will be found in the Great Entrance-hall of the South Kensington Museum.

work in 1832, and Bohn has since published a new edition. Goethe, it may be noted, made known the autobiography to his countrymen by the translation he produced in 1803. The original MS. of Cellini, a small octavo, after having long lain neglected, is one of the treasures of the Laurentian Library at Florence. It may be mentioned by the way that Cellini's treatise on the craft of the Goldsmith has remained untranslated except into French.

That most difficult question of the authenticity of the large number of pieces of jewelry attributed to Cellini, M. Plon may be said to have treated exhaustively; indeed, this feature constitutes, as we have already remarked, the chief claim of the work to the attention of art-lovers. The goldsmith of Cellini's period still held his proper rank; the designer requiring, in fact, to combine, on a small scale it is true, all the secrets of the three great arts of which drawing, design, and colour are the basis and principle. Many of the creations of the Renaissance goldsmiths are, it will frankly be admitted, marvels of architectural design. The field of employment was large, and throughout Italy the activity of the goldsmiths was extraordinary. The museums of the world, after three centuries of war, destruction, and change of fashion, are still able to show how nobly the "industrial arts" of the past were patronised by the great. The curious story of the hair-breadth escapes from the melting-pot of one of Cellini's most famous, though undoubtedly not his most creditable creation, the celebrated salt-cellar now at Vienna, is well told by M. Plon. A special chapter is devoted to the numerous seals and medals which Cellini engraved,—many of them being reproduced in the work. In this difficult art, of the process of which Cellini gives a minute description in his treatise, the Florentine master was a delicate designer, if far from equalling his predecessors, the contemporaries of Pisano. The chapter devoted to Cellini as a sculptor is most interesting, the illustrations of the justly famous Perseus and its charming details being particularly worthy of notice, as also are the reproductions of the several busts by the master. As an architect, Cellini, though he has left a treatise on architecture, does not appear to have been at any time employed.

It is, of course, to his work as a jeweller and goldsmith that the chief interest of Cellini's career is attached. M. Plon examines carefully and with the aid of illustration each specimen of Cellini's work which has (in most cases owing to its reputation) escaped destruction, and wonderful is the list of the delicate little jewels and choice specimens of the goldsmith's art, in the refinements of which Cellini so singularly excelled. Among English possessions described, Lord Salisbury's wonderful crystal cup deserves especial mention. The romantic discovery of this in a long unvisited lumber-room at Hatfield aroused no small interest among art-lovers many years ago. Space forbids our entering further into an enumeration of the many other historical relics of Cellini's skill scattered over the collections and museums of the world; suffice it to say that M. Plon has carried out a delightful study by examining personally each work with which facts or tradition have associated the name of the great Florentine jeweller, whose powers, though modern aesthetic criticism may regard them as over-rated (and with justice, when Cellini's work, however delicate, is compared with that of his predecessors), merit none the less a high place in that brilliant chapter of the artistic history of the past, comprised in the wide field of what we have come to understand as the "industrial arts," as practised in days when art was a living creed, when not one of its many branches was pursued purely to satisfy commercial instincts of greed; and when no object, however small, was considered unworthy of the artist's decorative attention.

Examination of Local Surveyors and Inspectors of Nuisances.—At an examination held by the Sanitary Institute of Great Britain, November 1st and 2nd, ten candidates presented themselves. The Institute's certificate of competency to discharge the duties of Local Surveyor was awarded to Mr. W. R. Maguire, and the Institute's certificate of competency to discharge the duties of Inspectors of Nuisances was awarded to Messrs. W. H. Wells, Jesse Kemsley, T. A. Croghan, James Maguire, and W. J. Joyner.

GRAPHIC AND ANALYTIC STATICS.

In this work* we have another valuable addition to the civil engineer's and mathematical student's library. The modern method of representing graphically by means of Polar polygons and reciprocal figures the stresses on the various parts of the usual structural forms employed by the engineer and architect is very clearly and logically described. The admirable method of lettering the corresponding lines in the different figures greatly facilitates the process. Some of the words are, however, not happily chosen to express the meaning of the author. "Intensity" of force is used instead of "magnitude"; a point is said to be "got at," "come at," and "located," on a line; a resultant is said to be "evaluated," &c. There are faults in the graphic system of representing stresses which are, perhaps, inherent in its nature. The obliquity of the linear intersections, the cumulative character of minute errors, and the shortness of the lines employed to represent the stresses when the figures are brought within reasonable dimensions, make it very difficult to complete the polygons and reciprocal figures with accuracy. In many examples the old system by the parallelogram of forces is preferable. The polar system, however, leaves the figure of the structure less confused, reduces mental labour, and makes the approximate determination of the stresses almost a mechanical operation.

The chapter on direct stress, giving an account of some interesting experiments illustrating the effect of a tensile force, and showing that a metal rod may follow Hook's law, "*Ut tensio sic vis*," much beyond the elastic limit of the material, is novel. Probably the internal strains produced in rods during the process of rolling, and the presence of foreign matter in small quantities, may account for many of the eccentricities observed.

The analytical deductions accompanying, and partly founded upon, the graphic representation, which is the leading characteristic of the work, will enable the student to correct any graphical errors.

The molecular tensions produced in the various parts of a structure by stresses are equally capable of graphic treatment, even when the forms are so irregular that mathematical analysis fails. This branch of the subject is still capable of considerable development, but requires to be systematically pursued. We are disappointed that no description has been given in this work of a method so frequently and usefully employed in the engineer's office, and so intimately associated with the graphic statics employed for stresses.

The methods employed in determining the areas of intercepts, volumes of frustra, and positions of centres of gravity, appear far too complex for so simple a subject. It seems unnecessary in order to prove that the area of its circle as the angle between its sides does to 2 π , or four right-angles; or to cover three pages with close reasoning and integration in determining the volume of a wedge cut from a cylinder by two planes meeting in a point on the surface, passing perpendicular to a plane through the axis and making angles α and β with a plane at right angles to it. Here two lines of simple algebra are all that is necessary to obtain the same result.

Thus if V be the volume, a the radius of the cylinder, and b the maximum depth of the wedge measured along the cylindrical surface,

$$V = \frac{\pi a^2 b}{2} \text{ but } b = 2a (\tan \alpha - \tan \beta)$$

$$\therefore V = \pi a^3 (\tan \alpha - \tan \beta)$$

Again, two pages of integration are devoted to determining the area bounded by a circular quadrant, its tangent-ordinate and the arc of a concentric parabola, and even then the process is not completed. This problem does require the calculus, if the well-known expression for the area of the parabola be not granted, but it takes the simplest form.

Thus, if $2a$ be the radius of the circle, the area of the circular quadrant is πa^2 .

* Graphic and Analytic Statics in Theory and Comparison; their practical Application to the Treatment of Stresses in Roofs, solid Grids, Lattice, Bowstring, and Suspension Bridges, Braced Iron Arches and Piers, and other Frameworks; to which is added a Chapter on Wind Pressures. By Robert Hudson Graham, C.E. London: Crosby Lockwood & Co. 1883.

The equation to the concentric parabola is $y^2 = 4a(a + x)$. The area of the parabola is, therefore,—

$$\int y dx = 2\sqrt{a} \int \sqrt{a+x} \cdot dx = 2\sqrt{a} \cdot \frac{2}{3} (a+x)^{3/2}$$

The parabolic area between the limits $x = 0$ and $x = 2a$ is, therefore,

$$4a^2 \sqrt{3} - 3a^2$$

The area of the intercept required is,—

$$= a^2 (4\sqrt{3} - 3 - \pi)$$

The determination of the centre of gravity of a cycloidal area is another example of too much work, though considerable mathematical ability is displayed. Generally throughout the work the mathematical demonstrations appear far too abstract for the subject under consideration, and in this respect the work compares unfavourably with Barlow or even with Rankine. Nevertheless, the solutions are skilfully performed, and will prove interesting and instructive to the student for whom the author particularly intends them.

The examples seem well chosen, and very neatly and accurately drawn, but it would be as well to omit factors which do not influence the results. In estimating the pressure which a rail would exert against immovable abutments through an increase of its temperature, it is unnecessary to stipulate that it be ten miles long, or that a sleeper be "maliciously" placed across the rails when considering the effect it would have on the wheels of a locomotive.

The analytical investigations of moments of inertia are admirably clear and logical, but of the same abstract character as the other investigations. When treating of curved ribs, the author assumes that the directions of the thrusts at the abutments are known. As this is by no means the case, the results obtained are of very little use.

The directions of these thrusts can, however, be determined. It can be proved that when a force acts upon a curved rib, the thrusts meet in a point in the line of the force, and together with it divide the rib generally into four arcs, so that the sum of the moments of inertia of the end arcs is double the sum of the moments of the middle arcs taken round their respective lines of thrust: their magnitude being determined by the parallelogram of forces, and taken into account in estimating the moments. When through the proximity of the force to one of the abutments, the rib does not intersect the line of thrust, it can be produced until it does, and then the above equation of moments can be applied. When a number of forces act upon a curved rib, they may be treated in a similar manner. The resultant thrusts being determined in magnitude and direction, the polygon of thrusts can be drawn, indicating the moments of deflection at all points in the rib. We have not yet seen any other accurate account of curved ribs. It would be a great boon to the profession if a simpler solution than that here given could be found.

In the chapter on straight beams we must take exception to the statement that the tendency of the fibres to slide relatively to each other horizontally attains its maximum at the centre of a beam and at the neutral axis. If we imagine a beam divided into horizontal laminae the central section is really the only place where no tendency to slip occurs. The slip increases towards each end, and is equal or very nearly so at each cross section. The greatest resistance to such slip undoubtedly occurs where the greatest amount of motion would otherwise take place. It is the resistance of the fibres to sliding which causes the upper and lower members of a beam to follow the well-known law of elasticity throughout their depth. It is illogical to suppose, as some have done, that these shearing forces when resisted decrease the strength of a beam whose strength they have themselves created. It appears evident that if a laminated beam had its laminae securely clamped at the centre it would derive no increase of strength thereby; but if the laminae were efficiently clamped at both ends it would become as strong or nearly so as a solid beam. Clearly then the horizontal shearing strain is greatest at the ends, and diminishes towards the centre where it is nil.

Chapter 7 treats of solid girders in equilibrium, and commences at once with an attempt to equate the elastic curve, with the usual result. An equation is found which would utterly fail for considerable deflections. This is another

problem waiting to be solved in a practical form by our skilled mathematicians.

We need hardly say that the work is very creditably executed; the letterpress clear, and the lithographic illustrations excellent both in accuracy and finish, and that the author has taken great pains with the examples for class practice. But above all the graphic system will prove highly useful to those who are at present unacquainted with it; and we can only hope that the author will pursue the subject into molecular tensions.

OPENING MEETING, ROYAL INSTITUTE OF BRITISH ARCHITECTS.

The opening meeting of session 1883-84 of the Royal Institute of British Architects was held on Monday evening last in Conduit-street, Mr. Horace Jones, President, in the chair.

After the minutes of the last meeting had been read and confirmed, several donations to the library were announced, including a number of books, photographs, &c., illustrative of Sydney, New South Wales, presented by Mr. G. A. Mansfield, of that city. Among the other donors were Major Heales, F.S.A., Sir J. A. Picton, and Mr. R. Poppelwell Pullan.

Upon the motion of the President, a vote of thanks was accorded to the donors.

The following gentlemen were balloted for and declared to be duly elected, viz.:—As Associates: Messrs. Joseph Foster Wood,† of Exeter Buildings, Redland, Bristol; Francis Thomas Wilberforce Goldsmith,*† of Clytha Park-road, Newport, Monmouthshire; Charles Frederic Moore Cleverly, B.A.,† of Oaklands, Gipsy Hill; Charles Henry Brodie,† of Great Portland-street; Walter Scott,† of Tufnell Park-road; and Frank Johnson,*† of Armingher-road, Uxbridge-road.

The President's Address.

The President then delivered the opening address. After a few words of welcome to colleagues and friends, he alluded to the losses sustained and the inroads which a year had made in the ranks of the Institute since the opening meeting of last November, the number being no less than twenty-two. Among the foremost he mentioned the great Viennese master, one of the recipients of the Gold Medal given by Her Gracious Majesty the Queen on the recommendation of the general body of Fellows, Heinrich Baron von Ferstel, who died on the 14th of July last, after a long and painful illness, at the comparatively early age of fifty-five. Two days afterwards his body was conveyed to the Votive Church,—the work of more than twenty years of his life,—where the funeral service was performed previously to the interment in the family vault at Grinzing, the place of his residence when alive. A list of his principal works was to be found in the "Proceedings" of last Session, and a memoir of him would in due course be printed in the "Transactions." Three other Honorary and Corresponding Members had also died during the session, viz., Professor de Fabris, architect, of Florence, for some time President of the Royal Academy of Fine Arts in that great city; Christian Hansen, of Copenhagen, a brother of Theophilus Ritter von Hansen, of Vienna, Hon. and Corr. Member; and the Count Vespignano, Architect to St. Peter's, at Rome. Though in this country, as if to afford a contrast to the events of 1881, death seemed to have spared the elders, a more than usual number of young professional men had fallen: two even of those who a few months ago were among the first to enter the ranks of the Associates under the terms of the By-law which enforces Examination, had passed away, namely Samuel Cuthbert Rogers, at the age of forty-five, and Cecil Haden Stock, in his twenty-fifth year, the latter of rapid consumption in New Zealand, whence he was ordered in the hope of benefit from a sea voyage. Besides these there were other cruel losses, such as R. M. Marnock, Associate, a young man of promise, who died in Australia, and R. C. Page, Associate, whose recent death had evoked sincere regret, neither of whom had reached to forty years. The other Associates lost by death were A. W. Archer, W. A. Baker, B. W.

*† Have passed the Voluntary Architectural Examination in the Cases of Proficiency.

† Have passed the Examination in Architecture.

Cumming, J. W. Forge, F. P. Hughes (Madras), W. Moffatt (Aberdeen), B. A. Faice, and T. E. C. Streetfield. Two Fellows had passed away, viz. R. L. Sibley, a well-known District Surveyor, and C. N. Tripp, of Gloucester. Four Honorary Associates had also succumbed, viz., W. G. Harrison, the well-known and highly esteemed Queen's Counsel; J. Gascoigne Lynde, of Manchester; Sir Edward H. Scott, the banker; and William Spottiswoode, who, as President of the Royal Society, held a position of special honour. His loss could not fail to be felt by a larger circle than his own personal friends, and it was a mournful gratification to know that, as in the case of the late Mr. Street, a fitting resting-place had been found for the remains of the late President of the Royal Society among the highest worthies of the nation, in Westminster Abbey.

An important event of the year was the opening in state of the Royal Courts of Justice on the 4th of December last by the Queen, and with a befitting ceremony, including a deputation and address from the whole body of the workmen who had been employed upon the works. He was aware, at least he had often noticed, that in the reports given at various times by the public journals of the completion of the foundation stones, and also at the royal dedication of public buildings when the royal dedication took place, the names of the architects were generally omitted, and the buildings might have been raised by the touch of some fairy wand as far as regarded any allusion to the hands, hearts, or heads of those who had laboured for perhaps years over them. It was, therefore, an act in accordance with the kindly spirit of Her Majesty to graciously express her pleasure at the loyal address presented by the workmen of the various crafts employed upon the buildings and congratulate them upon the successful results of their honourable toil. He would not attempt to review that building, but they were all aware that shortly after its opening a good deal of criticism was evoked upon several points, especially the temperature and ventilating, and he need scarcely remind them, though he would wish to remind the public, that a newly-built and recently-finished building required some little time to dry and season, and that many of those defects in regard to heat, ventilation, and even acoustics, loudly complained of at the moment, would cure themselves in a very moderate period by the natural effect of use, of wear, and of time. The opening of the Palace of Justice at Brussels led him to remark, with feelings of some regret, that the British did not emulate the Continental peoples in their willingness to bear the expense of liberal contributions for public buildings and national monuments. Let them reflect that Belgium, a country not much more populous than the English Metropolis, and Brussels, less populous than some of the London parishes, had readily found treble the amount for a palace of justice that the English did. Had the same liberal scale been applied to those Royal Courts opened in December last, he felt sure that many unkind criticisms of the edifice would have been changed into psalms of praise and admiration. Among other buildings completed and opened during the past year, he would mention the new Galleries in Piccadilly of the Royal Institute of Painters in Water-Colours, the work of Mr. E. R. Robson, a Fellow and colleague; also the new City of London School in Blackfriars by Messrs. Davis & Emanuel, architects.

Last year he had touched upon the question of the safety from fire of public edifices, theatres more especially, little thinking that within a few short weeks the daily papers would be full of the catastrophe at the Alhambra Theatre. The original building, a clever and praiseworthy attempt to use Arabic architecture, the work of their respected friend and past vice-president, Professor Lewis, was intended as a home for science, under the name of the "Panopticon." But, as was too often the case, it had been "the alchemist's search," and instead of turning smoke into gold, it turned the gold into smoke, falling in the end into other hands. The sad and terrible calamity which happened at Sunderland, although not from the same cause, furnished another incentive for some such course being taken as he suggested last year, viz., that competent men of different nations should take the matter into serious consideration, so as to improve the efficiency of construction, the convenience, economy, and safety of public buildings. One

source of danger was the use of doors opening only one way, and when these by any chance got clogged, or were subjected to pressure by a number of people pushing against them, thus preventing their being opened, the likely and obvious result would be a serious catastrophe, to which, of course, any building might be subject equally with the one mentioned. Doors intended merely to shut off divisions might be made to open both ways upon spring hinges, or where, on account of draughts, &c., they could only be made to open one way, such as in passages, stairs, &c., they might be framed with an inner stile and rail to open in an emergency the contrary way to that which they generally did. Such a system would be particularly applicable to the iron fire-resisting doors, separating one section of a building from another.*

He had now to allude to the proposed completion of Blackfriars Bridge, and the desire of the Corporation of London to adorn the bridge with sculpture. In July, 1880, the matter was referred to the Bridge House Committee for the purpose of obtaining designs for the proposed work, which in due course were produced. The Committee had availed themselves of the courteous advice and the high talent of Sir Frederick Leighton, the President of the Royal Academy, Mr. William Calder Marshall, R.A., and Mr. George Frederick Watts, R.A., who had considered the various works sent in competition, and reported their opinion thereon to the Committee. He (the President) had had the honour of being associated with them, and unfortunately they had been compelled to report that among the various designs recommended for premiums, none were adapted for execution,—a decision which was endorsed by the Bridge House Committee, and approved by the Corporation. At the end of 1881 the matter was again referred to the Committee to proceed further, when they conferred with the same gentlemen, who gave a unanimous opinion as to a certain mode of procedure, but one which involved considerable alteration to the pedestals of the bridge. To that opinion, from various reasons, the members of the Committee objected, and they came to the conclusion to leave the piers or pedestals unredressed in size; in fact, to follow the original suggestion of Mr. Cubitt, the architect of the bridge, as to an equestrian statue; and further, to obtain, if possible, an equestrian statue from which a cast could be made, whereby an opportunity would be afforded of appreciating the size and judging the effect of the same upon one of the pedestals of the bridge. An equestrian statue had been obtained from the hand of the clever French artist, M. Clesinger, representing a gallant soldier or commander, of royal or of noble race, of the sixteenth century. Its extreme length was about 23 ft., and the extreme height nearly the same. He hoped that in a short time that model would be placed in position; though, indeed, it was quite understood by the Committee that there were many points in the work which would have to be altered or avoided in any fresh production or design intended to be any indication of the proposed treatment or subject other than as regards size and general dimensions.

In reference to the proposed communication across the Thames below London Bridge he would observe that an inquiry into the various schemes and reports placed before the Corporation and the public had tended to confirm the views held by many who had had this question long before them. In the first place, with regard to communication by ferries. However appropriate, in less crowded streams than the Thames, and where the tide is less strong, ferries had been, and though they might still be, useful means of communication between opposite banks, yet in the Thames they would serve more as an indication of what the intercourse between the two shores consisted in, than a permanent substitution for other modes of communication; and perhaps their real benefit would be to show the approximate necessity or obligation of forming the proposed communication. Secondly, with regard to high-level bridges, it

* We may observe, however, as has been over and over again pointed out, that no special contrivances for exit will be of any avail unless habitually used in a theatre on ordinary occasions, so that audiences are accustomed to employ them. An audience under an alarm of fire is a crowd of people who have nearly all lost their heads, and they will never, we fear, have self-control enough to avail themselves of any means of exit but that which they have been accustomed to.—Ed.

had been clearly shown to be probable that people would just as soon make a round or circuit as mount a considerable height only to descend again; that the actual distance to be travelled, whether by mounting and descending or taking the round of London Bridge, would not be very different in going to or from the East-end of London and the Elephant and Castle, Kennington-gate, &c.; and it had also been clearly demonstrated that a tunnel would require the same length and the same gradients as a high-level bridge, only that of course they would be reversed. Both these methods were considered by their principal supporters to be considerably ameliorated by the ample means of giant lifts and other machinery worked either by hydraulic or steam power; but there were some who looked less kindly on such appliances. Thirdly, a low-level bridge, which in respect to the land traffic was, of course, unexceptionally the most economical, meant, as regards the river traffic, which was really many times greater than the land traffic,—absolute annihilation,—as far as sea-going vessels were concerned, west of any such proposed bridge, though the nearer it was placed to London Bridge the less serious would be such annihilation. A low-level bridge with openings would not cost more than one-third of the others, and if the water-way were left open with occasional closures for, say, two or three hours during each tide, that would be the maximum interference with the river traffic. At night the opening of the bridge at high water would be continued, as the occasional closures would not be required. Various statistics had been taken, but none which absolutely showed the exact number of vehicles which pass from the north end of the Minories and more distant points to, say, Tooley-street or Bermondsey-street. From these returns of vehicular traffic and foot passengers, the one taken on 3rd July, 1876, showed that about 99 was the number of vehicles that passed in this direction and about 156 in the direction of Bricklayers' Arms and Old Kent-road, but the gain to these latter would have been very slight even had there been any other communication on either the east or west side of the Tower. Therefore it might be assumed that there were not more than about 260 vehicles for which this bridge was to be made. If, however, they doubled the number, and made it, say, 500 each way, that would be a very liberal, if not an extravagant, estimate of the present position of the traffic. It had been assumed by Sir Joseph Bazalgette and Colonel Haywood, and many others who had considered the question, that that traffic would very quickly rise to between 4,000 and 5,000 per diem, but it must be kept in mind that public money should only be spent in the improvement of present thoroughfares, trade, &c., and that to spend money for the future and speculative improvement of any district is not to improve the interests of the added number of the inhabitants because they are not there, but only to improve the value of the landowners' property on the future improvement of special trades or commerce, improvements which common political economy most plainly indicated should be borne by individuals and not by the public, any more than the public should pay the expense of new roads, sewers, railways, &c., of agricultural or waste land in order to permit the freeholder to reap the advantage of it as land ready and laid out for building purposes. A temporary steam ferry had been estimated to cost from 10,000 to 20,000, per annum, and if one could be substituted for a year or two at 14,000, or 15,000, it would demonstrate the propriety or non-propriety of expending a capital sum the annual interest of which would be equal to 30,000, per annum at the lowest, and, under certain circumstances, to 120,000, or even more. In regard to a high-level bridge, it had been already demonstrated that a height sufficient to leave the river traffic uninterrupted would render the bridge utterly useless, on account of the length of the ascents and descents. Lifts, say 70 ft. or 80 ft. high, might mitigate this to some extent, but would of themselves be an unsatisfactory solution of the problem. Then, as to cost, Sir Joseph Bazalgette estimated the cost of a high-level bridge at between two and three millions. A tunnel would be equally inconvenient, incur much the same expense, and, without lifts, would be equally useless. One scheme, devised by private enterprise last year, was lost before Parliament. It had, however, the inconvenience or con-

venience, as the case might be viewed, of twelve lifts, six on each shore, and their estimate appeared to promise some considerable economy. A low-level bridge appeared now to be the only matter to be dealt with. First, let them take that which would be most convenient for land traffic, viz., an uninterrupted one. The nearer it was to London Bridge the less damage would it do to the river traffic. One had been designed, keeping very nearly on a level with Fenchurch-street, the upper floor of Billingsgate Market, the departure platform of the London and Brighton Railway, London Bridge, and running into High-street, Southwark. The cost of that would be considerable, probably approaching two millions, and it would receive serious opposition from the owners of Fresh Wharf. The one proposed to be erected upon the site east or west of the Tower would cost, if continuous, about half a million of money, but it would be the ruin and annihilation of all the wharfs westward of it to London Bridge, including Billingsgate, and it would be pursuing a diametrically opposite course to that pursued by Manchester and other important commercial centres, viz., bringing sea-going ships as near the heart of their trade as possible. It would interfere with and stop the reception of thirty or forty millions per annum which would be gladly welcomed by the wharfs at Ratcliff, Limehouse, Blackwall, down to Gravesend, as also by the docks which had been and were still being made; and when a trade was once displaced it might seek other and more distant localities. To obviate that,—a serious and imperative reason,—a low-level bridge must be made with openings readily worked and thoroughly adapted to passing an average of about twenty sea-going steamers to and fro per diem (say ten each way each tide). The present line of berthing ships gave a clear space of say 300 ft., and if that, or even if desired or deemed necessary a few feet more were given, no more inconvenience need arise than existed now in passing the line of boats and ships berthed as at present. If that 300 ft. space were maintained, and the bridge kept open at high water, at a slight inconvenience to the land traffic, no complaint of obstruction could be made as to the river traffic. Such a low-level bridge could be constructed, either as a swing or lever bridge, or a bascule or lifting bridge, designs for all of which have already been before the Committee and the public. One proposal made by an eminent engineer was to put a pivot bridge in the middle of the stream; that appeared to be a mistake, as it reduced the maximum of the opening to only about 180 ft. clear of the berthing line of barges, &c. There were several other methods which had been submitted, and which might probably be remembered, such as the shooting bridge to be shot out or slid from each side to meet in the centre; also a scheme for raising the centre portion bodily 100 ft. high, and another to sink it down into the depths of the water, &c. Of those, time would not permit him to speak further.

To revert now to the more immediate concerns of the Institute, the President was glad to be able to state that arrangements had been made with the Glasgow Institute of Architects, a society constituted on the same bases of professional obligation and motive as the metropolitan chartered body, whereby an examination of candidates desirous of qualifying for candidature as Associates of the latter would be held at Glasgow, provided only that a sufficient number of applications be received before the end of this year. He anticipated ultimate success for this attempt to spread architectural education, and he went so far as to hope that similar examinations to those already held in London might be annually conducted by local societies of architects, not only in Glasgow but also in Manchester, Leeds, Birmingham, and, the fates being propitious, in Bristol. As a proof of the increasing interest in teaching and examination, he would remind his audience that in his address last November he had mentioned the City and Guilds of London Institute as coming into use and worthy of support. He was pleased to be able to state that this year the candidates for examination in that Technical College numbered 2,397, as against 1,972 in 1882, giving an increase of 425.

Last year he had also alluded to the privileges of non-Metropolitan Fellows of the Institute as compared with those of the Metropolitan Fellows. Since then considerable progress

towards an understanding in the matter had been made. A special committee of the Council was appointed to confer with the Manchester Society of Architects on the subject, the result being that a communication was made to Mr. John Holden, the hon. secretary of the latter body, of which the following is a *verbatim* copy:—

"Referring to the Memorial dated the 16th of August, 1882, in respect to the position and privileges of non-Metropolitan Fellows of the Royal Institute of British Architects, submitted on their behalf by your Manchester Society of Architects, referring also to the Conference held in London on the 3rd of December, 1882, between the representatives of your Society and a sub-committee of the Council of the Institute, whose report, dated the 6th of January, 1883, containing resolutions agreed upon by the Manchester Society and the sub-committee, offered suggestions for ascertaining the sense of the whole body of Fellows in respect to annual election of officers and the affairs of the Institute generally without compelling every non-Metropolitan member to travel to London in order to record his vote in person: we have to state that after long and careful consideration the Council have decided to meet the views of the memorialists in the matter of eliciting individual opinions and advice in writing from the general body of Fellows. For this purpose, with regard to the next annual election, it has been decided as a tentative course to forward, prior to the first issue of the Balloting List, a circular letter to every Fellow throughout the United Kingdom inviting him to fill in on a blank form (to be enclosed with the circular) the name of any Fellow, or the names of Fellows not exceeding four, whom he would suggest to the consideration of the Council for nomination in such list as ordinary member or members of Council for the ensuing year of office.

With regard to the enactment of any new by-law, or the alteration, repeal, or suspension of any existing by-law proposed under the terms of By-law LXXII. or with regard to professional questions of general interest, the Council propose to adopt a similar tentative method of previously ascertaining the views thereon of the whole body of Fellows. Before this decision was arrived at the Council sought legal advice in respect to the true limit of interpretation to be given to that clause in the Charter which states that 'at all general meetings and meetings of the Council the majority of the members present and having a right to vote thereat respectively shall decide upon the matters propounded at such meetings.' The Hon. Solicitor was good enough to devote much attention to the subject, and the result confirmed the Council in their opinion that a Fellow, in order to use his privilege of voting, must be present in person, while any suggestion which might nullify or even evade that law would be in opposition to the true intent and meaning of the Charter.

Imbued with these convictions, but feeling at the same time a sincere desire to satisfy, as far as lies in the power of the Corporate body, the wishes of non-Metropolitan Fellows, anxious also to see the latter engaged equally with their Metropolitan colleagues in the work of the Institute, the Council trust that this proposal for previously obtaining the advice in writing of the whole body of Fellows in respect to the annual election and the affairs of the Institute generally, will be accepted by Fellows resident at a distance from London in the spirit in which it is offered, and that the tentative efforts to be made next year for the purpose may prove useful and beneficial to the Institute at large.

At the same time a slight modification of By-laws Nos. XXVI. and XXVII. in regard to the election of officers had been proposed and accepted, particulars of which it might be desirable to mention. In January last a friendly requisition was submitted under the terms of By-law LXXI., signed by William White, F.S.A., Fellow; Ewan Christian, vice-president; Thomas W. Cutler, Fellow; Robert W. Edis, F.S.A., Fellow; R. Phené Spiers, F.S.A., Fellow; John Noyes, Fellow; Alfred Waterhouse, A.R.A., member of Council; and Joseph Peacock, Fellow, asking the Council to consider the By-laws XXVI. and XXVII., on the grounds that, in the opinion of the requisitionists, the nomination to the highest offices of the Institute ought to be in the unrestricted discretion of the Council. A conference between them and the Council was held on the 26th of February last, when, on their behalf, two resolutions were offered to the Council as suggestions in respect to the alterations of the by-laws in question, and after careful and protracted consideration of them the Council arrived at the decision contained in the following extract from the minutes of meetings of Council held on the 11th and 12th of June:—

"That as regards the nomination of the President, the Council shall be empowered to nominate for election any Fellow or Hon. Fellow of the Royal Institute of British Architects; that present and past members of Council alone shall be eligible

for nomination as Vice-President; and that no Vice-President who has filled the office for six successive years shall be eligible for re-election as Vice-President until the expiration of twelve months from the termination of his office. Further that the enforced retirement of members of Council annually by rotation is not desirable."

In accordance therewith the President added that the Council proposed to take the earliest opportunity of recommending to a Special General Meeting of the Institute the alteration of By-laws XXVI. and XXVII., and, if necessary, other by-laws relating thereto.

It might be here relevant to the subject if he made some allusion to a circumstance connected with the career of one of their most esteemed past vice-presidents. It was of course no news to them that Mr. George Godwin, who for some forty years had conducted the oldest professional journal in this country, namely, the *Builder*, had just abdicated the editorial chair, and the President trusted that in the able writer and artist who succeeds him they would find, as he had no doubt they would find, the same courteous spirit and fair gentlemanlike criticism which had insured to Mr. Godwin, both during his editorship and on his retirement, the respect and sympathy of all his friends and colleagues.

Some time during the session now opened, probably about July, continued the President, the Institute would enter upon its fiftieth year of existence, and though he had no wish to forestall the interesting remarks which would be more appropriate in the month of his successor, he thought it an agreeable duty to intimate the near approach of so interesting an event. Of those worthy who met, in 1834, their excellent and venerable friend, Professor Donaldson was the only survivor. He trusted that when they were called upon to celebrate their full half-century, the Professor would be with them in health and spirits to point a moral and adorn a tale of interest and importance, he ventured to believe, to the profession of architecture. At the jubilee of the Institute, a large number of architects from all parts of the United Kingdom would probably be gathered together in London, and following the precedent of 1881, the Conference would take place at the period of the annual meeting during the first week of May. He trusted that the gathering would be not only national, but even international, for he had reason to know that more than one Foreign Corresponding Member would, on the occasion, gratify their British *confidés* with their presence in this country.

Mr. Waterhouse, A.R.A., in proposing a vote of thanks to the President for his interesting and vigorous address, said he would not attempt to follow the President through all the different parts of it, especially through his arguments with regard to improved Thames communication between the two sides of the river below London Bridge, because he (the speaker) had given very little attention to the subject, though he felt it to be a very important one. He was sure that they would all regret the premature death of Baron von Ferstel, who was an architect of unusual power, as all who had seen his works in Vienna could testify. It saddened one to see one after another taken from them; at the same time, however, they were consoled and reassured as to the future when they observed the greatly-increasing excellence of the work of the younger members of the profession. In reference to the proposed equestrian statue at Blackfriars Bridge, he thought that if it were possible always to erect plaster casts of statues in the first instance, they would not have so many sculptural abortions as they had to lament.

Colonel Prendergast, Honi. Associate, in seconding the motion, said that the President's address was full of valuable matter, especially the part which referred to the vast bridge across the Thames which must be built sooner or later. But he thought that the traffic across London Bridge could be considerably reduced if there was some understanding with the great carrying companies of the metropolis. For instance, the London and North-Western Railway Company had an enormous depot in Broad-street, near Finsbury-circus, to which goods were brought without there being, as he believed, any necessity. Their distribution from this crowded locality did much to crowd the approaches to London Bridge. In regard to the remarks as to the entrance of members to the Institute, they were, he thought, upon the eve

of a great change in public opinion. There was no one in that room who more highly appreciated than he did the architectural works of the Middle Ages, but signs of a coming change of style were apparent, and it behooved the younger members of the profession to study deeply the great architecture of antiquity. He ventured to hope that in the Examination recently instituted something might be done to give due weight to the importance of this study, which he might call the grammar of their profession.

Mr. Hyde Clarke, in response to a call, briefly supported the resolution. He referred to the coming fiftieth anniversary of the Institute, and said that he could not look back so far as their venerable friend, Professor Donaldson, but he had been associated with the Institute for forty years, and at a time when it was not held in such public estimation as was now the case. The President had referred to the departure from the editorial chair of the *Builder* of Mr. George Godwin, and that reminded him that at the time of which he (Mr. Clarke) spoke the criticism of architecture did not occupy the same position as was the case in the present day.

The motion having been carried by acclamation, the President spoke a few words in acknowledgment, and the proceedings terminated.

LINCOLN'S INN FIELDS AND THE METROPOLITAN BOARD OF WORKS.

Or all the grand projects for new bridges, streets, and communications for London proposed or foreshadowed by the Metropolitan Board of Works recently, none, we venture to think, will pass without considerable discussion, and perhaps we may add, modification. There is one, however, to which we especially referred in our issue of November 18 last year, viz., the project for communications north and south between the localities on the upper and lower sides of Lincoln's Inn-fields,—from the Thames Embankment to the North of London, including the approaches to the New Law Courts and important adjacent buildings,—between such places as Somerset House in the Strand, and the British Museum in Bloomsbury, the railway stations on the Embankment and those in the Euston and St. Pancras roads. To this scheme we would now further refer, because we believe the exact route is not decided, and because we think the matter of material importance to a vast number of the inhabitants of the metropolis, not only at present but in the future. The rumour which has reached us is that the route recently contemplated by the Metropolitan Board of Works was not dissimilar in some respects,—at least so far as the southern forks were concerned, those from the two churches of St. Mary and St. Clements (the one an old route improved, the other a new one partly cut out of the Government property on the west side of the Law Courts)—from that of the plan published by ourselves on the above date, prepared by Mr. C. Forster Hayward, architect, but dissimilar in that it proposed to carry the traffic through Lincoln's Inn-fields, bringing it all into Holborn merely, without any provision for carrying it on further northwards. To this there are many and grave objections, and we hope they have shown themselves ere this as strongly to the Board as to ourselves. The first is the destruction almost of that noblest of all squares, Lincoln's Inn-fields, one of the lungs of London, by choking it with dust and noisy traffic just when open spaces are so valued. In contemplating the future we fancy we see strings of vehicles and clouds of dust, which may not for the present be visible even were the route open at once; for we know how slowly, comparatively, the lines of traffic readjust themselves; but we also know how the traffic seems suddenly to swell and grow as soon as the advantage or importance of the route is apparent.

What the legal inhabitants of the west side and adjacent corners of "the Fields" will say to the Board's proposal we can well imagine, and that they will represent their case forcibly and clearly we have no doubt when the time comes. We should, however, hope that when a good alternative route is pointed out and shown, on good authority, to be not only practicable, but economically valuable, it will prevail over an ill-advised line which may appear at first sight only to be economical, but which is evidently not so, when the matter is studied on the spot

and with the rate-book as a guide. Another objection surely would be that after all the taking down of houses and sacrificing valuable frontages to form the entry into Holborn, there is no route on the opposite side,—nothing beyond Holborn itself, not even the smallest alley or turnstile in continuation, so that to make the advantage of this plan equal to the proposed route through Little Queen-street a line would have to be cut through a large number of buildings on the north side, costing a very heavy sum in addition to that requisite for acquiring and utilising the property in Gate-street and Little Turnstile.

On the other hand, Mr. Hayward's proposed route, passing through property at the back of Lincoln's Inn-fields, west of its western side, low in value, and of a character unworthy of the locality, being also even partly vacant and useless ground,—would enter Great Queen-street in a line with Little Queen-street, the long-expected improvement of which must come sooner or later, and crossing in the least possible space and most direct manner,—a straight line,—continue immediately up Southampton-row to the north, with the very least possible obstruction to the traffic east and west, which is often very great at this point. Here Mr. Hayward proposes an octagonal "Place,"—a form which lends itself well to the proposed street arrangements, and would do so the more were the station of the contemplated railway from St. Pancras to Charing Cross planted here, as we believe is in contemplation.

The one great object of going north and south without break would be accomplished by this route, and access to the important northern railway termini made a fact which hitherto has been only a dream of the future.

We cannot but credit the Board with the very best intentions in their desire to provide new main arteries in the great London system; but we plead for retaining what is valuable, while making the necessary sweep of encumbrances. In the same way we should hope that the paragraph which appeared recently in our own pages as to the contemplated removal of the two churches in the Strand,—buildings as picturesque and as valuable monuments as any in London,—is but a distorted dream, and that no member of the Board, much less the concentrated wisdom of that body, would consent to discuss their removal. There is ample room to set back the lines of street frontages to a useful extent on the north side, where is the chief line of access to the Law Courts, and the position of the buildings dividing the traffic is in no way objectionable, but the reverse. Let them alone! *

DEMOLITION IN GRAY'S INN-ROAD.

So multitudinous are the courts and alleys which open out from the several streets in the denser portions of the metropolis that we shall scarcely miss those which have just been removed for the widening, in its southern portion, of Gray's Inn-road. Yet the number of these particular approaches and passages is not inconsiderable in itself; and ere their names and situation are lost beyond recall we give a list of them,—far completer than may be found in the usual authorities,—for the use of students of London topography in the future. Reckoning from the Holborn end of the lane, they are as follow:—Fox-court, Feather-court, Bell-court, Plough-yard, Spread Eagle-court, King's Head-court, Huns-alley, Tyndall's building, Baldwin's gardens, Baldwin's court, Boarded-alley, Queen's Head-court, Verulam-street, Pinder (or Pinner) alley, Leopard-alley, Maidenhead-alley, King's Head Inn-yard, George-court, Black Horse-yard, Rose and Crown-court, Portpool-lane, Nag's Head-court, Barna-yard, Cook and Dolphin Inn-yard, Red Lion Inn-yard, and Black Bull Inn-yard. The Standard and Cow yards, with the Talbot Inn, were recently absorbed by the Town-hall, and Sparrow's Rents by Reid & Co.'s brewery, which was formerly the old Boar's Head brew-house, and, with the three adjacent houses in the lane, belonged to the Bristol Corporation. These several messuages stood partly on the property appertaining to Bath House, and partly in the manor of Purtpool or Portpool. This latter remained

* We learn that a memorial is in progress of signature, by those interested in the locality, to the Metropolitan Board, against a proposed protest against the presumed interference with Lincoln's Inn-fields on its west side,—except merely to improve the footway into Holborn.

hereditary in the Gray family from 22nd Edward I. to the time of King Henry VII., when, in the year 1505, Lord Gray de Wilton denied his manor, together with certain messuages and gardens, to one Hugh Denny. From him the property passed into the hands of the prior and convent at East Sheen, Surrey, who leased "the mansion of Portpoole" to "certain students of the law" for an annual rent of 6l. 13s. 4d. At the Dissolution the members of the Society of Gray's Inn were transferred to the king's books as fee-farm tenants of the crown, paying the same rent as to the monks of Sheen. Bath House, mainly rebuilt by William Bourchier, Earl of Bath, in the beginning of the seventeenth century, was again reconstructed by Fulke Greville, Lord Brooke, who here fell a victim to the resentment of his dependant, Ralph Haywood, on the 1st of September, 1628.

Lord Brooke, whose memory survives in the adjacent Brooke's Market, Greville, Beauchamp, and Brooke streets, was schoolfellow with the author of the "Arcadia" at Shrewsbury, under Thomas Ashton. He it was who desired that his epitaph should set forth as his principal claims upon the regard of posterity that he had been servant to Queen Elizabeth, counsellor to King James, and friend to Sir Philip Sidney. In that part of the lane* which is now pulled down Pym and Hampden are said to have lodged when the Star Chamber was investigating a certain question relating to ship money. John Aubrey, the antiquary, lived in Rose and Crown-court, as may be gathered from some letters addressed to him in the period 1672-3, by Sir Thomas Browne "at W. Henry Coley his house." There. Of Fox-court we have lately spoken.[†] Pinner, or Pindar, court will live awhile by name in the Pindar of Wakefield, an old tavern, famous in its day, at the further end of Gray's Inn-road, near the St. Chad's Well. Baldwin's-gardens, with an uneasy repute rivalled by that other ancient sanctuary Fulwood's-rents, its neighbour, home of Ned Ward, and,—strange conjunction,—of the Spectator, was so styled from Baldwin, gardener to Queen Elizabeth. Few traces, save in direction only, exist of the once fair and pleasant way leading past Battle-bridge by Maiden-lane to Hampstead and Highgate, which aroused the admiration of Stowe. Still, remains of Fielding will be pleased to be reminded that Tom Jones, in his search for Sophia Western, first entered London with Partridge by Gray's Inn-lane, a thoroughfare that formed, in later times, the route for the old Paddington stage from the then new New-road to Holborn-bars.

THE SEVERN TUNNEL.

In our remarks of the 20th ultimo (*ante*, p. 510) on the flooding of the Severn Tunnel, we suggested the possibility of having to resort to the expedient of sinking a cylinder directly down on the site of the leak. This, the *Times* of November 1 states, the engineers have now determined to do; although the word "shaft" is used instead of "cylinder." Will the engineers of the tunnel take it in good part if we suggest (considering the great risk, both of cost and of human life, that is incurred in a case of the kind), that the use of an iron cylinder, made in segments, will probably be found not only the most secure, but ultimately the cheapest, method of sinking? A firm basis will thus be afforded for sinking, winding, and pumping operations, which no other mode of protecting a shaft can secure. And if the use of compressed air should hereafter become necessary, the method, if contemplated in deciding on the size and strength of the iron cylinder, may be hereafter introduced without additional expense.

The disaster which befel the tunnel at the equinoctial spring tide must not in any way be confounded with the leak. The only point for remark as to the overflow of the Severn tide pouring down the shaft is, that in the basin of a river notoriously subject to some of the highest tides in the world, it might have been thought that the bank-head of a tunnel shaft would naturally have been raised above the highest known level of rise of tide. For that, however, the contractors are quit at the moderate cost of one or two horses, and so much extra pumping. It is as extraordinary as it is happy that no men were lost. The overflow is

now pumped out, and a door, constructed to shut off the western part of the tunnel, being closed by divers, on the 31st October, the drying of this part of the works appears to be quite within reach. This, however, tells us nothing as to the leak; and the influx of tidal water renders unavailable the test which we suggested as to connexion or non-connexion with the channel. As far as we can form an opinion from what has been published as to the results of the pumping, we are inclined to hope that the local reservoir theory may prove to be true. But there is no kind of work, which it comes within the province of the engineers to execute, as to which it is so impossible to anticipate the phenomena as in the case of tunnelling. In the Kilsby Tunnel, on the London and Birmingham Railway (2,398 yards long), the usual trial borings had been made, but unaccountably missed a quicksand, which extended over a length of 450 yards of tunnel. Pumping machinery of a magnitude which at that time was thought very formidable had to be created; and for nine months 2,000 gallons per minute were raised from the treacherous soil. It was at one time feared that the work would have to be abandoned, and a new application made to Parliament to sanction a diversion of the line. As it was, the actual cost of the tunnel was raised from 99,000l., for which it had been let, to nearly 300,000l., or from 40l. to 125l. per linear yard. These figures show a remarkable contrast between the cost of removing the solid and the liquid contents of a given section of tunnel. The former is a matter the cost of which may, under ordinary circumstances, be fairly approximated. As to the latter, if extra expense once begins there is no telling where it will stop. The original Thames Tunnel of Sir M. I. Brunel cost 1,137l. per linear yard, or a little over two millions sterling per mile.

EDINBURGH.

ALL the scaffolding has been recently removed from the Cathedral Church of St. Giles, and it is now apparent that the additions to the exterior, whatever objections may be taken to details, have to some extent mitigated the hard formality which was the result of Mr. Burn's operations. It is manifest, however, to the most superficial observer, that a good deal remains to be done in order that the exterior may present anything approaching a satisfactory effect. The north elevation, towards the High-street, may safely be left as it is; but the south transept still exhibits the built-up doorway, with the flight of steps leading thereto. Now that the new west doorway is free from obstruction, the baldness of the remainder is brought into more striking prominence, and the east end would not suffer by being overhauled and relieved from its present flatness.

In the Grassmarket a very humble upper room, over a shop, has been used as a working men's church, but this process of setting aside special places of worship for different branches of the body politic does not seem to meet with general approval. A site has recently become vacant at the south-west angle of the Grassmarket, by the demolition of some old buildings, and upon this site it is proposed to erect a new church, to accommodate a congregation of 200, with a hall in connexion therewith to seat 300 persons. The new church is to be dedicated as a memorial to the late Dr. Robertson, of Greyfriars parish. The site is one where picturesqueness should be aimed at, and this may be attained even although the funds at command are small. Situated as it will be at the base of the Castle Rock, any attempt at producing an imposing effect is likely to prove abortive.

On a recently-cleared site to the west of the original Chalmers Memorial Church in the West Port, a new police and fire-station is to be erected from the plans of Mr. Robert Morham, City Architect. The building is to be four stories high, and the style will be of Scottish character in keeping with the architectural features of the locality. Upon the ground-floor there will be a charge-office, a district sergeant's room, muster-room, lamp-room, six cells, and fire-engine room. The upper floors are to be occupied as dwelling-houses by members of the police-force and fire-brigade. The new Chalmers Memorial Church to the westward is now completed, so far as the exterior is concerned. The spire is imbued

with that sturdy massiveness which is a characteristic of old Scottish churches, and when toned down somewhat will accord well with the surroundings. The body of the church is hardly so satisfactory, but is not devoid of a certain quaintness of effect which is appropriate to the locality.

Episcopal sanction has been obtained for the erection of a mission-hall for the temporary accommodation of a congregation at Golden Acre, Inverleith-row, at a cost of 500l. If it is found that a sufficient congregation gathers to this centre, a suitable church will, in due course, be erected.

The Clydesdale Bank-buildings in George-street have been considered one of the happiest efforts of the late Mr. David Bryce. The central portion of the elevation towards George-street is recessed, and there is a plain doorway approached by a flight of steps. This having been considered by the bank authorities a defect, Mr. Macnaughton, architect, was employed to remedy it. With this view a balustrade of the usual type has been placed at the foot of the flight of steps. Some alterations have been made in the interior by the removal of pillars which were considered obstructive. The floor has been laid with encaustic tiles, and the walls decorated in a tasteful and effective manner.

In connexion with the Free Church Assembly Hall, certain adjoining buildings fronting Lawnmarket and in Milne's-court are to be removed to widen and improve the east corridor of the great hall, and upon part of the ground there is to be erected a minor hall and other accommodation. One of the old landmarks of the city will, by these operations, be swept away; it presents towards the Lawnmarket a quaint tumble-down frontage. The very picturesque house immediately opposite, at the head of the West Bow, was pulled down some time ago, and a new block is to be erected thereon forthwith. The new buildings erected here keep up the traditions of the past, and future generations may look upon them in somewhat of the same light as we did upon those which have disappeared.

A statue of the late Professor Dick is to be erected in the quadrangle of the Veterinary College, of which he was the founder. It is to be cut in freestone, by Mr. John Rhind, sculptor, and, with its pedestal, will stand 12 ft. high. The deceased Professor is represented as seated and attired in the ordinary frock coat, and in his right hand he holds the fetlock bone of a horse. The left arm is thrown back over the arm of the seat, the countenance denoting that he has given utterance to some emphatic remark. The likeness is said to be striking, and the manner in which Mr. Rhind has carried out the work is considered highly satisfactory.

During the summer vacation considerable alterations have been effected in the south-eastern portion of the University buildings. The Librarian's house has been converted into a Senate Hall, while the old Senate Hall, with its ante-room, has been converted into a public office and secretary's office. The entrance to the Senate Hall is by a Doric doorway in the middle of the south-east quadrangle. The Senate House is 36 ft. long by 24 ft. wide, and 18 ft. high. There is an ante-room divided from it by a screen, with Ionic columns and wide-sliding doors, admitting of the two apartments being thrown into one, with an available length of 48 ft. There is an appropriate cornice, and above it is a curved cove with moulded ribs, which are carried across the ceiling, dividing it into panels, two of which are fitted with ventilating gas-burners. These alterations have been carried out under the superintendence of Mr. Morham, City Architect, at a cost of about 1,300l.

Danger from Panic in Theatres, &c.—

Mr. J. G. Buckle writes,—"I would call the attention of architects and managers to a fastening for doors known as Arnott's patent bolt, a really practicable and serviceable invention. It is intended for all doors used by the public in places of entertainment. It only allows the door to be opened outwards, requires no manipulation, and can be opened by a slight push from the inside. When the door has once been opened it can only be rebolted by the attendant, and it is quite impossible for the bolt, under any circumstances, to slip into the socket. With such a bolt on the door the Sunderland calamity could not have occurred. All the doors in public buildings should be fitted with this or some similar contrivance."

* The southern portion of what is now known as Gray's Inn-road was, until a few years ago, called Gray's Inn-lane.
† See the *Builder*, vol. xlv., p. 345 (Sept. 15, 1883).

THE ROYAL COURTS OF JUSTICE.

We hear that statements are abroad that it has been decided to construct a staircase from the north corridor in the Royal Courts of Justice (that is, the cross corridor which connects the long court corridors) into the Great Hall. We pointed out some time ago in discussing the merits and failings of the new buildings, the absolute necessity for such a staircase, both for practical use and for the completeness of the hall. The serious mistake in omitting this staircase was very prominently marked on the opening day of the present sittings of the court. The judicial procession headed by the Lord Chancellor in his black and gold robes, preceded by his mace-bearer, having solemnly walked up the centre of the hall from the Strand entrance, was compelled, on reaching the top, to disappear into the dark crypts and to proceed through dismal passages adorned with a refreshment-bar, and then up a back staircase, past lavatories, and robing-rooms until it reached the court corridors. The Queen's Counsel and others followed by the same route, though some braved the darkness of the winding staircases leading into the east and west corridors. Had there been a staircase leading directly from the Great Hall, the procession would have proceeded in the same dignified way as it began straight up to the entrance of the different courts. In a lesser degree the same inconvenience is felt every day, and it is much to be hoped that the authorities will lose no time in making the necessary changes. This great cardinal matter is one of so much practical and artistic importance that we refrain from making any observations on some minor details in connexion with this important national building, so that nothing shall lessen the importance of this main point.

CONCRETE GROYNES OPPOSITE PASTON PLACE, BRIGHTON.

In our last volume (p. 604) we gave illustrations of the premised designs for certain improvements which the Corporation of Brighton propose to carry out on the eastern part of the sea-front known as the Madeira-road, and we this week give an illustration of a concrete groyne which has been built on the shore opposite Paston-place, to the eastward of the proposed improvements, as it is through the operation of this groyne that the Corporation are able to acquire the land upon which they will be constructed.

Paston-place is a street leading down from the Sussex County Hospital to the sea in the vicinity of Kemp Town, at a point about half a mile from the eastern boundary of the borough, and at this point the sea-wall is about 60 ft. in height, with a double flight of steps leading from the Marine-parade to the beach. The groyne shown in our illustration has been built opposite the centre of the steps, and extends from the base of the cliff southward into the sea for a distance of 550 ft. The extreme height from the footings to the top of the groyne (exclusive of the parapet walls) is 32 ft., and the width in the middle is also about 32 ft., but made circular and battered as shown on the drawing. The structure is tapered towards each end both as to width and height, being stouter in the centre where the height is greatest, and where the force of the sea is more severely felt.

It was originally intended to be built simply as a groyne, with straight sloping sides, but it was afterwards determined to make the upper part of the sides upright and to enlarge the centre, so as to form a small promenade pier, which has since been fitted with seats, and makes a quiet and agreeable lounging-place, immediately overlooking the sea. The sloping part of the groyne is built to a batter of 1 in 3, and the whole of the work is faced with blocks containing about 3 cubic feet in each, made separately in moulds with large flint stones, bedded by hand in Portland cement, the bed and cross joints of the blocks when set being also of cement. The blocks are regularly bonded in the manner of masonry, and the hearing between the facing blocks is filled in either with blocks made of Portland cement and shingle, or, where the work is above the tidal action, with cement concrete laid in mass in the usual way. The blocks are made of a small size, so that they can be easily handled

and fixed without the aid of expensive scaffolding and machinery.

Before this groyne was built there were several timber groynes between Paston-place and the Chain Pier; but in spite of these the sea came nearly up to the foot of the sea-wall and washed away the roadway which had been formed at its base, whereas, since the erection of the concrete groyne a large bank of shingle has accumulated between Paston-place and the Chain Pier, so that not only is the roadway quite safe, but the old groynes are buried beneath the shingle, and several acres of new land have been acquired. This operation is still going on, and when the accumulation of shingle shall have proceeded so far as to cover the whole of the west side of the groyne, the Town Council will have ample space upon which to construct the terraces, lawns, baths, and other works which they have in contemplation. Already Mr. Magnus Volk, the enterprising electrician, who has recently lighted the Royal Pavilion by electricity, has undertaken to extend an electric railway from the Steine to Paston-place, along the south side of the new road, and to construct an inclined plane or lift on the west side of the Paston-place steps by which passengers can be taken up from the Madeira-road to the Marine Parade.

The question of reclaiming land from the sea is an interesting one anywhere, but is especially so at Brighton, where the shore is daily becoming more and more crowded with visitors from London and elsewhere in search of health and recreation, and where a battle has for generations been waged against the encroachments of Father Neptune. Lord Macaulay, in his History of England, says that "Brighton was described in 1770 as a place which had once been thriving, which had possessed many small fishing barks, and which had, when at the height of its prosperity, contained about 2,000 inhabitants, but which was sinking fast into decay. The sea was gradually gaining on the buildings, which at length almost entirely disappeared. Ninety years ago the ruins of an old fort were to be seen lying among the pebbles and seaweed on the beach, and ancient men could still point out the traces of foundations on a spot where a street of more than a hundred huts had been swallowed up by the waves. So desolate was the place after this calamity, that the vicarage was thought scarcely worth having. A few poor fishermen, however, still continued to dry their nets on those cliffs on which now a town, more than twice as large and populous as the Bristol of the Stuarts, presents, mile after mile, its gay and fantastic front to the sea."

Gideon Mantel in his "Geology of Sussex," written in 1822, in the chapter headed, "Present Effects of the Ocean," gives a similar account of the encroachments of the sea, and mentions Brighton as having lost forty acres, but now the case is somewhat reversed, for during the last twenty years or so the Brightonians have shown so much spirit in the contest, and the operations have been carried on with so much judgment, that they have not only held their ground, but have been able to get back from the sea some of that which had been taken from them.

The King's-road has been widened on several occasions, so that it is now more than double the width that it was twenty years ago. The Aquarium has been built upon land that was but a few years ago under water, and a resolution has been recently passed by the Town Council ordering the extension of two concrete groynes opposite East-street and the Steyne at a cost of 10,000*l.*, and a further widening and improvement of the King's-road at a cost of 25,000*l.*

The groyne opposite East-street is near the centre of the town, close to Brill's Baths, and was the first one of the kind which was built, having been designed by Mr. Lockwood in 1865, to provide a more substantial and permanent defence than was afforded by the old timber groynes, which, although constructed of oak and greenheart timber in the best manner, were found to be unequal to the work required of them. A few planks washed off a timber groyne will allow thousands of tons of shingle to be swept away before means can be taken to prevent it, and the never-ceasing action of the sea upon the iron bolts and timbers produces a motion and a wearing of the parts, and a consequent weakness, which renders constant renewals necessary. The concrete groynes have up to the present time required scarcely any repairing at all, and are not likely to do so, whilst they have in every

case answered the purpose of accumulating shingle in the manner desired. The first cost is heavy, but in the end they are much more economical than timber groynes.

The cost of the groyne shown by our illustration, including the additions required to form it into a promenade pier, was 10,350*l.* The work was executed by Messrs. George Cheesman & Co., contractors, Brighton, from the designs and under the superintendence of Mr. Philip C. Lockwood, C.E., the borough surveyor.

WESLEYAN CHURCH AND SCHOOLS, ADDISCOTBE.

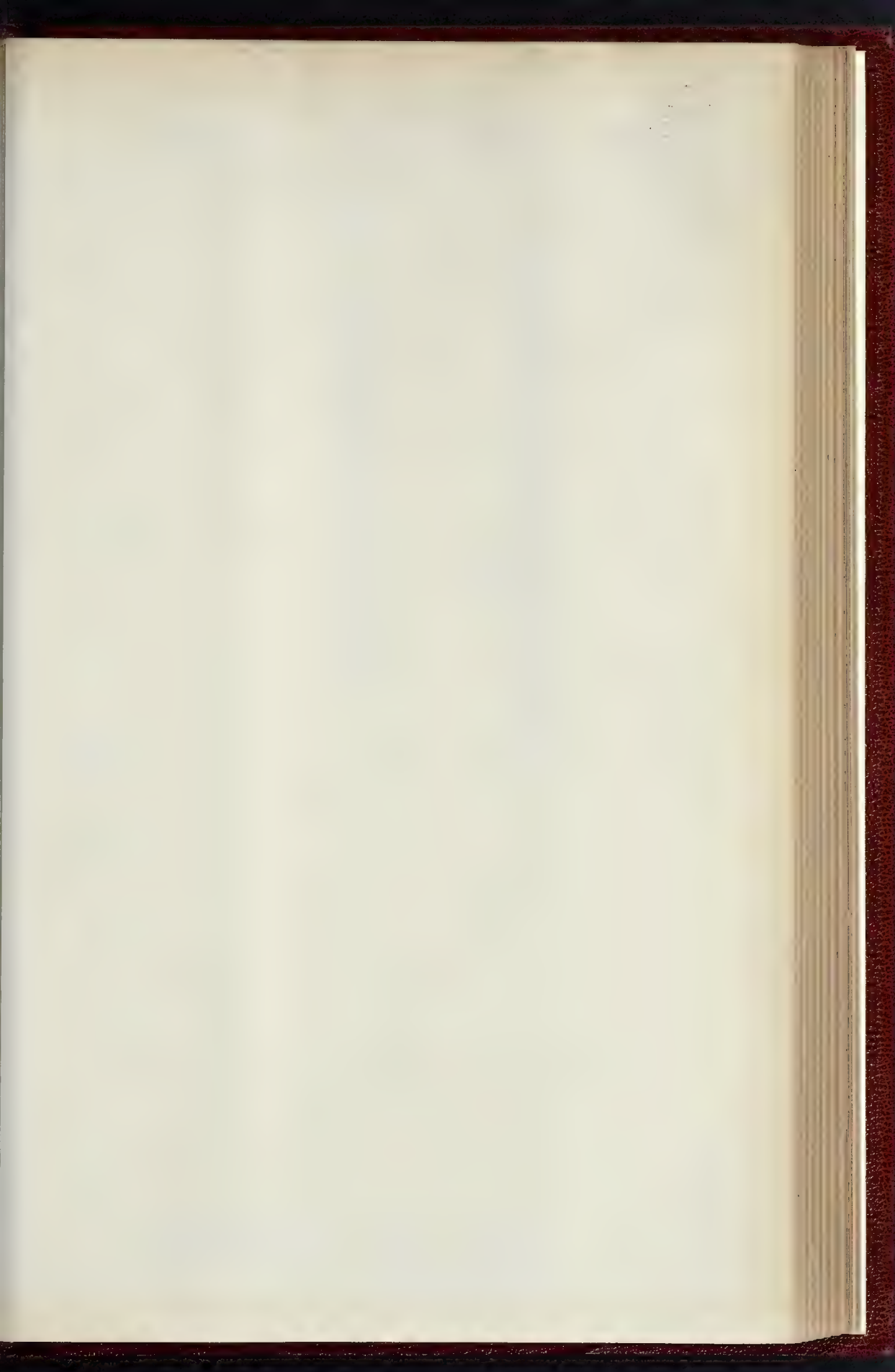
This church, of which an interior view is represented in our present issue, was erected last year. It is built of bricks, Kentish rag, and Bar-ground stone externally, and is internally finished in brick and stucco. The roof is boarded. The pulpit and reredos are of stone, Caen and Beer stone being used for this and the other internal work. The columns separating the chancel from the body of the church are of polished Aberdeen granite. The windows are filled with leaded cathedral glass in geometrical patterns. It is, perhaps, noteworthy that all the doors to the church open outwards. Ventilation is provided by Mr. Boyle's patent appliances. The accommodation is for 624 persons on the ground-floor, and future galleries are intended for 382 additional persons. The schools are in the rear of the church, and comprise a general school-room, for 320 children; an infants' school-room, for 144 infants; three class-rooms, two vestries, and complete sets of lavatory and water-closet arrangements.

In the basement are a kitchen (with lift), a warming-chamber (the warming by Grundy), and coal and wood store. The total cost was 6,000*l.* Mr. J. W. Sawyer was the builder, the architect being Mr. F. Boreham, of Finsbury-pavement.

ENTRANCE DOORWAY, ST. MARY-LE-BOW.

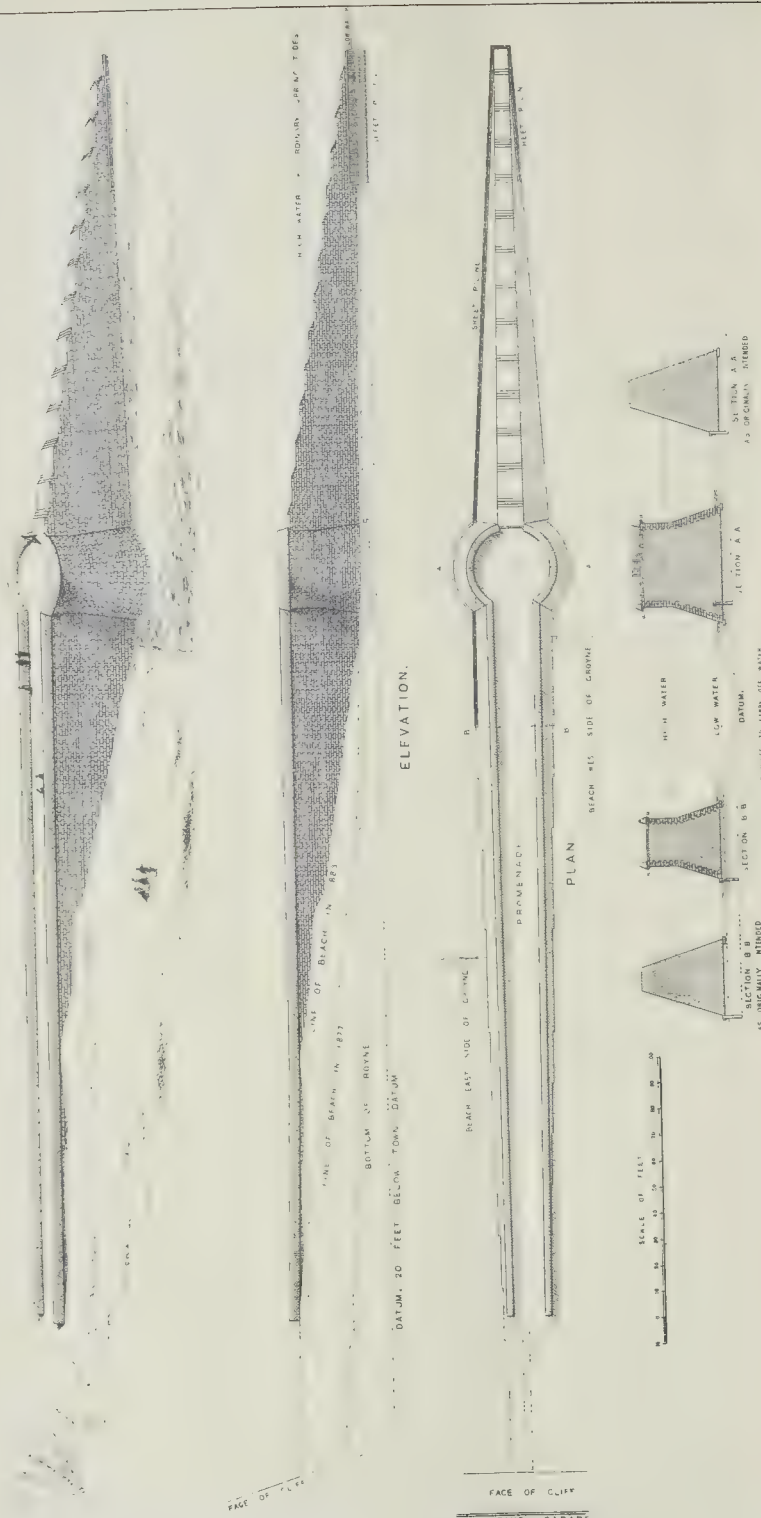
The doorway in Wren's famous church which looks towards Cheapside and its never-ceasing stream of traffic, ought to be a subject of interest in these days of the worship of the English Renaissance school. Incongruous in nearly every detail, it is an example, nevertheless of the effect which mere power and largeness of design will achieve, even when the architectural taste displayed is none of the purest. The massive rustication of the jambs and archivolts forms an effective framework for the more elegant details of the doorway, with its columns somewhat over-entiaised, and its Pagan Doric frieze, which has been loyally Christianised by the introduction of cherubs' heads in the "metope" spaces. The spot has been the site of a church nearly as long as London has existed, and the name of the church is one of the household words in the literature of old London. This is the last edition of Bow Church door—the modern architectural spirit supplanting the Gothic one which ruled there once, and of which all trace was burned out in the great conflagration; and it has stood its ground well. It is as solid to-day as when it was built, and with all the changes in taste and fashion that have since supervened, we can admire it still. The lithograph is from a drawing made by Mr. G. H. M. Addison.

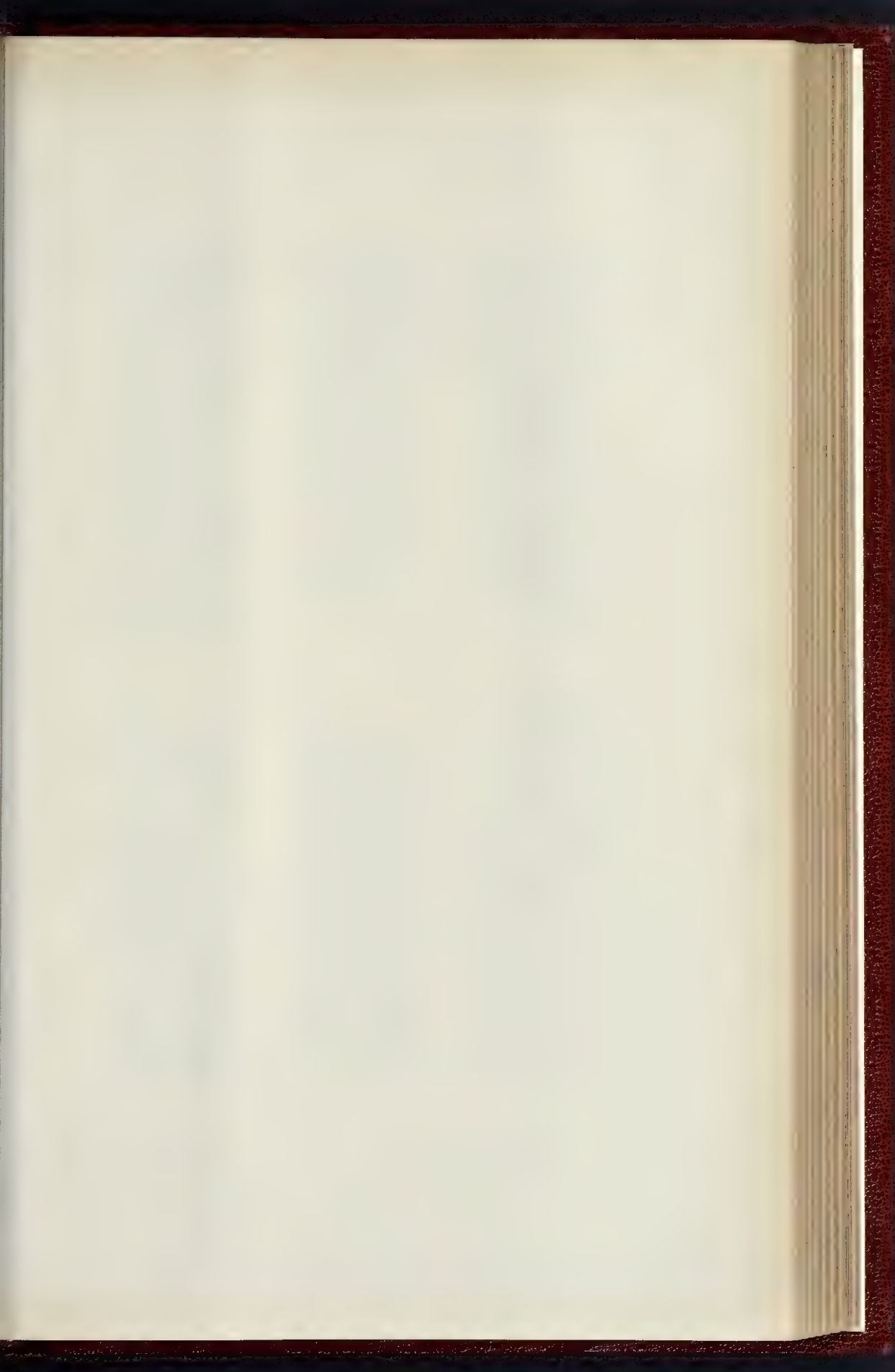
The Prospects of English Watch-Making.—Messrs. Kendal & Dent, in a letter to the *Times*, say that one of the causes of the decline of the English watch trade is that the Swiss manufacturers can, and do, produce sound and thoroughly well-finished watches, good timekeepers, at less than half the cost of an ordinary English lever. But they have a hopeful word to say on the question whether the English watch trade will improve in the future. They firmly believe it will, and they say that it is a fact that at the present moment a goodly number of English levers are being produced by machinery, and the results are most satisfactory. These watches keep better time than the ordinary hand-made English lever, and for accuracy and finish are the cheapest watches in the market at present. They cannot, however, as yet be produced fast enough. There is more than one scheme perfecting that will affect the future of the English watch trade, though they may be slow.



THE BUILDER, NOVEMBER 10, 1892.

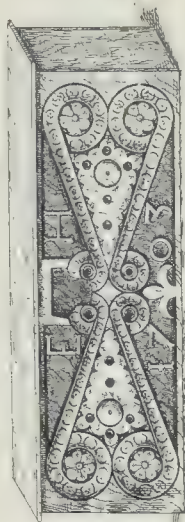
CONCRETE GROYPE, OPPOSITE PASTON PLACE, BRIGHTON.



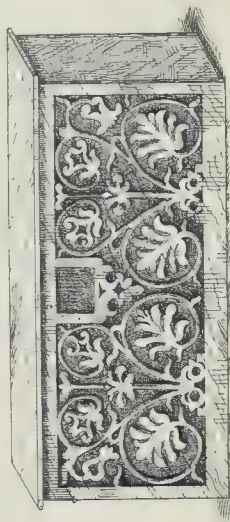


Six Small Oak Boxes or Desks.

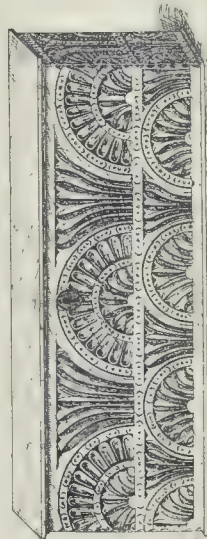
No. I.



No. II.



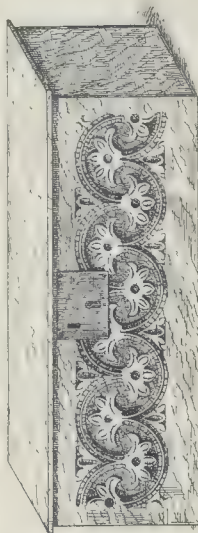
No. III.



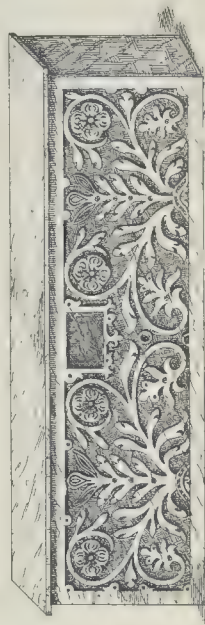
No. IV.



No. V.

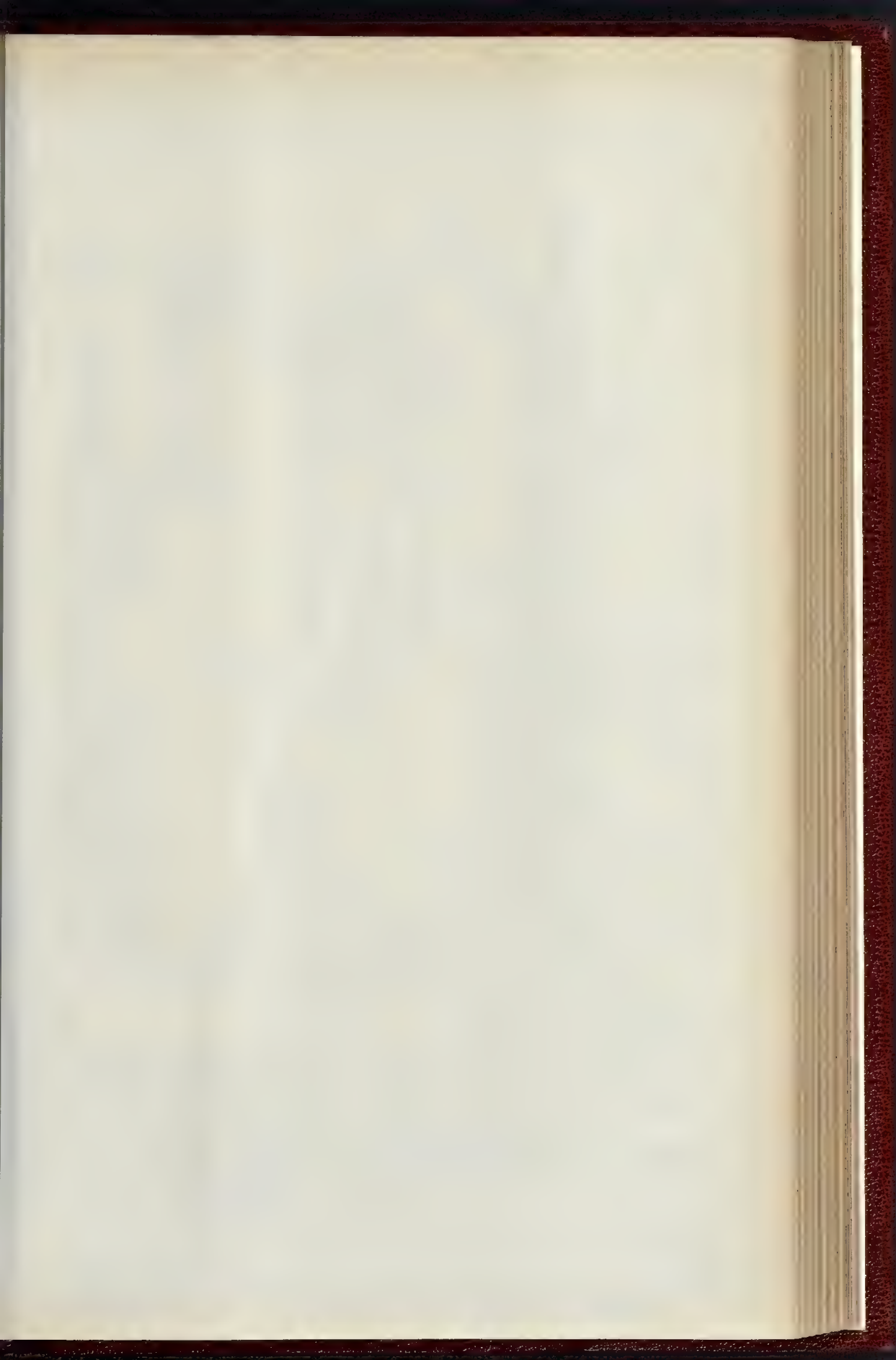


No. VI.



No. VII.

Whitman & Sons, Boston, U.S.A.

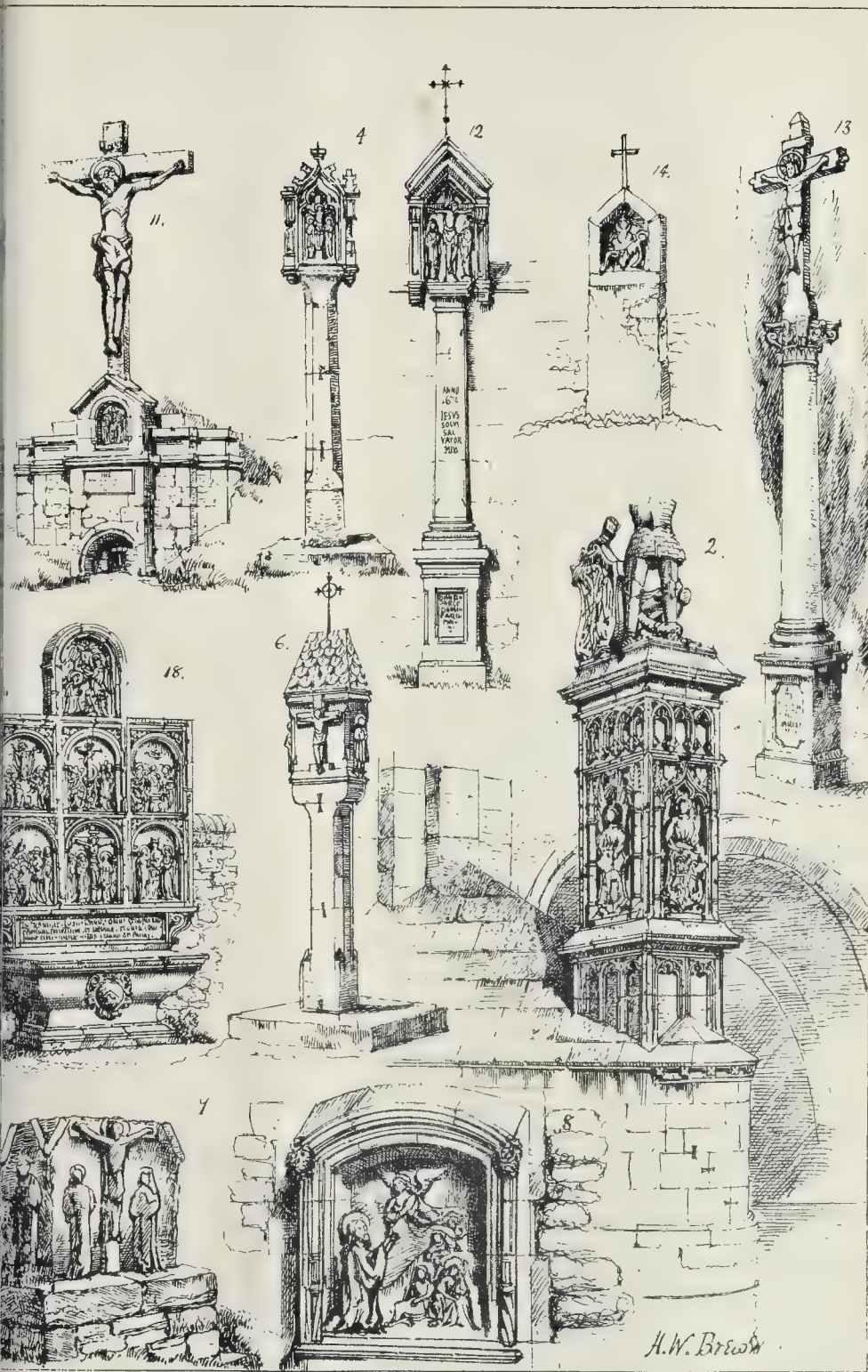




Vincent Brooks, Day & Son, Photo-litho

WAY-SIDE MEMORIA

1. High Cross between Bonn and Goddesberg.
2. Memorial Stone on the Bridge at Prague.
3. Cross at Heidingsfeld, near Würzburg.
4. Cross at Randesachre, near Würzburg.
5. Cross at Wertheim.
6. Cross at Bamberg.
7. Calvary at Bamberg.
8. Tablet at Ratisbon.
9. Tablet at Kitzingen, Bavaria.

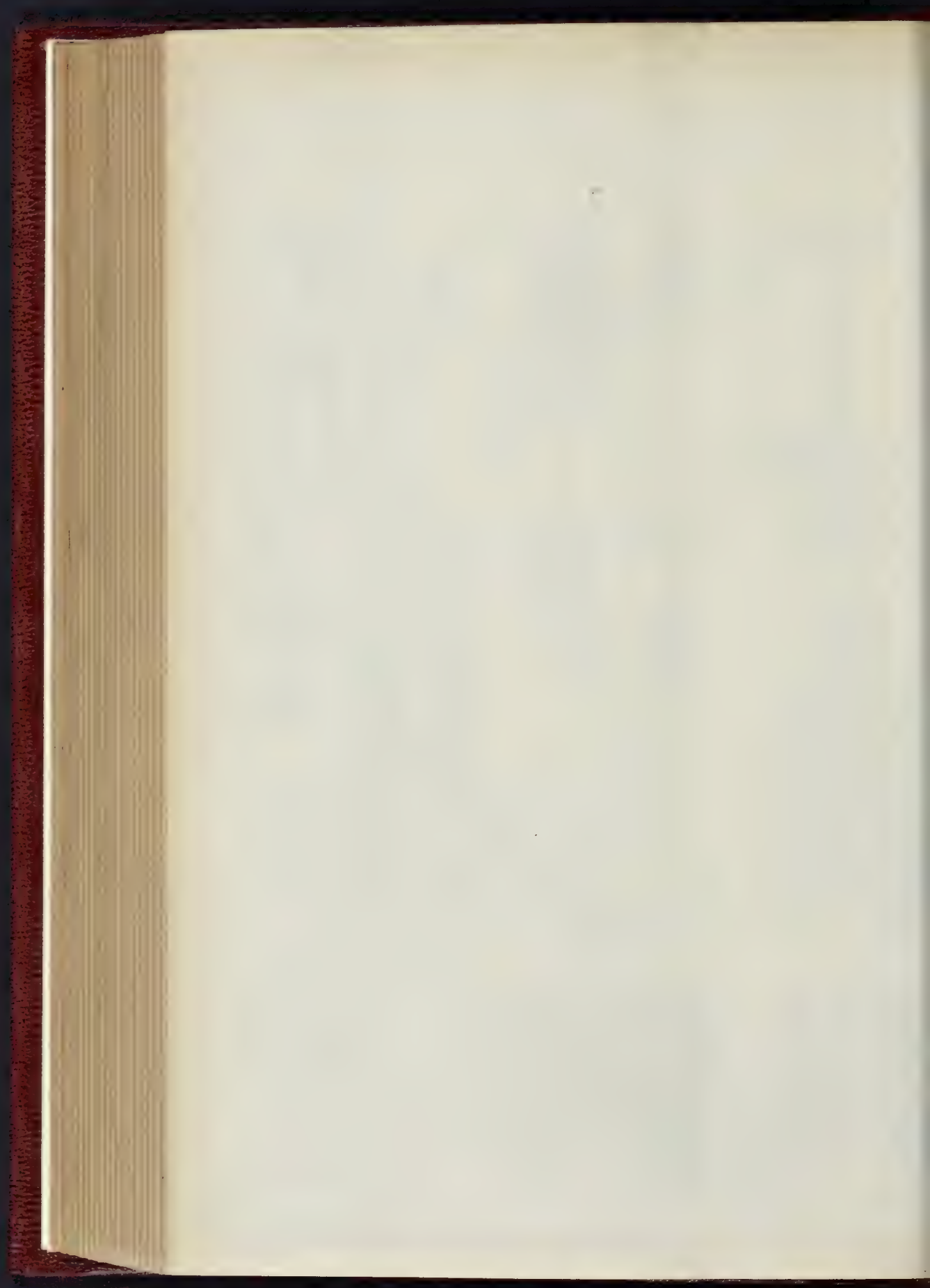


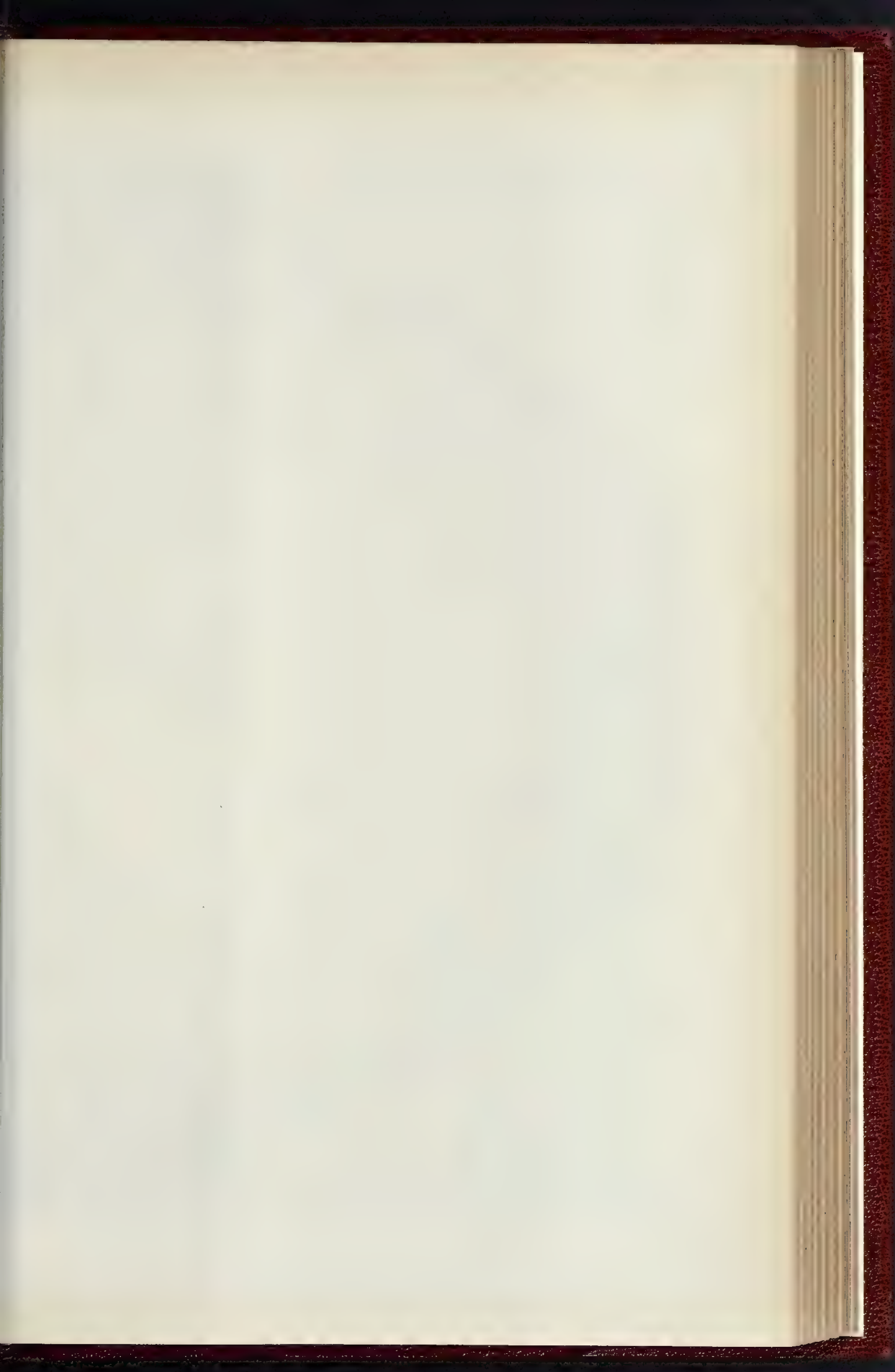
CROSSES IN GERMANY.

Memorial Column on the road to Frank-
fort, near Würzburg.
Crucifix over the spring at Gaetlrun, near
Würzburg.

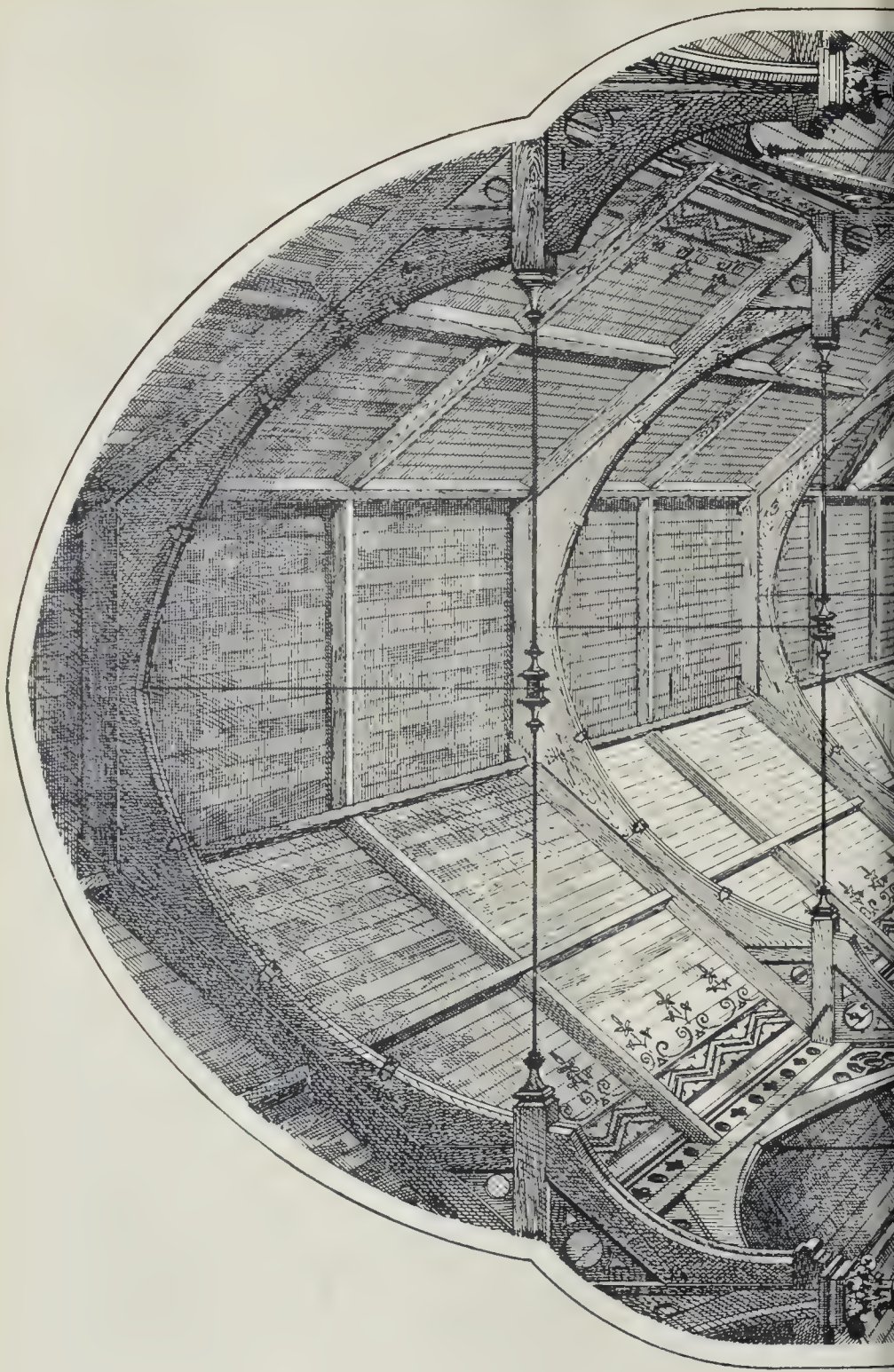
12. Cross near the "English Garden," Würz-
burg.
13. Cross between Ratisbon and Carthause.

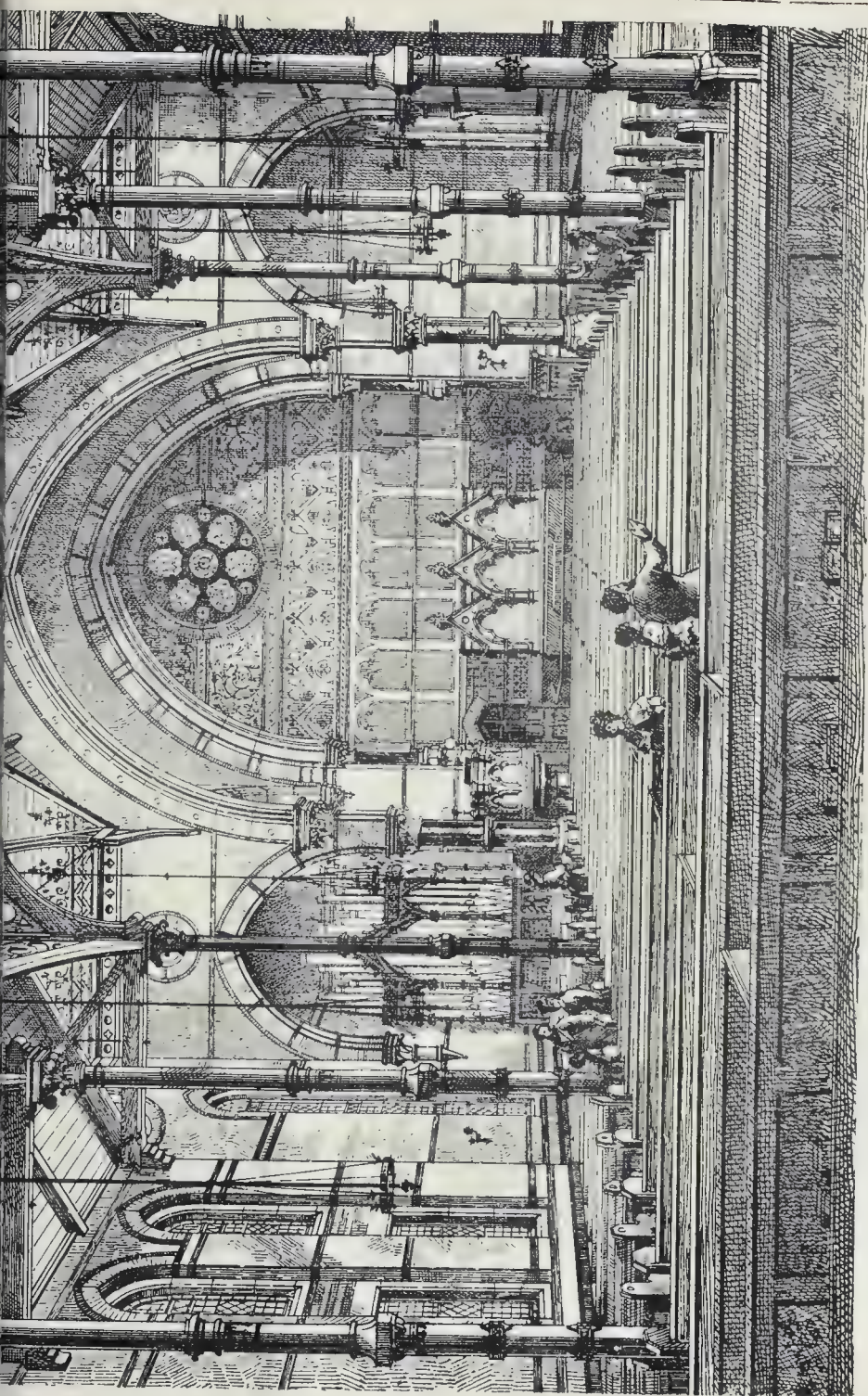
14, 15, 16. In Vineyards near Würzburg.
17. On the Bridge at Limburg.
18. At Dettelbach.





THE BUILDER. NOVEMBER 10. 1883



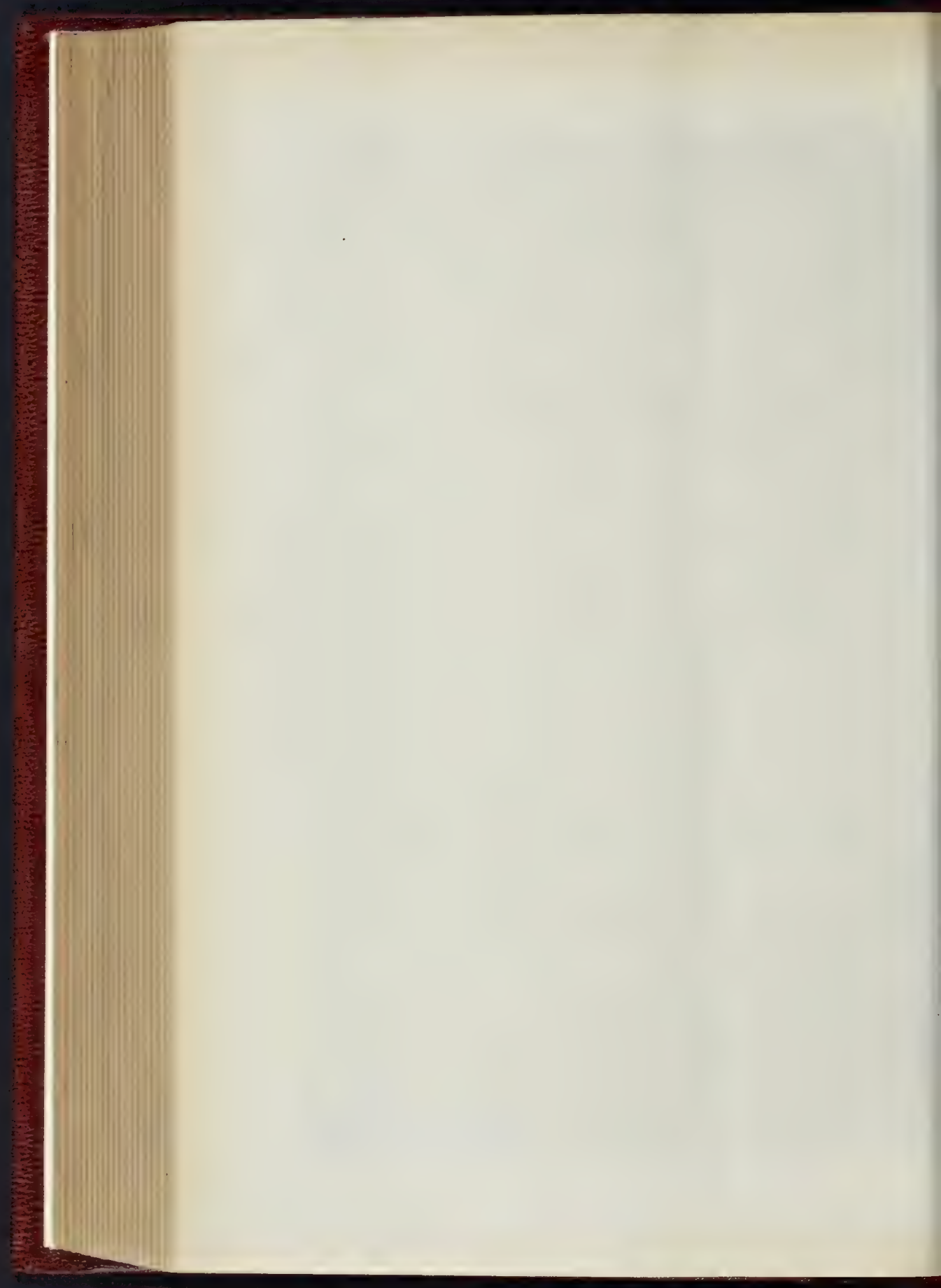


ERECTED
1884-85

WESLEYAN CHURCH + ADDISCOMBE + CROYDON

FRED. BORELIAM ARCHT.
LONDON

Vincent Brooks, Day & Son, Photo litho



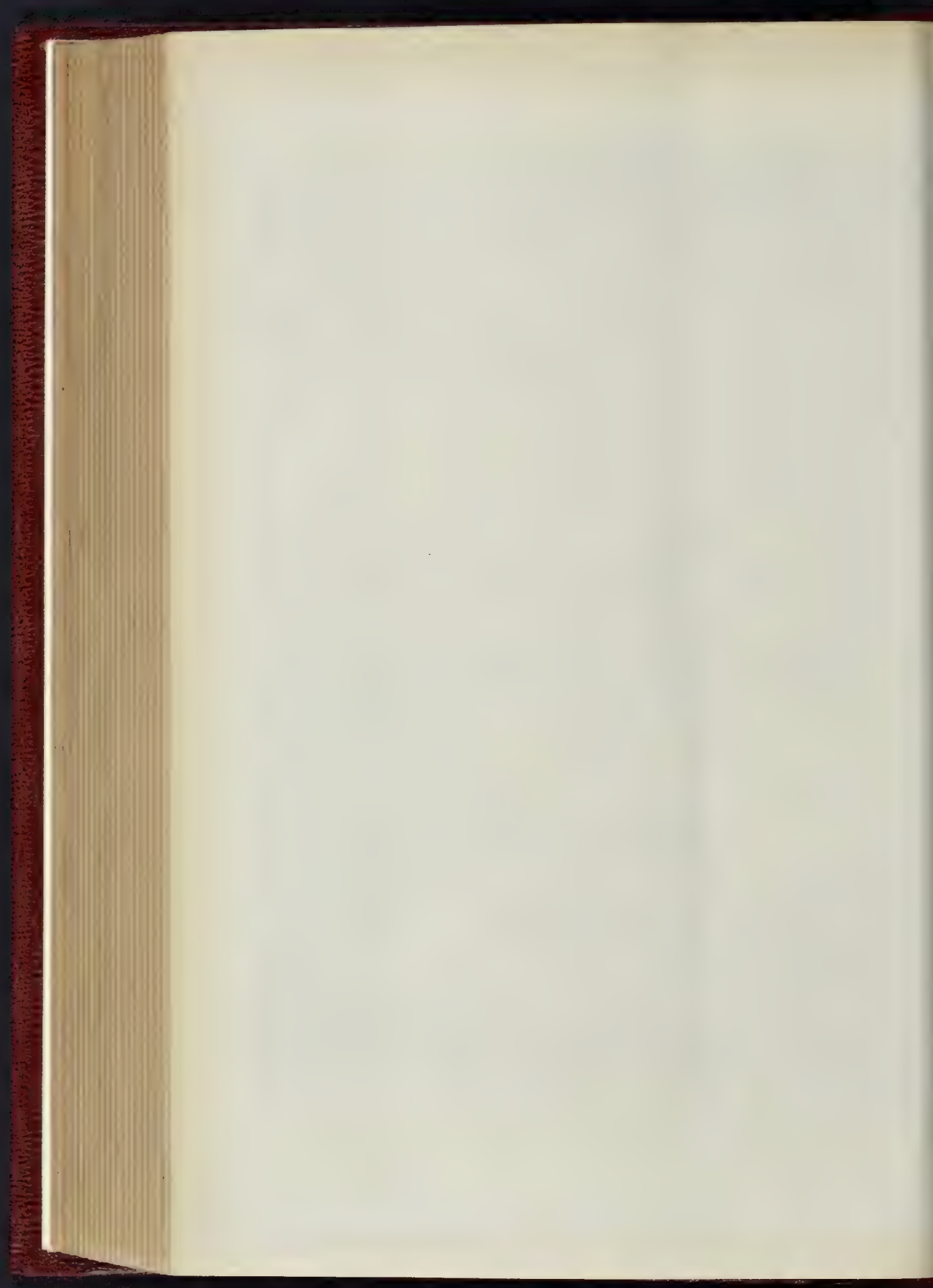


Oak Staircase Park House Englefield Green Fgham.

Designed by the Architect

Wynans & Sons, Printers

EXAMPLES OF OAK WOODWORK. — (See page 632.)

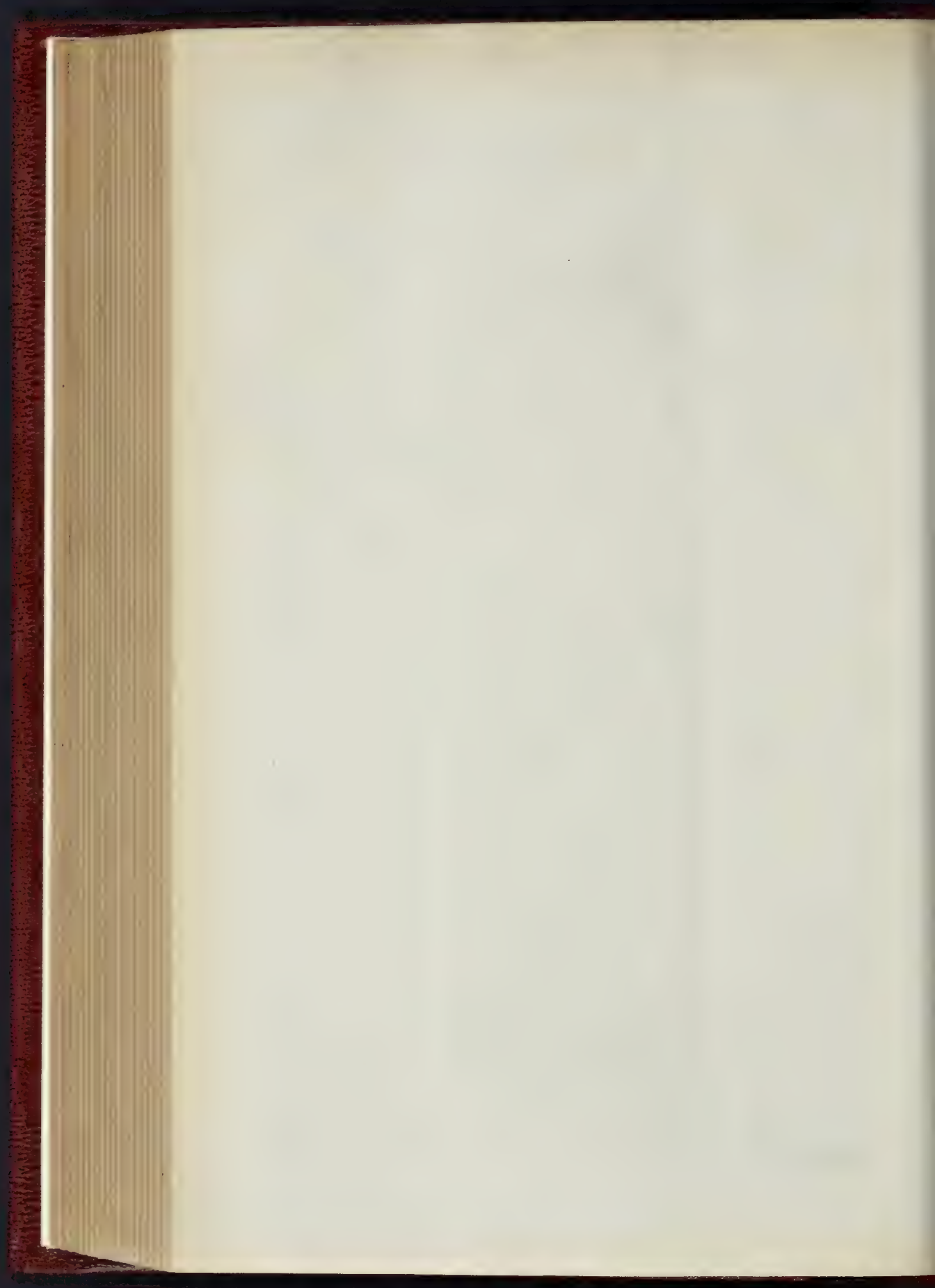




Engraved with a view from

Wyman & Sons, Printers G. Queen St

DOORWAY: ST. MARY-LE-BOW, CHEAPSIDE.



EXAMPLES OF CARVED OAK WOODWORK.

IN the introduction to this very handsome and interesting publication,* the author says that he was led to publish these illustrations from the difficulty he had himself experienced in obtaining practical information on the woodwork of the sixteenth and seventeenth centuries, when engaged himself in the restoration of houses of those periods. In the course of a good many examinations of actual examples as guides for his own use, he accumulated a considerable amount of information and illustrations in regard to it, which he now puts forth as likely to be of use both to architects and to the public generally who are interested in having artistic furniture in the present day, or in studying the history of that which was formerly produced.

Why the author has limited himself to the sixteenth and seventeenth centuries we do not clearly understand, but probably because his own architectural practice has lain a good deal among houses of that period and style, and his studies have been accordingly. That the work characteristic of that period is not the best or purest in style Mr. Sanders admits, both for himself, and vicariously through the mouth of Mr. Ruskin, from whom he prints a letter speaking of the difficult task of "qualifiedly praising" (that's an ill phrase, a vile phrase) "what, excellent to your immediate purpose, is not in harmony with the precepts of the best masters in wood-carving." Mr. Ruskin's objection need not, perhaps, be taken as applying indiscriminately to all the work illustrated; though it can hardly be denied that there is about much of the work a degree of mechanical stiffness, a want of fancy, an adoption of forms which recall the worse and not the better features of Renaissance art, which would prevent us from accepting these illustrations as specimens of the higher type of artistic woodwork. The objections, however, which may be urged against them apply really rather to the defects of the illustrations as examples of design than as examples of carving; it is not that they are not good as woodwork, but that they are of a secondary order of taste and feeling as design, in whatever material they have been executed.

This very fact, however, perhaps leaves more emphatically manifest the points which Mr. Sanders seems more especially desirous of calling attention to,—the admirable workmanship of these ancient pieces of oak furniture, and the feeling for effect displayed, in spite of the often objectionable style, in their moulding and other ornamental treatment. In regard to the solid and thoroughly honest construction of the work, the author refers to the fact that not a few of these pieces of oak furniture have seen considerable vicissitudes,— have had every chance, at least, of being a good deal knocked about, "that which originally adorned the Hall having found its way into the farmhouse, and sometimes into the husbandman's cottage"; and yet, after all this change of place and variety of usage, they are still in sound and serviceable condition. One reason why older furniture has lasted in this way better than modern is, no doubt, owing to the less demand in older days for elegance of design, which almost inevitably means a greater degree of fragility. Few of the designs figured in this book are really graceful, but they are solid and workmanlike; furniture made for people who looked forward to a settled life for themselves and their heirs, executors, and assigns, and had their furniture made, not for the fashion of a season or two, but as a permanent possession for themselves and their successors.

We cannot, however, quite go so far as Mr. Sanders in thinking that our moral tone of feeling and our way of looking at life generally will be much affected by the construction and design of our furniture. We should rather put it the other way, and say that the furniture which is in fashion at any special period is, to some extent, an indication of the taste, and, therefore, in an indirect way, of the general feeling and principles, pervading society at that period. Thus the Louis Quatorze style is unquestionably the evidence of a period of show and display, and of indifference to honest construction, and presumably therefore to honesty

in other matters. But we do not believe that any one naturally good, straightforward, and honest in character, will be morally corrupted even by the every-day presence of a Louis Quatorze sideboard. It does not do to push these relations of morals and art too far.

As to the actual examples which Mr. Sanders gives us, apart from their morality, they form a series of admirable drawings of objects, many of which are of the highest interest historically and constructively, and some of them of great interest and character artistically; and even where we do not admire them absolutely as they are, they form suggestions for effective treatment which may be improved upon by the right-minded wood-carver. The collection of oak chests which we have, with the kind permission of the author, reproduced in our illustrations, affords some admirable examples of ornament of a simple yet effective kind, applied to a very commonplace and utilitarian class of objects. These boxes, varying from 2 ft. 6 in. to 3 ft. in length, were made for placing upon other pieces of furniture, and hence were not elevated on legs, like some of the larger specimens of chests figured in other plates in the book. These examples are all in the possession of the author. The one marked No. 3 on the plate is particularly bold and effective in the design of the ornament, and is hardly less interesting on account of the curious *naïveté* with which the workman (very likely a village joiner) has neglected any attempt to make the upper and lower ranges of semicircles central with each other. We do not say this is a beauty in the design, but it is a valuable bit of character.

The staircase interior, which we also reproduce, is the author's own design, and aims at reproducing the effect of some of the old oak staircases still to be found in a country house occasionally, and to show its suitability to modern interiors. We should have preferred the balusters a little heavier in proportion. The massive angle newels, formed of four thick balusters combined are, however, very effective, and quite in the spirit of the period intended to be imitated. We could understand, however, Mr. Ruskin not liking these. The two "boxes," with their rather feeble ornaments carved on each face, though quite in the spirit of the time to which reference is made, are not in the best school of design by any means. We should have thought the author might have produced something really better, and which would have pleased his distinguished and friendly critic more, if he had endeavoured to originate from his own consciousness something as effective and more distinctly logical in design. Still, the effect of the whole is very solid and pleasing.

The book contains, among its twenty-five plates, some illustrations more elaborate than these, including a wonderful old carved bedstead at Buxton, and various chairs and sideboards, combining richness with solidity of effect in a notable manner. The author's text is interesting throughout, conveying information mingled with a few scraps of art-criticism; and the whole book is beautifully got up, and forms in every way a most useful and ornamental addition to an artistic library.

"WAYSIDE MEMORIALS AND CROSSES."

AMONGST the various Medieval monuments left to us, the old roadside memorials and crosses which abound in the Roman Catholic countries of Europe, are not the least interesting. Although not generally high examples of art, they serve to show us how thoroughly a love and appreciation of art had penetrated even to the humblest classes of the community, and how long this artistic feeling lingered, even after it had almost ceased to exist in churches and buildings of a more exalted character. The little shrines erected against the walls of vineyards and along the high roads connecting Bavarian villages, even as late as the commencement of the nineteenth century, show an amount of picturesque feeling and treatment that delights the pedestrian, and makes many a dull and dusty highway interesting. Sometimes even amongst those of a later date a higher class of work is to be seen. Close to Durbach, a little village in the neighbourhood of Würzburg, there is a crucifix erected at the junction of two roads. The figure is life-size, and of stone; the date, if we rightly recollect, 1782; but it is most beautifully modelled, and, although the name of the sculptor is unknown, it is evident that he was

a master of his art and thoroughly correct in his anatomical knowledge.

In earlier times, many of these roadside memorials were really works of a very high class, and partook rather of the nature of public monuments. "The Station" at Nuremberg, the "Spinnerkreutz" at Vienna,* our own Eleanor crosses in England, and the beautiful high cross upon the roadside between Bonn and Goddesberg, of which we give an illustration, and which deserves something more than a mere passing notice at our hands, must be regarded as works of this class. Fortunately, the date of the Bonn monument is known, and there seems to be almost a certainty as to the architect to whom must be ascribed the merit of its design. The date is 1333, and it is said to have been erected by Archbishop Walfram, of Juliers (there is also a tradition that it was from the designs of Meister Johann, architect of the upper portions of the choir of Cologne Cathedral), in commemoration of the completion of that part of the great church. The stone was brought from the Drachenfels, and as the transaction is described in the "Cologne Chronicle," and as the architecture exactly carries out and coincides with the events recorded, we see no reason to doubt the account given. There are other traditions, one of which regards the erection of the monument as an act of penance by a knight who had murdered his brother; but there appears to be no foundation for this and half a dozen other stories and legends which have become connected with this structure.

2. The monument or "memorial stone" upon the bridge at Prague, though much injured, is a pretty example of such a structure. It records the completion of the great bridge at Prague, commenced by the Emperor Karl IV., from the designs of the celebrated architect, Peter von Arler (presumed architect of Milan Cathedral, and of St. Vitus at Prague, and the great church at Gmund). This memorial stone probably, however, dates from the year 1503, which is the date of the final completion of the bridge. The figure of St. George which crowns the composition is unfortunately greatly mutilated.

3. There is a very interesting roadside cross at Heidingsfeld, near Würzburg, which was evidently the donation of a single individual. The upper portion is ornamented with a bas-relief of the Crucifixion, beneath which is St. Lawrence, and at the foot the donor is kneeling, with a legend, partly in Latin and partly in German, proceeding from his clasped hands. The meaning of the inscription is as follows:—"In the year of Our Lord, MCCCCLXXIII. O Lord Jesus Christ, of thy mercy spare us. O Jesu. IHS. ✠ Blessed Lawrence, Pray for us in the hour of our death." The date, 1473, would quite coincide with the character of the sculpture, which is remarkably good, and wonderfully well preserved.

4. A cross of plainer design, but rather similar, is to be seen in a field near Randesachre, a village on the opposite bank of the Main to Heidingsfeld.

5. At Wertheim is a cross of singular design standing upon a tall circular base, and surmounted by a regular weather-cock. It probably dates from about the year 1500.

8 and 9. At Bamberg are two rather singular roadside crosses, which at first glance look like thirteenth-century works. They are, however, probably works of the commencement of the sixteenth century.

Tablets representing scenes from the Passion of Our Lord are frequently to be met with, generally dating from the close of the fifteenth century. Good examples are to be seen at Kitzingen and Ratibon (see figs. 8 and 9).

A pretty form of memorial is to be seen upon the high road from Würzburg to Frankfurt, at about two miles from the former town. It is protected by a semicircular stone canopy, and consists of a column supporting a well-carved tablet with figures of saints, coats of arms, &c. (see fig. 10).

At Gaerbrun, in the same neighbourhood, there is a small shrine and crucifix erected over a spring (fig. 11), and still nearer to Würzburg is a pillar bearing a kind of niche, with a small calvary enclosed in it; upon the pillar is the inscription "Jesus Solus Salvator Mens," A.D. 1674 (fig. 12). Simple and ruder forms of shrines abound in this part of Bavaria (see figs. 14, 15, 16).

Near Ratibon is a graceful column bearing

* Examples of Carved Oak Woodwork in the Houses and Furniture of the Sixteenth and Seventeenth Centuries. By William Bliss Sanders, Architect. With twenty-five illustrations photo-lithographed from the original sketches of the author. London: Bernard Quaritch. 1883.

* Supposed to be a corruption of Crispinus and Crispianus, whose statues adorn the monument.

a crucifix which dates from the close of the seventeenth century. This monument has gained an historical notoriety from the fact that it was at the foot of this column that Napoleon I. received the only wound which he gained in all his campaigns (see fig. 13).

Many of the bridges in Germany are adorned with crosses, some of which are very artistically treated. A fairly good example is to be seen at Limburg-on-the-Lahn (see fig. 17).

Sometimes roadside memorials assume the form and general arrangement of a stone altar and retables. A very pretty example occurs just outside the little town of Dettelbach, in Bavaria (see fig. 18). Of course, this is not an altar, and has never been used as such; in fact, its diminutive proportion would prevent its ever being used for mass, the table portion being only about 2 ft. high. What would be the retables (if it were an altar) is adorned by seven very well executed bas-reliefs of our Lord's Passion, &c. Unfortunately, the date is illegible, but it is probably a work of the end of the sixteenth century.

EDINBURGH ARCHITECTURAL ASSOCIATION.

On the 2nd inst. the opening meeting of this Association for the session was held in the Professional Hall, George-street, Mr. M'Gibbon, the president, in the chair. The Chairman intimated that classes for instruction in construction and design would be commenced this session on the same lines as those of the Architectural Association in London. Mr. Fairweather, C.E., of Edinburgh University, and Mr. R. R. Anderson, had kindly consented to open the classes, and he hoped that as they would be both interesting and instructive, a large number of students would take advantage of them.

Professor Baldwin Brown then gave a lecture (the first of a series of four) entitled "General Survey of Christian Ecclesiastical Architecture up to the thirteenth century." Confining himself to the historical aspect of the subject, the lecturer, in rejecting the antique temple as an impossible model, pointed out that the earliest meetings of the Christians were held in private houses, and suggested that the earliest ecclesiastical buildings erected by them were divided in style between the halls of such houses and the so-called basilicas or law courts of Roman cities. Later, however, the domed church, which afforded space for grand ceremonials, became the special form favoured at Byzantium, while the rectangular basilica was the prevailing type in the West. Adverting to the next stage in architectural history, the lecturer endeavoured to show that Roman styles of building were adopted by the conquerors of the West, so that there was a continuity of architectural history to Medieval times. After briefly noticing the Carolingian Age as the time of transition from early Christian architecture, the lecturer gave some account of the circumstances under which the great Medieval churches were erected.

BIRMINGHAM ARCHITECTURAL ASSOCIATION.

THE annual conversations in connexion with the Birmingham Architectural Association took place on Wednesday evening at the Queen's College. Mr. J. J. Bateman (President) occupied the chair.

The ninth annual report of the committee of the society, which was submitted by the secretary, stated that during the past year there had been a considerable increase in the ordinary and honorary members, and the session had been the most successful the association had enjoyed since its inauguration. Archaeological and sketching excursions were made during the session to Knowle and Packwood, to Mr. J. C. Edwards's Ruabon Terra-cotta Works, to Hagley, and to Clent. The attendance was good on each occasion, and the classes had been numerously attended. The designs contributed were of a satisfactory character. The financial position of the association had improved since the last annual meeting.

The report having been adopted,

The President delivered an address, in the course of which he pointed out to the young members of the profession the best means of advancing their professional aims.

Mr. Clere moved a vote of thanks to the

President for his address, which was seconded by Mr. F. E. F. Bailey.

The resolution having been adopted, The President, in acknowledging it, said that he was prepared to open a guarantee fund for the inauguration of a representative architectural exhibition in Birmingham, which he was sure would prove of great benefit to the architectural artists of the Midland metropolis.

SOCIETY OF ENGINEERS.

THE second ordinary meeting of this Society for the present session was held on Monday evening, November 5th, at the Westminster Town Hall, where the Council of the Society have arranged for the holding of the ordinary meetings in future, the Society having outgrown the limits of its previous meeting-place in Victoria-street; the offices, library, and reading-room of the Society will, however, for the present, be at 6, Westminster-chambers. The President, Mr. Jabez Church, M.I.C.E., F.G.S., occupied the chair, and a paper on "The Dundee Street Improvements, and Drainage of Lochee," by Mr. Andrew Greig, was read. The following is a synopsis of the paper:—

The population of Dundee in 1831 was 45,355, and in 1870 it was 118,900. The assessed rental in those years was 78,821l. and 370,728l. respectively. The town having thus greatly increased in population, and also in mercantile importance, the Police Commissioners, who are also the Local Authority, obtained an Improvement Bill, in 1871, to enable them to take down various buildings, to construct several new thoroughfares, and to drain the suburb of Lochee, &c. The value of the property bought was 395,000l.

The principal improvements were in the centre of the town, where several streets were widened, and a new street opened up from Seagate to Meadowside, where stands the Albert Institute, containing the Free Library, Picture Gallery, and Museum. This new street is named Commercial-street, and is the continuation of the street of the same name leading from the docks. Buildings, four stories in height, and consisting of shops, offices, and dwelling-houses, have been erected on the greater part of both sides of the street. The style of architecture is Italian, the corner buildings partaking more of the nature of Italian Renaissance, and the general character of the whole being dignified and massive rather than ornate. These streets have been paved with granite and whin setts.

Lochee is a suburb of Dundee, and has a population of about 12,000. The area to be drained contained over 500 acres. A large portion of the village lay too low to be drained into the sewers at the north end of Dundee. An outfall was, therefore, constructed from the west end of Lochee to the sewer in Perth-road, thus bringing the sewage to Dundee. Power was obtained in the Bill to purchase land for sewage utilisation and irrigation purposes, but nothing has yet been done in this matter. The outfall is egg-shaped and built of brickwork in cement. It is 2 miles 1,252 yards in length, and cost, exclusive of surface damage and wayleave, 6,615l. The pipe sewers in Lochee are 5 miles 386 yards long, and cost 7,506l.

The Poor and their Landlords.—We extract the following from the pamphlet entitled, "The Bitter Cry of Outcast London," which has been circulated recently:—"If by any chance a reluctant landlord can be induced to execute or pay for some long-needed repairs, they become the occasion for new exactions. Going through some rooms we come to one in which a hole as big as a man's head, has been roughly covered, and how? A piece of board from an old soap-box has been fixed over the opening by one nail, and the tenant has been given a yard and a half of paper with which to cover it; and for this expenditure,—perhaps 4d. at the outside,—3d. a week has been put upon the rent." In the case of tenants in better circumstances the principle *caveat emptor* will apply, but hardly in the case of these helpless ones. The law cannot define rents, but it might regulate the condition of repair in which a dwelling-house is to be kept. At present the law only steps in where conditions, technically "insanitary," and consequently dangerous to the public health, are concerned.

THE POSITION OF THE SANITARY INSPECTOR.

ASSOCIATION OF PUBLIC SANITARY INSPECTORS.

THIS was the subject of a paper by Mr. Septimus P. Skipworth (Surveyor and Sanitary Inspector to the Caistor Rural Sanitary Authority, Lincolnshire), read before a meeting of the Association of Public Sanitary Inspectors, held in the Library of the Parkes Museum on Saturday evening last, Mr. G. B. Jerram, Chairman of the Council, presiding. The following is the substance of Mr. Skipworth's paper:—

Now that the Association of Sanitary Inspectors is an accomplished fact, I would strongly urge upon its members that its primary object should be to memorialise the Local Government Board upon several grievances under which we labour, and which very greatly fetter the independence which we, of all public servants, ought to have in carrying out our work. I would suggest that particular stress be laid on the following points, as bearing more strictly on the question of the improvement of our position:—

Firstly, as to the *Mode of Appointment and Tenure of Office*.—I think every member will agree with me that the duties of a sanitary inspector are not of that easy and superficial character which some might imagine, but that, on the contrary, they demand much technical knowledge, great common-sense and tact, and the strictest impartiality in dealing with those matters which come under his cognisance. I am not aware what may be the general rule (if there be one) in the metropolis, but it may, I think, be taken for granted that appointments are made for only short periods, generally from year to year, or for two years in some cases. In rural districts the occupiers of land, by the present system of rating, are not only pecuniarily interested in their own establishments, but are saddled with almost the whole of the parochial charges, and it is from this body that the great majority of elected guardians are chosen. A large proportion of them are men who would go on as their fathers have done before them,—*laudatores temporis acti*,—and are inclined to be very sceptical about the advantage of what they call new-fangled sanitary ideas, the benefit of which, being negative and preventive, they are unable to see, especially if it costs anything, however small. This prejudice against all sanitary improvements unfortunately exists to a considerable extent among the smaller farmers and the more uneducated people of a rural district. It is therefore almost impossible but that an inspector, in the conscientious discharge of his duties, should have incurred the displeasure of some of the Guardians, and when the time of his re-appointment arrives it is too often made an opportunity for giving practical effect to such displeasure by either reducing his already wretchedly small salary, or removing him from his office, and turning him out upon the world, overcrowded as it is with strugglers for a living. That impartiality which is required,—nay more, demanded,—by the public among whom he works, can hardly be maintained under such circumstances, and nothing short of permanence of appointment,—subject, of course, to good behaviour and proper discharge of duty,—would secure that freedom of action which is due to a sanitary inspector. It is a false position, and one in which no public servant should be placed, when he has to consider whether the faithful performance of his work is likely to interfere with the daily bread of himself and his family. Permanence of appointment is enjoyed by all Poor Law officials in Unions, and should, *à fortiori*, be enjoyed by us; our claims are much stronger than theirs, inasmuch as their work does not bring them into adverse contact with those who employ them,—they are not compelled, as it were, to tread upon the toes of those who at short intervals have to fix their salaries, nor can they be turned adrift at any time owing to the caprice or ill-will of some narrow-minded Guardians or members of a Local Board.

Secondly, as to *Salaries*.—I have said that much technical knowledge is required of an inspector. He has, in fact, to be thoroughly acquainted with many of the most important branches of several occupations, notably those of the architect, the surveyor, the builder, and the plumber. It may be argued, perhaps, that these requirements are not actually demanded by the Orders of the Local Government Board, yet every inspector of any experience

will, I think, agree with me that the practical part of his work does not consist only in finding out nuisances, but that the public, if not his employers, depend of him the ability to devise for them a remedy. Mr. Kenneth McLeod, of Glasgow, in a very able paper on the qualifications of a sanitary inspector, says, "He must be able at a glance to detect a structural defect, and, in an intelligible form, point out a remedy," and he goes beyond this, and says, "he must educate himself to detect the kind of infectious disease of any patient he may discover," and further "he must acquire a knowledge of the different kinds of disinfectants, and know those best fitted for safely and effectually disinfecting fever localities." Here we have the inspector stepping into the domain of the medical profession. And Mr. McLeod is right. If we are to work effectually to prevent diseases as far as possible, and to check their spread when they do occur, we must be a happy combination of all the professions mentioned above. There is not, in my mind, any other body of public servants of whom such a varied knowledge is required. I cannot think that any reasonable man can look upon the salaries given as adequate remuneration for such requirements. They vary from 20*l.* upwards, and seldom exceed 140*l.* or 150*l.* per annum, even in large rural areas, whereas the expenses of carrying out the work are very heavy. Many of these salaries must mean "We (the Sanitary Authority) are forced to appoint some one, but we shall give as little as we possibly can, and the less work you do the better we shall like you." Once appointed, however, it is impossible for us to work upon this principle, and I assert that even though our employers are so short-sighted and so blind to the interests of the district over which they preside, yet that the public demand and will have a fulfilment of the work for which it is known that we are appointed. In my opinion, no system of salary according to work should be insisted on by the Local Government Board. It is not for us to suggest the plan, but I put it before you as a matter for discussion whether it might not be according to population in metropolitan and pure urban areas, and according to area, with some consideration as to population, in rural districts, where the expense of a horse is an absolutely necessary item. I would, however, strongly urge upon the Local Government Board that they should, failing the adoption of some system of minimum salaries, resolutely refuse to sanction such miserable and starvation allowances as we frequently hear of.

Thirdly, as to *Superannuation Allowances*.—An inspector once appointed has little or no hope of advancement or of promotion. His work is a dangerous one, as he is brought into very frequent and close contact with all forms of infectious disorders. It may be that, if not very strong and of an excellent constitution, his health may be ruined by the dangers which he must unflinchingly meet. These (and many other reasons which cannot be recapitulated in a short paper) are strong arguments for our right to pensions, and such allowances as are granted to officials of the Poor Law.

A discussion was opened by the chairman, in which Messrs. Boulter (Bexley), Rees (Guildford), Poulson (Tottenham), Sherborne (Chelsea), Bond (St. Giles's), Middleweek (Kensington), Stace (Limehouse), and Buckworth (St. Baviour's, Southwark), took part. The difficulties which beset sanitary inspectors in the faithful discharge of their duties, especially in rural districts, were pointed out, and it was urged that an inspector having given proof of capability and energy during the first year of his appointment should have his office secured for him for a further period of at least five years, subject, of course, to certain conditions. The fearless performance of his duties by a rural sanitary inspector should not place him at the mercy of interested persons who were members of the board whom he served. Utterance was given to the opinion that this sort of intimidation would continue until some great change was brought about by the institution of county boards, whose members would be the chosen representatives of much wider areas than those of the present rural sanitary authorities. Under the members of such enlarged boards, who would presumably be men of greater status than the average rural Poor-law guardian, and men who had no ulterior ends to serve,—the sanitary inspector would be able to do his work without the fear of losing his bread and cheese. Reference was made to the condition of the dwellings of the poor in London.

One inspector was inclined to think that some of the statements recently made were exaggerated; and the question was raised whether, if those statements were true, the sanitary inspectors were to blame? The answer to this question was given in the negative, although it was stated that the glaring sanitary defects alleged to exist in many East End dwellings would not be possible if the sanitary inspectors made house-to-house visitations. One of the great difficulties in the way of the detection of over-crowding was to be found in the fact that a sanitary inspector had no power to enter premises between nine at night and six in the morning.

It was stated by the hon. secretary that the Association now numbers fifty-four members and nineteen honorary members.

At a Council meeting subsequently held, it was resolved,—

"That George Godwin, esq., late editor of the *Builder*, be invited to become an Honorary Member of this Association; and, at the same time, this Association desires to express its thanks for his labours in the past, and its heartiest wishes for his happiness and health in his retirement."

A resolution was also passed inviting Dr. T. Orme Dudfield, of Kensington (President of the Society of Medical Officers of Health) to become an Honorary Member.

SMOKE ABATEMENT.

The winter course of lectures at the Parkes Museum of Hygiene, Margaret-street, Regent-street, was inaugurated on the 1st inst., when Mr. Ernest Hart delivered a lecture on "Smoke Abatement."

Professor Chandler Roberts, F.R.S., occupied the chair, and in introducing the lecturer said that in the early days of the steam-engine it was recognised that the increased consumption of coal would bring about serious evils, but as regarded the state of London from the same cause very little sustained effort had been made. Mr. Matthew Arnold had told an American interviewer that "there was no place, after all, like dear old smoky London." Mr. Arnold could hardly have meant to admit to a share of his affections the smoke of the metropolis, but he no doubt expressed a widely-felt opinion that the dear old smoke of London was inevitable. The war now being waged against smoke was due in no small measure to the efforts of Mr. Hart.

Mr. Ernest Hart said the difficulty which the Smoke Abatement Institute had to contend against was that whilst everybody wished it well very few were inclined to help it much. The only persons who were against the Institute on principle were the chimney-sweepers, and the only class against it on the ground of interest were market gardeners, who feared a stoppage in the cheap supply of soot. But it had been proved that an improvement in the consumption of coal and a more extensive use of gas would enable sulphate of ammonia to be more largely used in the cultivation of the land. This lecture was intended as a serious prelude to a considerable and continuous effort which must be made, and for which the help would be needed of the Parkes Museum and other sanitary institutions if any real progress was to be attained in the abatement of smoke. After briefly giving a history of the attempts made in this direction from the time of Elizabeth, when Parliament passed an act prohibiting the use of coal in the houses of the metropolis, Mr. Hart said it would be perceived that the present race of reformers had a respectable history and an honoured line of predecessors. The basis on which they claimed the help of all classes of the people was the unpleasantness of smoke, and its proved prejudicial effect in the air on the health, the respiratory organs being those on which the incidence of the prevalence of that smoke chiefly fell. Mr. Hart, on this point, quoted a mass of statistics to show the enormous increase in the death-rate of London and other large and smoky towns during certain periods of the year. Another evil was that every year the area on which it was possible to grow flowers in London was being gradually being driven beyond our urban circle. Then as to the cost of this smoke, Mr. Chadwick had stated that it added 1,000,000*l.* a year to the washing bill, and every householder would bear witness to the showers of blacks which came through open windows, destroying the decora-

tion and furniture of our houses. The coal nuisance had even debased and degraded our ideas of ornamentation in London, and destroyed a large part of the beauty and appearance of our houses,—and it had led us to assume that to evade, not to escape from, the consequences of this dirt we must necessarily use dark papers, oak-grained doors, and generally to live in dark and dirty coloured apartments, because they were least likely to show the dirt which fell upon them. The injury done by smoke particles to the surface of the Houses of Parliament was estimated by Mr. Shaw Lefevre at 2,500*l.* a year; whilst from the same cause the surface of Westminster Abbey was in a state of so much decay that a great national effort would shortly have to be put forward in order to in some measure repair the damage. Beyond this the waste of coal, the waste of labour, and the cost of hauling the waste, the expenditure on street cleansing, and the additional labour involved in private houses, were almost incalculable. If people would read the reports of the Smoke Abatement Institute they would see which grades were the least efficient and the most smoky, which were the coals which had the least evaporative value and which had the most evaporative value. The manufacturers whose chimneys produced the most evil were bakers, brewers, builders, chemical works, confectioners, iron and brass foundries, laundries, leather dressers, oil workers, potters, printers, saw-mills, smiths, steamboats, and tanners. Every one of these trades could be carried on without the production of any smoke whatever and without interference with the economical carrying out of their businesses. For the remedy of this state of things the Institute looked, in private houses, to the use of improved grates, but the ultimate line of progress would be the abolition of the use of crude coal in open grates and stoves, and the introduction of the use of the gaseous fuel derivable from coal. As to manufactories, both in Lambeth, the East End, and the provinces, some owners had adopted smoke-consuming apparatus with great financial benefit to themselves. These facts would greatly help the Institute in proceeding against offenders, but what they wanted, above all things, was to carry the industrial classes with them and show the advantages of taking the course which the Institute recommended. Mr. Hart urged householders to adopt a system of under-feeding for kitcheners, and to burn in the other grates a mixture of coal and gas coke broken into small pieces, having the sides and backs of the open grates made of fireclay and not iron. In conclusion, he stated that what the Institute aimed at was the appointment of a Royal Commission, so as to collect all the available knowledge on the question and apply that knowledge in abolishing smoke, not only in London but in provincial towns. The Parkes Museum were considering a proposal to allow the Smoke Abatement Institute to exhibit a typical series of smoke-abating grates and appliances, and in the exhibition which will be held next year at South Kensington the ventilation of houses and the abatement of smoke would be an important section. They also wanted to give the local authorities in London increased and more extensive powers to deal with the difficulty; but, above all, they wished to educate public opinion, for that was the only true means of bringing about a better state of things.

After a short discussion, a resolution was passed, on the motion of the Chairman, seconded by Mr. W. White, F.S.A., cordially thanking Mr. Hart for his paper.

The Council of the National Smoke Abatement Institution met at 44, Berners-street, on Monday, to consider the resolution proposed at the Mansion House by the Duke of Northumberland, and seconded by Sir William Siemens:—"That the period has now arrived at which systematic inquiry is desirable into the application of the resources of technical science for the abatement of smoke now largely produced in industrial processes and in the heating of houses, as well as into the operation of the existing laws for smoke abatement and that the Council of the National Smoke Abatement Institution be requested to urge upon the Government the desirability of appointing a Royal Commission for the purpose." It was decided to comply with the request contained in the resolution, and a committee of the Council was appointed to take the necessary steps. A proposition to arrange

with the Council of the Parkes Museum for space to exhibit smoke-abating appliances at that institution was considered and adopted, subject to conditions being agreed. The general report on the tests made by the Institution since the last meeting was presented, together with detailed statements and tables, prepared by the engineer, for future publication.

THE PICTURESQUE OF TO-DAY.

In an article headed "Venice at the East End" in last Monday's *Pall Mall Gazette*, that brilliant and picturesque writer, Mr. Richard Jefferies, after describing vividly the scene of the floating out of outward-bound shipping from the London docks at each tide, adds the following comment, equally eloquent and pertinent, to which we have pleasure in giving further currency:—

"This happens, not on one day only, not one tide, but at every tide and every day the year through, year after year. The bright summer sun glows upon it; the red sun of the frosty hours of winter looks at it from under the deepening canopy of vapour; the blasts of the autumnal equinox howl over the vast city, and whistle shrilly in the rigging; still at every tide the world of ships moves out into the river. Why does not a painter come here and place the real romances of these things upon canvas, as Venice has been placed? Never twice alike, the changing atmosphere is reflected in the hue of the varnished masts, now gleaming, now dull, now dark. Till it has been painted, and sung by poets, and described by writers, nothing is human. Venice has been made human by poet, painter, and dramatist, yet what was Venice to this,—this the Fact of our own day. Two of the caravels of the Doge's fleet, two of Othello's strongest war-ships, could scarcely carry the mast of an Australian clipper. At a guess it is 6 ft. through; it is of iron, tubular: there is room for a winding spiral staircase within it; as for its height, I will not risk a guess at it. Could Othello's war-ships carry it, they would consider it a feat, as the bringing of the Egyptian obelisk to London was thought a feat. The petty ripples of the Adriatic, what were they? This red bowsprit at its roots is high enough to suspend a trapeze; at its head a ladder would be required to mount it from the quay; yet by and by, when the tide at last comes, and its time arrives to move outwards in the dance of a million tons, this mighty bowsprit, meeting the Atlantic rollers in the Bay of Biscay, will dip and bury itself in foam under the stress of the vast sails aloft. The 40-ft. billows of the Pacific will swing these three or four thousand or more tons, this giant hull which must be moored even stem to shore, up and down and side to side as a handful in the grasp of the sea. Now, each night as the clouds part, the North Star looks down upon the deck; then, the Southern Cross will be visible in the sky; written, but half a globe apart. What was there in Venice to arouse thoughts such as spring from the sight of this red bowsprit? In two voyages my Australian clipper shall carry as much merchandise as shall equal the entire commerce of Venice for a year. Yet it is not the volume, nor the bulk only; cannot you see the white sails swelling, and the proud vessel rising to the Pacific billows, the North Star sinking, and the advent of the Southern Cross; the thousand miles of ocean without land around, the voyage through space made visible as sea, the far, far south, the transit around a world? If Italian painters had had such things as these to paint, if poets of old had had such things as these to sing, do you imagine they would have been contented with crank caravels and tales thrice told already? They had eyes to see that which was around them. Open your eyes and see those which are around us at this hour. In five centuries people will just begin to realise what London is."

How far more true, healthful, and really "poetic," is the turn of thought and feeling here shown, in comparison with that sentimental mauling over the remains of the past, that refusal to see or recognise anything great, noble, or inspiring in the life, and deeds, and associations of to-day, which we are accustomed to from another distinguished æsthetic writer and his satellites. Believing as we do, that the present age, instead of being (as Mr. Ruskin would have us think) ignoble and mean in its motives and associations, is one of the most interesting and stirring periods of human life that have been, we welcome criticism on its surroundings so appreciative as that we have quoted. The moral of Mr. Jefferies's remarks is, do not moan about the poetry of an age that is gone for ever, but keep your mind open to the poetry of the actual life around you, and remember the story of "Eyes and No Eyes."

Examinations in Sanitary Engineering. "M. H. B." writes:—Could any reader inform me whether there is a diploma to be had for passing examinations in sanitary engineering?

AN EXHIBITION OF WORKS IN WOOD, 1884.*

SIR,—It is proposed by the Carpenters' Company and the Joiners' Company of the City of London to hold an exhibition of models, specimens and illustrations of all matters relating to their several crafts, next summer,—as is, I believe, announced in your advertising columns; and we hope that many of your readers may find the proposal of sufficient interest to induce them to assist us by becoming exhibitors.

The Companies offer a number of prizes for models and specimens of work, and designs, and these, it is hoped, will induce clever carpenters and joiners to devote some of their spare time this winter to the preparation of such objects. It is also proposed to form a museum, consisting of every sort of illustration of the art of the carpenter and that of the joiner, from the earliest times to the present day. Many architects who have measured drawings, prints, photographs, and models of famous roofs, or timber bridges, half-timbered houses, &c., or of old and new joinery of interest, could aid very materially in this effort to advance the knowledge and practice of an art interesting to us all by lending them for exhibition. There must be also many specimens, drawings, and photographs of old joiners' work in architects' hands, especially stalls, bench-ends, and tabernacle work from churches and cathedrals, which would be of the greatest interest, as would also be good specimens or drawings of modern work of the same sort.

Students of architecture will find that prizes for models and drawings of works in wood from actual measurement, and also from engravings, have not been forgotten, and it is to be hoped that a keen competition for these will ensue.

Both the Companies have on their Courts men practically familiar with their respective trades. The Master of the Carpenters' Company is an architect of long standing and position, Mr. W. W. Pocock. We have in our hall plenty of space for the exhibition, and intend to spare no pains to make it successful. Will your readers, as many of them as can do so, co-operate with us? T. ROGER SMITH.

P.S.—Full particulars will be forwarded by post to any person making application to the Clerk to the Carpenters' Company, Carpenters' Hall, London-wall, E.C.

We append the following particulars as to the classes of work to be illustrated in the Exhibition:—

1st Division. Constructive Carpentry, in which skill in obtaining the greatest amount of strength at the smallest expense of material and labour shall be the object.

Class 1. *Roofs*, iron being allowed only in straps, bolts, spikes, &c., for uniting the parts; any excess of iron being considered a defect.—1st prize, 5*l.* and a medal; 2nd prize, 3*l.*

Class 2. *Bridges, Floors, Beams, &c.*, with the same allowance and limitation.—1st prize, 5*l.* and a medal; 2nd prize, 3*l.*

Class 3. Any of the above where the timber is the principal material; yet iron may be used as an auxiliary, as in tie-rods, king or queen heads, and bolts, &c.—1st prize, 5*l.* and a medal; 2nd prize, 3*l.*

Class 4. *Centring*, framed or other scaffolding, piling, shoring, needling, and all temporary works, including temporary buildings, with the same allowance and limitation as in Class 1.—1st prize, 5*l.* and a medal; 2nd prize, 3*l.*

Class 5. Any other framing of timber, with the same allowance and limitation as in Class 1. Under this head, scarfing, mortising, &c., may be shown.—3*l.* and a medal.

2nd Division. Constructive and Ornamental Carpentry, in which skill in obtaining architectural or picturesque effect combined with strength and economy in material and labour shall be the object aimed at.

Class 1. *Timber only*, iron, however, being allowed, as in Class 1, Division 1, such as open roofs, girders, gates, palisades, screens, porches, verandahs, &c.—1st prize, 5*l.* and a medal; 2nd prize, 3*l.*

Class 2. *Timber as the covered foundation of other material producing architectural effect*, such as domes, steeples, vaulting, bracketing, &c.—1st prize, 5*l.* and a medal; 2nd prize, 3*l.*

Class 3. *Timber, combined with brick, cement, tiles, &c.*, as in half-timbered houses.—1st prize, 4*l.* and a medal; 2nd prize, 2*l.*

Class 4. Any other carpentry combining skill in construction and architectural effect.—3*l.* and a medal.

In this 2nd Division the judges will take into

* Want of space last week obliged us to defer the publication of this till the present issue.

consideration and balance against each other the two essential elements of strength and architectural effect, to be obtained at a given cost of material and labour.

3rd Division. Joinery in the undermentioned divisions and classes, all to be hand-work, and not machine-work, and in wood:—

Class 1. *Staircases and handrails*.—1st prize, 5*l.* and a medal; 2nd prize, 3*l.*
Class 2. *Window frames and sashes, casements and shop-fronts*.—1st prize, 4*l.* and a medal; 2nd prize, 2*l.*

Class 3. *Doors, shutters, dados, and framing generally*.—1st prize, 4*l.* and a medal; 2nd prize, 2*l.*

Class 4. *Chimney-pieces, pulpits, stalls, &c.*.—1st prize, 5*l.* and a medal; 2nd prize, 2*l.*

Class 5. *Cornices, brackets, barge-boards, &c.*.—1st prize, 3*l.* and a medal; 2nd prize, 1*l.*

Class 6. Any other joinery not coming under the above classes.—3*l.* and a medal.

4th Division. Carving in Wood, all to be hand-work:—

Class 1. *Carvings of mouldings and cornices*.—1st prize, 5*l.* and a medal; 2nd prize, 3*l.*

Class 2. *Other ornamental carving*.—1st prize, 5*l.* and a medal; 2nd prize, 3*l.*

5th Division. Models or Drawings of existing examples, ancient or modern, coming under any of the foregoing classes:—

Class 1. *Drawings from actual measurements*.—1st prize, 5*l.* and a medal; 2nd prize, 3*l.* and a medal.

Class 2. *Models from actual measurements*.—1st prize, 7*l.* and a medal; 2nd prize, 4*l.* and a medal.

Class 3. *Models from drawings or engravings*.—1st prize, 5*l.* and a medal; 2nd prize, 3*l.* and a medal.

The accuracy and skill shown in the workmanship of the drawings or models will be chiefly taken into account in awarding the prizes in this division, but the importance or interest of the object illustrated, as an example of the carpenter's or joiner's art, will also be taken into account.

The original sketches and dimensions must be sent with all work done from actual measurement, not for exhibition, but to be submitted to the judges.

Application for further particulars to be made to Mr. S. W. Preston, Carpenters' Hall, London-wall, E.C.

THE NEW ALHAMBRA THEATRE.

THE new Alhambra Theatre, Leicester-square, is to be opened in two or three weeks' time, and upholsterers, decorators, scene-painters, and stage carpenters are now busily engaged in completing the fitting-up of the house. On Sunday afternoon last a party of about 30 ladies and gentlemen accepted the invitation of Messrs. Perry & Reed, the architects, to visit the theatre, when its acoustic properties were tested, and as far as these could be judged of in a half-upholstered and nearly empty house they were deemed to be satisfactory. We gave two interior views of the theatre, together with a general description of the building, in our last volume (pp. 810, 814, 816), and therefore it is not necessary for us to enter fully into detail on the present occasion. It is claimed for the building that it is absolutely fire-proof. The columns and girders supporting the different tiers are entirely of ironwork, completely encased in and protected from the action of fire by concrete, this protective coating having a minimum thickness of 2 in. The floors are of iron and concrete construction, the iron being entirely embedded in the concrete. The partitions between and behind the private boxes are also of concrete, fitted with iron doors, and all the doors in the building are of iron. There are three tiers, viz., the dress circle, the upper boxes, and the amphitheatre behind the latter rises the gallery. The exit from all these parts of the house, as well as those from the pit and pit-stalls, appear to be adequate for all demands that may be made upon them; they have, of course, been planned in accordance with the requirements of the Metropolitan Board of Works. There will be little or no wood in the auditorium, except for hand-rails, balustrade tops, and for the backs of seats, the framework of the latter being of iron. The stage has been considerably enlarged, and will be completely provided with the latest appliances for facilitating the rapid change of scenic effects. The height from the stage to the gridiron is 64 ft. Beneath the stage is a chamber 60 ft. deep, so that scenery may be

quickly lowered into it. The whole of these arrangements are being carried out under the direction of Mr. Fox, the stage machinist. All the woodwork is painted with asbestos paint on every exposed portion of its surface. The lighting of the interior will be entirely by means of gas. In the centre of the domed roof of the auditorium is a sun-burner, containing upwards of 800 lights, and said to be the largest sun-burner in the world. This has been made and fitted by Messrs. Strode & Co., and is fed by a gas-pipe. The whole of the other portions of the gas-fitting work has been done by Messrs. Vaughan & Brown, of Kirby-street, Hutton-garden. The chandeliers and brackets are of iron, brass, and glass, from special designs by the architects. The stage is fitted with Messrs. Vaughan & Brown's patent flash-light system, by means of which the gasman at the index-table is enabled to light or extinguish the whole of the gas on the stage instantaneously. Hydrants for the extinction of fire have been fitted up throughout the building by Messrs. Hand, Mason, & Co. The whole of the structural ironwork in the building has been made from drawings prepared by Professor Kennedy, of University College. Mr. Gatercole is the clerk of works, Mr. W. Brass is the contractor.

GERRARD HOUSE, SOHO.

ANTIQUARIES may be interested to know that the freehold of Gerrard House will shortly be submitted for sale. It was originally built in about 1680, and was first occupied by the gallant Charles Gerrard, Earl of Macclesfield, a brave partisan of Charles I.; and subsequently Lord Mohun, the duellist, and Lord Lyttelton, became tenants of the once famous mansion. Externally the house does not present much attraction, but much of its former magnificence is still to be seen in the fine ceilings with carved cornices and mantel-pieces, and notably in the noble staircase, down which, we are told, gay ladies swept with their long trains in the days of my lords Macclesfield and of the gay and profligate Lord Mohun.

APPARATUS FOR TESTING AIR.

An ingenious apparatus, which has been devised by Dr. Wolpert for the purpose of ascertaining in a simple manner the quantity of carbonic acid in the air of a room, is referred to in the German press. The principle on which the appliance is constructed is the disturbing effect produced on lime-water by carbonic acid. An indicator vessel, in the shape of a pear, is extended with the air of the room, and according to the number of times it can be discharged into a glass cylinder filled with lime-water before a given degree of disturbance is reached, the comparative purity of the atmosphere is noted.

THE PLANTING OF TREES IN CITIES.

In the course of an interesting paper lately read at the Vienna Assembly of the Building Engineers' Association, Herr Riedel dwelt upon the hygienic advantages resulting from trees being planted in the thoroughfares of cities. He alluded to the fact that there is less exact knowledge on the subject than there exists as to gardening and the culture of trees in forests; his circumstance probably arising from the exceptional influences to which trees in thoroughfares are subjected, and the special care required in their treatment. The points involved in the discussion of the subject are:—The subterranean conditions of the spot where the trees are situated; the choice of the description of trees; the climatic conditions of the locality as well as of the respective thoroughfares; the properties of the water used in watering them; and the difficulties of producing adequate subterranean circulation of air.

It is usually necessary to dig a hole and fill it with suitable earth before planting trees. This system was commented upon as being in several respects unsuitable. It was also remarked that the trees most suitable for planting are those which grow in the district. The necessity of artificial watering is evident on account of the speedy removal or evaporation of snow or rain. The system of watering trees at all times except winter (without regard to the particular stage of growth they are passing through) was spoken of as being opposed to the manner in which nature provides trees with moisture.

Ventilation is in some cities effected by pipes being laid between the roots of the separate trees, and as they also communicate with the outer air, efficient ventilation is thereby secured. In many cases, however, it would seem that the holes in which the trees are planted, are too small; the roots being thus allowed to come into contact with broken stones, &c.

To prevent the hurtful consequences of such a method of planting, Herr Riedel has suggested that large and deep holes should always be dug, and that between the mould which is placed in them and the surrounding earth, there should be in all cases a layer of some porous substance. The proposal includes effective communication between the various cavities in which the trees have been planted.

An approximate estimate was given as to the cost of the method described. For each tree the excavation of 428 cubic feet of earth was suggested. There would then be brought to be placed in the cavity 250 cubic feet of mould, 107 cubic feet of broken stone, slag, and sherds. About 215 square feet of sod would then be laid. The cost of thus planting a tree was stated to be about 50s. to 60s.

LOOK TO YOUR DRAINS.

THERE was tried before Mr. A. Lushington at Kingston last week the case of Holberton v. Levy, which shows in a high degree what increasing care is necessary in attention to drains, cesspools, and closets, especially from those who seek to make money by letting their houses furnished for the summer months,—in some cases that they may themselves take holiday. It also serves as a straw to show which way the wind blows in public, and indeed, judicial opinion, as to the first importance of sweetness in houses,—for hire, at any rate.

Here a widow lady took a furnished house for two months, but, from the first, asserts that she became aware of unpleasant odours, and she calls various witnesses to corroborate this; amongst others the Medical Officer for the district, who, although he declines to pledge himself to sewage gas, still tells his client that if she "smells anything" she had better get out,—which she at once proceeded to do after occupying the house for a fortnight, for which period she paid the rent.

The plaintiff, however, sued for the remainder of the money; and professional and other witnesses being called with some variance of testimony,—some saying it was a sewage smell which had proceeded from a small crack discovered in a drain pipe, and others roundly asserting that it was an escape of illuminating gas provoked by the use of a temporary stove with flexible tube.

The Judge summed up, and gave a verdict for the defendant, stating that it appeared there was reasonable ground for declaring the house uninhabitable. Although the plaintiff with his wife and seven children had occupied the house for four years previously, and continued to do so, enjoying good health the whole time, yet the merest indication of drainage mischief, slenderly supported by the evidence, was sufficient to cause a serious money loss, and is, therefore, of very grave importance to those desirous of changing residence for a short period, who should thus be doubly careful to have all matters of drainage, bath wastes, ventilating-pipes, and also gas-pipes thoroughly examined by competent persons, and corrected, if necessary, before giving up the house to strangers for ever so brief a period, so that reliable evidence should be forthcoming that this had been done, and a fresh set of noses not be offended by anything that may even possess a suspicion of foulness: otherwise it will be seen how serious may be the consequences, and that, instead of having enough to pay his expenses when away, he may, on the contrary, find himself the unhappy possessor of a full-blown bill of costs.

THE LATE FIRE AT HAGGERSTON.

SIR,—In consequence of the disastrous fire at Haggerston, over forty poor families have been rendered entirely homeless and destitute, and a fund has been commenced locally for their relief.

Will you kindly insert this in your next issue, so that the matter may be brought before the public?

CHARLES WM. MORLEY, Hon. Sec.
No. 96, Great Cambridge-street,
Hackney-road, E., Nov. 6, 1883.

WIDFORD CHURCH.

THE village of Widford (Herts) was on the 1st inst. a scene of an interesting ceremony. The day had been set apart for the dedication of the lately-completed paintings by Miss Hadsley Gosselin, who for two years has been employed in beautifying the roof of the chancel. The decorations must have taxed considerably the ingenuity of the artist, who has found upwards of one hundred designs with which to enrich the building, chiefly consisting of emblematic and symbolical subjects, no design being repeated throughout the whole work. The roof, a seven-canted one, is divided into ninety-six panels, by wooden ribbings. Those over the choir seats are about 3 ft. 6 in. square, and contain, *inter alia*, the emblems of the twelve Apostles encircled in wreaths of oak-leaves. The panels over the Communion-table are much smaller and more numerous, and are embellished with various emblematic designs. On the flat part of the roof are paintings on wooden panels. Commencing from the west end we have:—

1. St. Francis of Assisi, after a picture by Perugino in the National Gallery.
2. St. Martin of Tours, the idea of which is taken from a French miniature of the early part of the sixteenth century.
3. St. John the Baptist, after Giulio Grandi.
4. The Dove, symbolical of the Holy Ghost.
5. The Crucifixion, after a painting by A. Trinita.
6. The Lamb of God.

Other art decorations were included in the dedication, including an altar-cloth worked by the Misses Lewin, of Widford.

"LUNCHES."

SIR,—In the description of Wapenbury Camp, at p. 578, *ante*, I read that it adjoins "a ridge of natural formation called 'the lunches'"; query "natural." Great attention is now given to the local indications of open field cultivation of land in England, there being no certainty how or when it was introduced; was it Celtic, Roman, or Saxon?

This word "lunch" is only a variant of *lynch*, *lynchet*, a ridge formed by innumerable ploughings, where the instrument turns abruptly at the line of demarcation. Your contributor gives it in the plural form as "lunches": were other banks obliterated in constructing the camp? As to the word, Bailey has "Lynchet, a line of green sward which separates ploughed lands in common lands." Halliwell has "Linch, a balk of land; any bank or boundary for the division of land, also called *lincher* and *linchet*; a narrow steep bank or footpath."

In Anglo-Saxon we have *hinc*, a ridge of land; the particular form "lunch" approximates to "jump," of which, in another sense, it is a mutation.

These indications of open field culture are found about all the Roman sites in England, and it is a moot point whether the Saxons brought the system with them or found it already in use.

Nov. 3, 1883.

A. H.

OFFICIAL INTEREST IN CONTRACTS.

SIR,—In your issue of last week (p. 581), you have a very interesting article on "The Liability of Members of Vestries and Local Boards interested in Contracts with those Bodies," and I am glad to see that the Court of Appeal have upheld the ruling of a lower court on the subject. At the same time, I should feel much obliged if you or any of your readers can inform me if the same liability attaches to a member of the Board of Guardians of the Poor,—as, in the district from which I write, it is the custom of a certain member of the latter Board to find money for the various alterations and additions to the union-house, in fact, in a local paper published this day (which I post you with this), you will find that the security for a loan obtained from a member was signed and sealed. I must, in justice, say that the guardians advertised for the money, and two persons tendered, the interest and terms of repayment in both cases being the same, but one of them, whom I understood to be a financial agent, wanted 3*l.* 3*s.* for the negotiation of the said loan, and it was resolved that the money should be borrowed from the member. A resolution has now been passed by the Board "that cottages be built on the union grounds," and another loan will be required to pay for them. Doubtless the same member will be willing to find the required amount.

In my opinion this is a case to which the law is most certainly intended to apply, equally with the cases you report, viz., *Hemming v. Williamson* and *Fletcher v. Hudson*.

I do not ask this question with any view of enforcing the penalties, if any, incurred, but that it may be fully established that such proceedings are against the law as well as common sense.

A CONSTANT READER.

DRAINAGE OF PROPERTY SITUATE WITHOUT THE DISTRICT OF A LOCAL BOARD.

SIR,—A client of mine is the owner of a large property situate without the district of a certain Local Board.

Under section 22 of the Public Health Act, 1875, he has power to cause the drain from his property to communicate with the sewer of the Local Board on terms to be agreed upon. In other words, he has power to compel the Local Board to take the sewage from his property on payment of compensation.

Can any of your readers give me particulars of any instances where this power has been acted upon, and the names of any gentlemen engaged in the cases?

The difficulty is to know upon what basis the amount of compensation should be assessed.

I forward my name, but, for obvious reasons, not for publication, and subscribe myself,

SURVEYOR.

DISSENTING CHURCH-BUILDING NEWS.

Bulwell.—The Wesleyan Chapel at Bulwell is now opened for divine worship. Messrs. Joseph Munks, of Hucknall, and Thomas McCulloch, of Bulwell, were the builders. The total cost is 3,435*l*. The architect is Mr. Wills, of Derby.

Farnworth.—The memorial stones of the Congregational Church, Francis-street, were laid recently; the works are progressing rapidly. The design is a twelfth-century Gothic. The chapel has chancel and transepts. There will be accommodation, including end gallery, for about 400 adults. The cost will be 2,470*l*. The architect is Mr. Wills, of Derby.

COMPENSATION CASE.

ISAACS V. THE COMMISSIONERS OF SEWERS.

THIS was an action brought in the Lord Mayor's Court by Mr. Alfred John Isaacs, wholesale stationer, at 56, Bishopsgate-street Without, who claimed 7,000*l*. as compensation from the Commissioners of Sewers for taking premises formerly belonging to him at 3, Bevis-marks, Camomile-street, under powers given to them by Act of Parliament, for the improvement of streets.

Mr. Isaacs, the claimant, was called, and stated that the premises in question contained an area of 750 super. feet, the carpet area being 2,500 ft. There were five floors; the rental value was 240*l*. to 250*l*. He purchased the premises in 1875, when he paid 2,200*l*. for the independent expenses. Cross-examined: He had rented the premises for four or five years before he purchased them, at a rent of 100*l*. In consequence of hearing the intention of raising the rent to 160*l*. he purchased them.

Mr. H. H. Collins, architect and surveyor, was next called, and said he put his figures as follows:—that 750 ft. super. and 2,500 carpet area per foot as land value, 4*s*. per foot; rent, 150*l*.; cost of building, 1,500*l*., equals 9*d*. per foot at 7 per cent., which equals 105*l*. The total rental value was 255*l*., which, taken at the 43 per cent. table, equalled 22½ years' purchase, which equals 5,625*l*. Deducting for repairs 100*l*., it was reduced to 5,525*l*., and adding 10 per cent. for compulsory sale, 552*l*. 10*s*., it brought the sum total to 6,077*l*. 10*s*.

Mr. Edward Eason (of Messrs. Reynolds & Eason), of Bishopsgate-street, was the next witness. The total of his valuation was 6,044*l*.

Mr. Edwin Fox (of Messrs. Fox & Bousfield) was called. The rental value of the property he estimated to be worth 250*l*. per annum. He believed it would fetch five per cent. at twenty years' purchase if put up to auction.

Mr. T. Chatfield Clarke, architect and surveyor, said his estimate of the rental of 3, Bevis Marks, was 243*l*. per annum; 22½ years' purchase equalled 5,467*l*., but deducting for substantial repairs, 100*l*., that would bring the amount to 5,367*l*. After adding ten per cent. for forced sale, he made a total of 5,903*l*.

On behalf of the Commissioners of Sewers, Mr. E. N. Clifton, architect and surveyor, was called. He said he should consider the annual rental of the premises in question to have been worth 150*l*. per annum, and that he took at twenty years' purchase. In the ordinary way that would make 3,000*l*. Then it was to be considered that the building was out of repair. The amount he allowed for this was 50*l*., which reduced his sum to 2,950*l*. To that he added the ordinary ten per cent. for compulsory sale of 295*l*., making in the aggregate 3,245*l*. That was a full one.

Cross-examined: Four shillings per foot for land was excessive, but he would not point to anything in Castle-street or Camomile-street which had been sold under that price.

Mr. Vigers was also called, and said he thought 150*l*. was a very fair rental per annum.

After some other evidence, counsel addressed the jury, and the judge having summed up, the jury, after a short deliberation, gave a verdict for 3,750*l*.,—or only 250*l*. more than one half of the amount claimed.

Miscellanea.

The Navigation of the River Dee.—A correspondent of a Manchester paper writes:—The promoters of the scheme to canalise the Dee from Chester to Connah's Quay, on the Flintshire coast, have not lost sight of its importance in relation to the opposition to the project to cut a canal from the Mersey to the Irwell. Of this there can be no doubt that any views which Manchester might entertain in this respect would receive the hearty co-operation of the Corporation of Chester. The country between Chester and Manchester presents absolutely no engineering difficulties. Some years since a scheme was propounded by a Manchester engineer to tap the Dee between Chester and Parkgate, and to cut a canal across Wirral, passing beneath Helsby Crag to Frodsham and Warrington. The water in the Dee, by the proposed arrangement of placing locks at Connah's Quay, and so damming the river up, can be raised to any height, as the banks may be raised at the same time, to insure safety. The promoters will, doubtless, point to the fact that the bar at the entrance to the Mersey is shallower than that over the Dee; that the hearty assistance and co-operation of Chester may be relied upon; and that the heavy dues incidental to entering the Mersey would be saved. Chester possesses railways and canals nearer to all the country southward of it than Liverpool.

The Restoration of Peterborough Cathedral.—At a special meeting of the Restoration Committee, on Wednesday, a report of Mr. Pearson, R.A., condemning extensive portions of Peterborough Cathedral, was considered. According to the *Times*, the architect recommends taking down the western arch and the two remaining piers of the great tower, stating that he found the foundations in a very unsound condition and altogether unfit for supporting the heavy piers and tower. The pulling down of these will necessitate the demolition of fully one-half of a bay of the clerestory on both sides of the nave and transepts, and similar extensive work of demolition will have to be carried on in the triforium and aisle arches below. The estimate of the cost of this work, in addition to the 55,000*l*. required for the other work, is 5,797*l*. The meeting recommended that the work should be carried out.

Better Late than Never.—At the Slough Junction of the Great Western Railway the works in connexion with the new station are progressing rapidly towards completion. The booking offices and waiting-rooms of the up station of the relief line and those of the down station of the main road are now in a forward condition, while the central platform, west of the yard signal-box, is also being proceeded with. The materials used in the construction of the walls of the extensive ranges of buildings consist of red brick and white stone. A large number of artisans are now employed upon the works at the junction and sidings, without hindrance to the vast passenger and goods traffic constantly passing through the place to and from the metropolis. The up-station of the relief line will, it is expected, be ready for use in the course of a few months.

Index to the Copyright Registers at Stationers' Hall.—Authors will be glad to know that a monthly Index to the Copyright Registers at Stationers' Hall now appears in the *Bookseller*. The index is arranged under the titles or subjects of the works entered, so that a glance will suffice to ascertain whether a particular title has been entered. Full particulars of individual entries can, of course, be obtained on application to the Registrar at the Hall. The index will be of great assistance to authors in enabling them to avoid the use of titles which have already been employed, and they will further contribute to its efficiency by taking care that each of their own works is duly entered.

The Statue of Alexandre Dumas, on the Place Malesherbes, Paris, was unveiled on Sunday last. Gustave Doré was the sculptor. We gave a view and description of the work in our last volume, pp. 450, 451 (April 7, 1883).

Proposed Fine Art and Industrial Exhibition at Wolverhampton.—On Wednesday evening a meeting was held in the mayor's parlour, at the Town-hall, Wolverhampton, to further the movement for holding a Fine Art and Industrial Exhibition in the town. The Mayor (Alderman T. D. Gibbons) presided, and, in explanation of what had been done by the committee with respect to the matter, stated that it had been determined to hold an Industrial and Fine Art Exhibition next year (Whitsuntide) in conjunction with the opening of the building in course of erection in Lichfield-street for a Fine Art Gallery. That building, which was the gift of an anonymous donor,—the Town Council having given the land,—was the finest gift that had ever been made to the town. It was proposed that the exhibition should partake of the same character as that held last year at Worcester, and the object would be to make it such a success as to leave a surplus profit of several thousand pounds with which to furnish the Art Gallery in Lichfield-street. Up to the present time a sum of nearly 3,000*l*. had been guaranteed. It was thought that a guarantee fund should be raised of 5,000*l*. The exhibition building would be erected on the vacant piece of land in North-street, and it was proposed to make a covered way from the Art Gallery in Lichfield-street, along the side of the churchyard wall into Wulfruna-street, so as to connect the two buildings. Mr. P. Horeman, builder, had consented to put up the exhibition building for a sum of 2,500*l*. Authority was given for the commencement of the building.

Society of Arts.—The 130th session of the Society of Arts will commence on the 21st inst., with an opening address from Sir William Siemens, chairman of the Council. Previously to Christmas there will be four ordinary meetings, in addition to the opening meeting, and for these the following arrangements have been made:—November 28th, Mr. A. J. R. Trendell, "The International Fisheries Exhibition of 1883"; December 5th, Mr. Thomas T. P. Bruce Warren, "The Manufacture of Mineral Waters"; December 12th, Mr. Thomas Fletcher, F.C.S., "Coal Gas as a Labour-saving Agent in Mechanical Trades"; and December 19th, Mr. W. H. Preece, F.R.S., "The Progress of Electric Lighting." There will be six courses of lectures delivered during the session, under the bequest of Dr. Cantor. These will be,—1st, "The Scientific Basis of Cookery," by Mr. W. Matthei Williams, F.C.S.; 2nd, "Recent Improvements in Photo-Mechanical Printing Methods," by Mr. Thomas Folas, F.C.S.; 3rd, "London Houses," by Mr. Robert W. Edis, F.S.A.; 4th, "The Alloys used for Coins," by Professor W. Chandler Roberts, F.R.S.; 5th, "Chemist of the Royal Mint"; 5th, "Some New Optical Instruments and Arrangements," by Mr. J. Norman Lockyer, F.R.S., F.R.A.S.; and 6th, "Fermentation and Distillation," by Professor W. Noel Hartley, F.C.S. The usual short course of Juvenile Lectures will be delivered during the Christmas holidays. The subject will be "Crystals and Crystallisation," and the lecturer Mr. J. M. Thomson, of King's College, London.

"Chimneys at Hampton Court."—In reference to the drawing under this title published in the *Builder* for October 27th, we have received a letter from Mr. W. Greenhill, of Surbiton, telling us that he had sketched this part of the building, as a boy, in 1832, and the upper part of the chimney-stacks was then of a much plainer description, evidently (from sketch enclosed) of more modern date than the substructure. By an odd coincidence, Mr. Greenhill was himself called upon to restore this part of the building in 1852, and the ornamental tops to the chimney-stacks were his restoration. In thus putting up an imitation of what he supposed to have been originally there, he was, no doubt, acting on a principle then generally accepted; and his imitation seems to have been good enough to deceive one person, at all events, after the lapse of thirty years, into regarding them as original. The fact is an interesting comment on the whole subject of restoration, and on the mistakes and mystifications which restorers have prepared for the edification of future generations. The responsibility of the mistake rests, of course, with Mr. Arthur Keen, who made the sketch, and whose signed communication on the subject will be found on p. 552. Perhaps Mr. Keen may be able to give some further explanation.

Keighley School of Art.—The annual distribution of prizes to the students of the Keighley School of Science and Art took place in the 31st ult. Mr. Walter Smith, a former teacher in the school, gave an interesting address, in the course of which he observed that—

"Nature was the basis of all art, and for the purpose of depicting natural forms was a necessity. But flowers or foliage soon withered, but growing plants preserved their natural form and colour, suggesting to the draughtsman or designer many beautiful form arrangements or harmonies of tints. With nature as the motive or basis of design, and art as interpreter and adaptor, historical specimens of applied art as guides and examples, design would probably be better taught than before, and in this way a conservatory and museum would be greatly advanced toward the improvement of taste and original design. Mr. Forster had spoken a few years ago of the general and scientific education being like a ladder, with its feet in the public schools and its top at the universities. There should be the same relationship in the grades of drawing and design in the different grades of schools as there was between the rounds of a ladder,—the elementary part of drawing, as a language, being learned in the day schools, and the application of drawing in design should be the work of students in schools of art. He thought now was that students came to the art schools not able to draw, and had to be taught to do so before any technical study in art was possible. That indicated a need for more and better work in elementary drawing in the day schools, and there could be no doubt that now, as in 1852, any serious improvement in our system of art education must begin with the teaching of children in day schools."

Mr. Rawson, the head master of the Art School, reported that the total number of students who have entered the school during the year is 173, against 162 last year. The session had not been an eventful one, except in the increase of prizes for advanced work, and the decrease in the number of satisfactory sets. This had been brought about by the Department raising the required number of marks from ten to twenty, and retaining the previous value of the marks. For the first time a Trade School student, Fred. Carrouds, has obtained a third-grade prize. The number of Trade School boys who have received instruction in drawing in the Art School is 105. The number of girls from the Drake & Tonson's School has quite equalled that of the boys. The weaving school has been attended by fifteen students, but the work has been of a comparatively elementary character, but the school has suffered hitherto by constant changes in the teaching staff.

The New Council Chamber at Guildhall.—Rapid progress is being made with the new Council Chamber at Guildhall, designed by Mr. Horace Jones, the City Architect. Although the foundation-stone was only laid so recently as April last, the building has already been carried up almost to its intended height, more especially on the site of the old offices of the Town Clerk, Architect, and other offices of the Corporation. The structure will shortly be ready to receive the dome, which, with the nave, will give an internal height to the building of about 100 ft. It is expected that the building will be covered in, and the dome completed, by the end of the present year, or early in spring, and that the chamber will be internally finished and ready for opening by June next. Mr. B. E. Nightingale, of the Albert Works, Thames Embankment, is the contractor, the amount of the contract being 33,249l.

Penalty for Dishonest Plumbing.—The case of Howard Z. Norton, a plumber of 2,315, Fourth Avenue, New York City, was tried on Thursday, the 11th inst., after repeated postponements, for putting, or allowing his workmen to put, a dummy vent-pipe to a trap in the basement of a house, south side 121st-street, 13 ft. east from Madison Avenue. He was convicted and fined fifty dollars. The complaint was made by the Board of Health of this city, Louis M. Hooper, Assistant Sanitary Engineer, being the principal witness. This is the kind of work we like to record. It looks like business.—*New York Sanitary Engineer.*

The Builders' Benevolent Institution Dinner.—The 36th anniversary dinner of this institution took place at the Freemasons' Tavern on Thursday last, Mr. Henry R. Smith, President, in the chair. The total amount of the subscriptions and donations announced during the evening was 554l. We defer our report until next week.

Lifts at Amsterdam.—Messrs. Thomas & Sons, of Cardiff, have been awarded a silver medal,—the highest award made,—at the Amsterdam Exhibition, for lifts.

Society of Chemical Industry.—On Wednesday the first general meeting of the Birmingham and Midland Section of the Society of Chemical Industry took place at the Mason College. Mr. A. M. Chance presided, and gave a résumé of the objects of the society. He said he could not do better than quote Professor Roscoe, who, at the formation of the parent society said its main object was to bring together at definite intervals those who were interested in or possessed knowledge of the utilisation of chemical action on a large scale, and had charge of or were connected with those large branches of industry which were dependent upon chemical principles. Several branches of the society had been already formed in various parts of the country, and he might particularly point to those at Manchester, Liverpool, and Newcastle. The present meeting, he thought, would witness the actual and complete formation of the Birmingham section. He ventured to think, as a local man, that Birmingham would not be behindhand in the formation of a very influential section of the parent society. A town which comprised such a variety of works dependent upon chemical industry naturally rose to a height of considerable importance, and therefore it was possible that that section would become one of the most powerful sections of the society. Mr. A. Wilson read a paper on the generation of heating gas and the recovery of by-products. In the course of his remarks he said that, whilst no doubt the cooling of gas for the purpose of depositing ammonia was an exceedingly good process, yet the cost of the plant as at present worked out was certainly so high as to be really alarming to all except large capitalists. For instance, the consumption of one cwt. of coal would involve an outlay of 50l. in plant, and this was somewhat serious when it was considered that one cwt. of coal represented merely 7,000 feet of gas.

The Metropolitan Water Companies and their Charges.—At the instance of Mr. J. H. Mote, the Islington Vestry have adopted the following resolution:—

"That, having regard to the injustice worked by the system on which London water companies assess their rates, it is expedient that the Government be urged to deal with the subject in the next session of Parliament, independently of any Bill for creating a municipality of London; and that memorials, under the seal of the Vestry, embodying this resolution, be forwarded to the First Lord of the Treasury, the Home Secretary, and the Metropolitan Board of Works."

In pointing out many discrepancies and inconsistencies in respect of the water companies' charges, Mr. Mote mentioned that the New River Company charged at the rate of 4 per cent. for water supplied to every dwelling-house rated at a sum not exceeding 200l., and 3 per cent. for every house the rateable value of which exceeded 200l. A similar scale was adopted by the Chelsea, the West Middlesex, and the Grand Junction Water Companies. The Lambeth Water Company, however, charged at the rate of 7½ per cent. for a house rated at 200l. The Kent and the Southwark and Vauxhall Water Companies' charges were also higher than those of the New River Company. Other speakers alleged that the companies, including the New River Company, were still increasing their charges, the company named having augmented their charge for laying on water from 2s. 6d. to 5s.

Royal Archaeological Institute.—On the 1st inst. the first monthly meeting of the Archaeological Institute for the winter session of 1883-4 was held at the new rooms in Oxford Mansion, Oxford-street, the chair being occupied by the president, Lord Percy, who, in his opening address, spoke feelingly of the late valued president, Lord Talbot de Malahide, and also referred to the appointment of a new secretary, through the resignation of Mr. Hartshorne. A paper on "Sundry Recent Discoveries" which have been made in the central tower of Peterborough Cathedral during its reconstruction, by Mr. J. T. Irvine, was read by the secretary. Ranged on tables around the room was a collection of about forty pairs of gauntlets, made of steel, one belonging to Edward the Black Prince being of brass gilt, which were exhibited by the Baron de Cossou and Mr. F. Weekes. The specimens ranged with respect to date from the fifteenth to the seventeenth century, and some explanatory notes upon their characteristics were read by the Baron de Cossou.

Supply and Demand.—The Metropolitan Board of Works recently advertised for a competent person to supervise and report upon buildings in course of erection upon the Board's land, and to assist generally in work of a similar character. The salary offered is 150l. a year, rising by annual increments of 12l. 10s. to 200l. No less than 185 candidates have presented themselves for the office, many of whom have been in practice as architects, some in business as builders, and a large number of clerks of the works. The appointment has not yet been filled up, the subject being still under the consideration of the Board.

TENDERS.

For alterations at the Old King's Arms, Poland-street, Oxford-street, for Mr. Bucknell. Mr. Chas. Morning, architect:—

Shires	£785 0 0
Beale	756 0 0
Downs	735 0 0
Laugher & Pinkley	730 0 0
Spencer & Co.	720 0 0

For rebuilding No. 15, Great Castle-street, Regent-street. Mr. W. J. Miller, architect:—

Morter, Stratford	£1,185 0 0
Downs, Walworth	1,077 0 0
Adams, Great Titchfield-street	1,065 0 0
Spencer & Co., Knightbridge-street	1,023 0 0

For additions to Catholic schools in Alfred-road, Portsmouth, for the Very Rev. Canon Horan. Mr. Joseph Stanislaus Hansom, architect. Quantities by Mr. Henry Smith:—

G. Burbridge	£1,683 0 0
J. Butt	595 0 0
W. Ward	867 0 0
W. B. & L. Light	852 0 0

For house at Enfield, for Mr. Herbert Livermore. Mr. W. Gilbree Scott, architect, 102, Galford-street, Russell-square:—

A. Fairhead, Enfield (accepted)	£1,200 0 0
---------------------------------------	------------

Accepted for Wesleyan Chapel, Stainland, near Halifax Mr. T. L. Patchett, architect, Halifax:—

W. & S. Thornton & Son, Huddersfield	£100 0 0
Mason's and Bricklayer's Work	255 10 0
Taylor & Helliwell, Stainland	255 10 0

For rebuilding the White Swan Hotel, Upper Newwood, for the City of London Brewery Company. Mr. J. Jewhurst, architect. Quantities by Mr. Robert Ridge:—

Burt	£4,300 0 0
Jackson & Todd	3,975 0 0
Shurman	3,533 0 0
Cannings & Mullins	3,920 0 0
Maldes & Harper	3,387 0 0
Spencer & Co.	3,385 0 0
L. & C. Bowyer	3,835 0 0
Battley	3,870 0 0
Watson	3,758 0 0
Deacon & Co.	3,507 0 0
Smith & Sons	3,567 0 0
Marriage	3,500 0 0
J. W. Hobbs (accepted)	3,440 0 0

For additions to Park House, Sutton, Surrey, for Mr. W. Appleton. Mr. Herbert D. Appleton, architect, 157, Wool Exchange:—

W. Smith, Kennington (accepted)	
---------------------------------------	--

For engineering and gasfitting work to the Recreation Hall, at the Asylum for Imbeciles, Darenth, near Dartford, Kent, for the managers of the Metropolitan Asylum District. Messrs. A. & C. Harston, architects, 15, Leadenhall-street:—

Clark, Bunnett, & Co.	£205 0 0
T. Hushby	581 0 0
J. & F. May	575 0 0
Clements & Co.	630 0 0
Strode & Co.	497 0 0
Snider & Co.	376 0 0
Gardners (J. & C. Christie)	320 0 0

For fitting up internal fixtures in a tailor's shop at Kingsland, for Mr. Bishop, 93, Epping-road, Stoke Newington. Messrs. Scharien & Williams, architects, 3, Gloucester-terrace, South Kensington:—

J. A. Hingston	£155 0 0
Drew & Cadman	118 0 0
Scharien & Williams	110 0 0
Thompson	97 5 0
Hill Bros.	93 0 0

For re-making, kerbing, channelling, and forming the Montem and Penrith roads, New Malden, Surrey, for the District Local Board. Mr. T. Lockwood Heward, Surveyor to the Board, 7, John-street, W.C.:—

Montem-road.	Penrith-road.
Bath & Blackmore, Clapham	£204 0 0
Free, High Wycombe	272 6 0
E. & W. Iles, South Wimbledon (two roads)	525 0 0
H. Streeter, Croydon	250 0 0
Atkins & Bowyer, Twickenham	218 10 0
M. Foulter, Malden	217 10 0

For the erection of engine-room, iron water-tanks, and laying down Victoria stone floor to Lewis's Steam Mineral Water Works, High-street, Shadwell. Mr. W. C. Livermore, architect:—

Contract No. 2.	
England & Thompson (accepted)	£154 0 0

For new roads and drains on the Bexhill-on-Sea Estate, for Earl De La Warr. Messrs. Fowler & Hill, surveyors:—

Webb, Brockley	£4,628 0 0
Dibley, Hastings	2,590 0 0
King, Hollington (accepted)	2,400 0 0

For the erection of new hall and buildings for the trustees of the Lower Hamlets Mission. Messrs. W. A. Boulton and A. E. Warner, architects. Quantities supplied by Messrs. Williams & Gritten:—

Holland & Hansen	£15,987 0 0
Hall, Beddall, & Co.	15,340 0 0
Holland	15,330 0 0
Brass	15,487 0 0
Shaw	15,484 0 0
Perry & Co.	15,400 0 0
Bangs & Co.	15,375 0 0
Conder	15,280 0 0
Kirk & Randall	15,254 0 0
Trollope & Son	15,240 0 0
Higgs & Hill	14,784 0 0
Ashby & Horner	14,777 0 0
Morter	14,723 0 0
Clarke & Bracey	14,643 0 0
Ashby Bros.	14,587 0 0
Lawrence	14,501 0 0

For the erection of new wood-chopping and oakum-picking sheds at West Ham Union House, Leytonstone, for the West Ham Board of Guardians. Mr. Lewis Angell, architect. Quantities by Messrs. R. L. Curtis & Son:—

Keen	£23,350 0 0
Ayres	2,400 14 0
Martin	2,749 10 0
Nicholson	2,707 0 0
A. G. Smith	2,700 0 0
Hawkins	2,610 0 0
Gregar	2,579 0 0
Gentry	2,577 0 0
Webb	2,475 0 0
Horlock	2,475 0 0
Burling & Co.	2,439 0 0
C. Cox (accepted)	2,420 0 0
Russel (withdrawn)	2,100 0 0

For laying and constructing 18 in. iron pipe, and 18 in. and 16 in. stoneware pipe-servers in the bed of Pudding Mill River, and in Marsh Gate-lane, Stratford, for the West Ham Local Board. Mr. Lewis Angell, engineer. Quantities by Messrs. R. L. Curtis & Son:—

J. W. & J. Neaves	£2,780 0 0
J. Jackson	2,615 0 0
Burling & Co.	2,501 0 0
Stander & Co. (accepted)	2,420 8 10
Dearle (withdrawn)	1,819 0 0

For first block of residential chambers to be erected in Red Lion-square and Theobald's-road, Bloomsbury, for the St. George's Residential and General Building Company (Limited). Mr. Chas. H. Worley, architect. Quantities by Mr. R. C. Gled:—

W. Downs	£9,477 0 0
Mattcock Bros.	9,390 0 0
Patman & Fotheringham	8,973 0 0
E. Lawrence & Sons	8,833 0 0
Servener & Co.	8,829 0 0
Parker	7,980 0 0
T. L. Green (accepted)	7,938 0 0

For rebuilding The Flora, Harrow-road, for Mr. E. Tabernacle. Quantities by Messrs. Raymond & Webb:—

Carter	£4,174 0 0
Perry & Co.	3,467 0 0
W. P. Burt	3,406 0 0
W. Dwyer	3,392 0 0
Ward & Lambie	3,371 0 0
Vardin & Sons	3,350 0 0
Thomas & Cardus	3,250 0 0
Patman & Fotheringham	3,274 0 0
Simpson & Co.	3,179 0 0
Thomas & Butland	3,129 0 0
W. Oldrey	3,100 0 0

For the erection of Wesleyan Chapel at Amptill. Mr. Charles Bell, architect. Quantities by Mr. H. Lovegrove, No. 26, Budge-row:—

Orchard, Banbury	£3,975 0 0
Twelvetrees, Biggleswade	3,897 0 0
Smith & Son, Norwood	3,897 0 0
Terrell, Leighton Buzzard	3,553 0 0
Benn, Luton	3,468 0 0
Wade & Edey, St. Neots	3,420 0 0
Foster, Bedford	3,405 0 0
Harrison, Bedford	3,317 0 0
Cox, Luton (accepted)	3,105 0 0

For pair of houses, Farnham-road, Guildford, for Mr. George Keen, Mr. A. B. Harding, architect, Guildford:—

Martin, Wells & Co., Aldershot	£1,563 0 0
Lawrie, Godalming	1,537 0 0
G. & R. Smith	1,533 0 0
Smith & Sons	1,500 0 0
Strudwick (accepted)	1,410 0 0

For new premises in Eastcheap, for Sir H. W. Peck, Bart., M.P. Mr. Alexander Peebles, architect. Quantities by Mr. W. E. Stoner:—

	Building.	Alternative works.
R. Conder	£22,316	£23,535
Holland & Hansen	21,787	3,538
Hall, Beddall, & Co.	20,240	3,359
Mowlem & Co.	20,480	2,855
G. Trollope & Son	19,971	3,332
W. Brass	19,393	2,898
J. T. Chappell	19,381	2,598

For cabinet, bar-sittings, &c., at the Princess of Wales, Grove-street, Deptford, for Mr. Frank Barnes, Mr. Henry Roberts, architect, 113, Lewisham-road:—

Lacocles & Co.	£284 2 6
Hubble & Trott	270 0 0
J. W. Taylor, Camberwell (accepted)	248 0 0

Counter and Paving.

T. Heath (accepted).

Outside Lamps.

Biggs & Co. (accepted).

For alterations and decoration to No. 6, Spring Gardens. Messrs. Glasier & Sons, architects:—

Kinnimont	£128 10 0
Howard Brock	84 0 0
Clarke & Mannock (accepted)	83 0 0

To Contributors and Correspondents.

ALL LETTERS AND COMMUNICATIONS referring to LITERARY AND ARTISTIC MATTERS must be addressed—

"To the Editor of THE BUILDER,
46, Catherine-street,
Covent Garden, W.C."

And not to any individual by name.

T. N. (amount of tender not given).—G. T. E. B. (not strictly speaking a "sanitary" case).—G. C. (thanks have been written).—M. H. J. A. P. A. J. H. (Manchester Society of Architects).—H. F. W. H. T. G. T. (lights and treads received).—A. G. A. (thanks shall appear).—R. T. (not suitable for use).—J. D. & Sons.

Correspondents should address the Editor, and not the Publisher, except in cases of business. All statements of facts, lists of tenders, &c. must be accompanied by the name and address of the sender, not necessarily for publication.

We are compelled to decline pointing out books and giving addresses.

NOTE.—The responsibility of signed articles, and papers read at public meetings, rests, of course, with the authors.

NOTICE TO ADVERTISERS.

Persons advertising in the *Builder* may have REPLIES ADDRESSED TO THE OFFICE, 46, Catherine-street, Covent-garden, W.C., FREE OF CHARGE.

Letters will be forwarded if addressed envelopes are sent, together with sufficient stamps to cover the postage.

CHARGES FOR ADVERTISEMENTS.

SITUATIONS VACANT, PARTNERSHIPS, APPRENTICESHIPS, TRADE, AND GENERAL ADVERTISEMENTS.
Six lines (about fifty words) or under 4s. 6d.
Each additional line (about ten words) 0s. 6d.
Terms for Series of Trade Advertisements also for Special Advertisements on front page, Competitions, Contracts, Sales by Auction, &c. may be obtained on application to the Publisher.

FOUR Lines (about THIRTY words) or under 3s. 6d.
Each additional line (about ten words) 0s. 6d.
PREPAREMENT IS ABSOLUTELY NECESSARY.

* * * * * Remuneration must be sent, but all small sums should be remitted by Cash in Registered Letter or by Money Order, payable at the Post-office, Covent-garden, W.C. 11

Addressed to No. 46, Catherine-street, W.C. Advertisements for the current week's issue must reach the Office before THREE o'clock P.M. on THURSDAY. The Publisher cannot be responsible for DRAWING, TESTING, or left at the Office in reply to Advertisements and strongly recommends that of the latter COPIES ONLY should be sent.

TERMS OF SUBSCRIPTION.

"THE BUILDER" is supplied gratis from the Office to residents in any part of the United Kingdom at the rate of 12s. per annum, prepaid. Remittances payable to DOUGLAS FOURDEBINE, Publisher, 46, Catherine-street, W.C.

Best Bath Stone.

WESTWOOD GROUND,
Box Ground, Combe Down,
Corsham Down,
And Farleigh Down.
RANDELL, SAUNDERS, & CO., Limited,
Corsham, Wilts. [Adv.]

SUMMER-DRIED

Corsham Down Stone

For Winter Use.

PICTOR & SONS, BOX, WILTS. [Adv.]

Doubling Freestone and Ham Hill Stone.

Of best quality, supplied from their own Quarries and Kilns by STABLE & HART, Stoke, Shropshire. Agent, Mr. H. MITCHELL, 6, Augustus-road, Hamersmith, London, W. [Adv.]

Doubling Freestone, Of best quality, supplied from their own Quarries and Kilns by STABLE & HART, Stoke, Shropshire.

Agent, Mr. H. MITCHELL, 6, Augustus-road, Hamersmith, London, W. [Adv.]

HAM HILL STONE, BLUE LIAS LIME

(Ground or Lump),

Asphalte.

Sceysse, Patent Metallic Lava, and White Asphaltes.

M. STODART & CO.

Office:

No. 90, Cannon-street, E.C. [Adv.]

Asphalte.—The Sceysse and Metallic Lava

Asphalte Company (Mr. H. Glenn), Office, 38, Poultry, E.C.—The best and cheapest materials for damp courses, railway arches, warehouse floors, flat roofs, stables, cow-sheds and milk-rooms, granaries, tun-rooms, and terraces. [Adv.]

Immense quantities of DRY WAINSCOT, DRY MAHOGANY, DRY WALNUT,

in all thicknesses.

B. J. HUDSON & SONS,

Whitfield-st., W., and Great Peter-st., S.W.

London. [Adv.]

J. L. BACON & CO.,

MANUFACTURERS OF IMPROVED

STEAM AND HOT-WATER

APPARATUS,

FOR WARMING AND VENTILATING

Private Houses, Churches, Schools, Hospitals,

Manufactories, Greenhouses, &c.

OFFICES AND SHOW-ROOMS:—

No. 34, UPPER GLOUCESTER PLACE,

DORSET SQUARE, LONDON, N.W.

And at DUBLIN, BELFAST, GLASGOW, and

NEWCASTLE.

Illustrated Pamphlet on "Heating" post free.

CHAPPUIS' PATENTS FOR REFLECTING LIGHT.

DAYLIGHT REFLECTORS OF EVERY DESCRIPTION,

ARTIFICIAL LIGHT REFLECTORS.

WHY BURN GAS?—CHAPPUIS' REFLECTORS DIFFUSE DAYLIGHT.—They are exclusively adopted by and fitted at Buckingham Palace, all H.M. Government Offices, Houses of Parliament, H.M. First Commissioner of Works, the Metropolitan Board of Works, British Museum, South Kensington Museum, Royal Institution, Guildhall Museum, on board H.M. Ships, also Railway Companies' Offices, Hospitals, Institutions, Banks, Insurance Offices, Manufactories, Private Houses and generally from Noblemen's Mansions to Artisans' Work-shops. 30,000 in use in London alone. Patronised by leading Architects, Engineers, Contractors, &c., &c.

N.B.—For Prospectuses and Diagrams, address Stamped Envelope to

P. E. CHAPPUIS, Patentee and Manufacturer, 69, FLEET-STREET, LONDON.

NOTICE.—The POLYGONAL REFLECTOR (Latest Patent) FOR ARTISTIC AND PICTURE GALLERIES. Its construction allows of the angle of light being readily altered so as to reflect in any desirable direction.

The Builder.

Vol. XLV. No. 2128.

SATURDAY, NOVEMBER 17, 1883.

ILLUSTRATIONS.

Sketches at Architectural Association Excursion, 1883.—By Mr. E. W. Montford	653
Sketches at Hapington (Double-page Photo-Lithograph)	654
Principal Staircase, New Town-hall, Vienna (Double-page Engraving).—Herr F. Schmidt, Architect	656
Council Chamber, New Town-hall, Vienna (Double-page Engraving).—Herr F. Schmidt, Architect	658
Villas at Addlestone, Surrey.—Mr. Chas. H. Cooke, Architect	665
Plan of Principal Floor, New Town-hall, Vienna	687

CONTENTS.

Hydraulic Architecture	641	Archaeological Lectures at the British Museum	650	Building Patent Record	669
Spring Gardens: Site for the New Government Offices	643	Architectural Association Sketches, 1883	650	Sewerage Matters	669
Subterranean Water and the Support of Buildings	644	Villa Residences at Addlestone, Surrey	650	Chalmers at Hampton Court	669
Squire Architect	644	The New Town-hall, Vienna	657	Kirk's Lincoln Bridge	669
Continental Notes	645	West Front of M.H. Cathedral	663	Graphic and Analytic Statics	670
The Architectural Association	645	Surveyorship Items	668	"Lunches"	670
St. Matthew's, Princes-street	648	The Distribution of the Atmosphere	668	"Ye Gods, it doth Amaze me!"	670
Obituary	648	Competition	668	What is a New Street?	670
Building Agreements and Bills of Sale	648	Dangers to Health arising from Whitewash, &c.	668	Case under the Employers Liability Act: Stephens v. Simpson	670
The Destruction of Town House	648	New Buildings in St. Swinburn-lane	668	Provincial News	670
Jesus College, Cambridge	649	Repaired, now at the Church of St. Andrew Undershaft	668	Church Building News	671
Iron and Concrete	649	New Model Lodging Buildings in Lambeth	668	Books: Lady Eastlake's Five Great Painters, Longmans	671
Builders' Benevolent Institution: Annual Dinner	650	The Alcott Exhibition Palace, Battersea Park	669	Muse-Luna	672

Hydraulic Architecture.

Portion of the duty of either the architect or the engineer is so difficult as that which relates to hydraulic constructions. There are many reasons for this, such as the great cost and trouble of obtaining foundations below water, the different behaviour of various kinds of cement, and of other materials, in the air and in the water, the variation in the stability due to weight, from the buoyant action of the water, and other causes. But probably the chief difficulty lies

in the absence of satisfactory theory. For all kinds of terrestrial structures, from the simplest form of cottage to the loftiest vault, burdened with impossible pendants, or soaring between flying buttresses and pinnacles, the definite mathematical law can be detected and expressed. It is true that the draughtsman rather leans on practice and experience than on geometric or algebraic analysis. But if the latter be wanted, in the case of any new and unprecedented construction, it is attainable; and within the last few years, as those columns of our own which are devoted to reviews bear ample witness, so much thought has been given to the subject of the graphic solution of structural problems that there is hardly a question which can be put to the architect of which he cannot work out the answer on the drawing-board.

The case is far otherwise when water has to be taken into account. Instances of the disastrous failure of costly works for hydraulic purposes are not so rare as might be desired. Thus in May, 1847, the Government of India directed that the works on the Ganges Canal, designed by Sir Proby Cautley, should be vigorously carried out. Water was admitted into the canal in April, 1854, but during the next few years defects in the work came gradually to light, the chief of which was the "excessive declivity in the bed of the main channel, which caused a velocity of current greater than the sandy soil was calculated to withstand without erosion" (Buckley's "Irrigation Works of India," p. 101); yet the gradient was only 18 in. per mile. In 1863 Sir Arthur Cotton estimated the alterations and additions to this canal at 2,725,000*l.*; and proposed to reduce the inclination of the bed of the canal by from 3 in. to 6 in. per mile. But there is no doubt that Sir Proby Cautley had followed the formula of Dubaut, which at the time was, and indeed still is, an accepted authority for the setting-out of canals.

But we need not go to India for an illustration of the imperfect acquaintance with hydraulic law which is as yet characteristic of the state of science. As recently as 1864 the Mersey Board so far completed the works of the Low Water Basin at Birkenhead that water was run for the first time through the sluicing conduits. "But from some cause," says Mr. Ellacott, in his description of the basin (Min. Proc. Inst. C.E., vol. xviii., p. 525), "which was never clearly accounted for, such a violent shock was communicated to a portion of the masonry forming the back of the landing-stage recess, that the wall was instantly forced over 5 in. out of the perpendicular. Except for the purpose of sluicing under the landing-stage, no further attempt was made to run the water through the culvert. No trial was ever attempted of the corresponding culvert on the north side of the basin." Again, "on January 25, during the fourth trial of the sluices, the gates of the north channel were torn from their fastenings, and swept into the chamber. On the 21st of July the gates of the south sluicing-chamber were carried away in a similar manner." After the 15th of November, 1864, when the last trial of the sluice was made, it was found that the sheet piling in front of the apron was bare on the face to a depth of 4 ft., that a hole 9 ft. deep below the finished bottom of the basin had been excavated by the water, so that the piling had parted from the masonry of the apron. On the 23rd of November the water was pumped out of the chamber, when it was found that a large part of the floor had been torn up, and the concrete and piles laid bare in several places. It became clear that the action of the sluices was attended not only with much inconvenience and hindrance to business, but also with a considerable amount of danger. In fact, so unmanageable were these sluices, with a head of only 14 ft. 3 in. of water, which gave to the issuing current a velocity of twenty miles per hour, that the low-water basin, on which 470,252*l.* had been spent, had to be abandoned, and converted into a wet dock.

It is true that Mr. Rendel, the original designer of the sluices in question, was unfortunately no longer surviving to carry out his plans. But the law of the flow of water from an orifice under a definite head is so well known that it is not to be thought possible that the velocity of the current exceeded that anticipated. What was wanting was experience as to the inability of even the most carefully-constructed masonry to resist the effects of such a flow of water. From this point of view the failure of the Birkenhead sluices is highly instructive.

Scarcely less significant were the casualties that occurred in 1855, during the construction of the Victoria Docks, designed and executed by Mr. Bidder. These docks are entered from the Thames through a lock 80 ft. wide at the

bottom, 326 ft. 6 in. long from gate to gate, and with a depth of 10 ft. on the sill at low water. The walls of the dock are of concrete, faced with piling, and 20 ft. thick at the bottom. The portion of the chamber containing the gates is of brickwork, and the bottom between the walls is lined with 7 ft. 6 in. of concrete, or with 6 ft. of brickwork. The top of this continuous invert is 25 ft. 6 in. below Trinity high-water mark. On Sunday, 17 June, 1855, great progress had been made on the works; the upper and lower gates had been lifted into their places, the caisson was nearly completed, the bottom of the large dock of 74 acres had been puddled; and the removal of the river bank, and dredging at the entrance, was nearly all that remained to be done. There had been no symptom of weakness, nor any premonition of what was about to take place, except that on the previous day some joints in the coping on the south side were observed to be a little open, but to so slight an extent that the circumstance was not reported. The next day, however, in the afternoon, the portion of the north side between the upper and lower gates began to give way, moving forward bodily into the lock, pushing up the thick puddle towards the centre, bending and breaking the tie bars behind, dragging the tie piles forward, and, in some instances, breaking them off. A few hours afterwards the south side failed in the same way, but the brick walls and platforms remained intact.

This large and sudden failure was accounted for (Proc. Inst. C.E., vol. xviii. p. 463) on the ground that the continuous pumping which had been carried on for two years, night and day, in order to get in the foundations of the lock walls, had drained the country over a considerable area. The water in a well at a distance of 24 miles from the docks had been lowered during this pumping, and rose when it ceased. At the time of the accident the pumping had been discontinued for some weeks, and 3 ft. of water had been allowed to collect in the dock, to test the puddle. It was excluded from the lock chamber, and it was thought that the hydraulic pressure accumulated at the back of the wall and forced them bodily inwards. Fractures of the pivot casting, and abrasion and splitting of the roller-path, also took place.

The Avonmouth Dock was designed by Mr. Brunlees; commenced in August, 1868, and opened for traffic in February, 1877. It has an area of 16 acres, being 1,400 ft. long and 500 ft. wide, and is entered from the Severn by a lock, which has a clear length of 454 ft. between the inner and outer gates, and is 70 ft. in width. The range of tide for which the gates have to provide is 43 ft. 10 in.; the width of the dock wall at the base, 2 ft. above the dock floor, is 16 ft., and the width at the top is 10 ft. 6 in. When about 247 lineal yards of this section of wall had been built up to the level of the

coping, and the backing was well advanced, a failure of about 6 yards occurred. The wall broke through from top to bottom in the middle of this distance, slid forward 12 ft., and sank 4 ft. 6 in. Where not affected by this slip, the wall showed no tendency to slide out of place, but an inclination to overturn by coming forward at the top. It was built with a batter of 3 ft. 4 in. from floor to coping, but when the forward movement ceased, the batter measured only 1 ft. 4 in. The part of the wall that slipped forward maintained its original batter.

When the east wall was finished and backed up to nearly its full height, and within a few days from the date fixed for letting water into the dock, a subsidence of about 140 yards of the most recently completed portion took place. The movement was of a similar kind to that which had occurred on the opposite side. At the apex or breach, the wall slipped forward 15 ft. 6 in., and sank 7 ft. 6 in. The dock floor in front was thrown up 10 ft. in height for a distance of about 60 ft. The breach in the wall was much larger than in the other case, and extended through the foundations. This portion of the wall was founded at an average depth of 9 ft. below the bottom of the dock, and the whole of the foundation moved forward with the slip. Both accidents occurred on a Sunday night, when no men were at work, and two hours before the occurrence of the latter failures nothing unusual was to be seen in the wall.

In the discussion which took place on the Avonmouth Dock at the Institution of Civil Engineers on December 12, 1878, Mr. Walmsley Stanley remarked that before designing the walls of a dock the exact nature of the strata on the line, and for some distance on each side of the walls, should have been ascertained. He regarded the foundation for the docks at Avonmouth as exceptionally good. They rest on a bed of fine grey sand underlying the clay at an almost uniform level throughout its length, and at a depth of 6 ft. below low water of equinoctial spring tides. The trial borings were only carried 10 ft. deeper, and the pile-driving gave no signs that the sand had been passed through at a depth of 25 ft. Springs were frequent in this sand. A layer of 6 in. of clay had been sufficient to keep these down, but when this was removed they burst out in various places, and in some had to be provided with permanent outlets. The question is very pertinent. "Were these failures through any new elements of danger, or new combination of elements, or did they arise from want of proper examination before the design and execution of the work?" Whatever reply be given to this question the special study that is requisite for works of the kind is abundantly proved by these serious failures.

In the year 1864 it was found necessary to extend the dock accommodation at Belfast. The foundation for the wall of the new Abercorn basin was firm sand, so that it was not considered necessary to do more than drive in front of the wall a close row of sheet piles, 12 ft. long and 6 in. thick. At the Duffin and Spencer docks the substrata were soft and unreliable, and 15 ft. bearing piles of round larch were introduced. Battens and sleepers were laid on the heads of these piles, and covered with 18 in. of concrete, on which the masonry, 16 ft. in width at the bottom were built. These walls showed weakness from the first. As the backing proceeded, the symptoms became more serious. Two years after the erection of the entrance to the Spencer tidal dock a length of 70 yards of the wall fell bodily forward into the entrance. It fell outwards at the top, pivoting on its toe, and broke the bearing piles across about their middle, 6 ft. or 7 ft. below the bottom of the wall.

The sleepers, concrete, and tops of the piles adhered to the masonry, which had to be removed by divers. The nature of the backing used, which seems to have exerted on the back of the wall a semi-fluid pressure perhaps double of that due to hydraulic head, together with the soft foundation, are enough to account for the Belfast failures. Still the same question recurs, Was not the nature of these materials known beforehand? and should it not have been more skillfully dealt with?

Closely combined with the important question of the security of the foundation of hydraulic works is that of the true principles on which their dimensions should be determined. While adequate size is demanded by the exigencies of traffic, any undue or unused excess of dimen-

sions is at the same time a cause of increased cost and of increased risk. In hydraulic works the ruling dimensions must be determined in consistence with those of the craft which it is intended to accommodate. As to this, the present course of shipbuilding is, to some extent, in favour of restricted rather than of increased width, although in those dimensions which provide for the length of craft there is advance rather than decline. The gates of the Canada Dock at Liverpool, 100 ft. wide, were constructed for paddle-box steamers. So great a width is not needful for a screw-ship. It is plain that the extreme dimensions in length, breadth, and width, plus a certain allowance for clearance, of the craft which it is designed to accommodate, should be taken as the ruling dimensions for hydraulic works. For locks, a foot or two of clearance in each direction may suffice; for docks, basins, and canals, 25 per cent. of width and depth will hardly be too much to allow for clearance. Room in excess of this will involve waste. The present proportions used by ship-builders give from eight to ten beams to the length, and locks that are not in this proportion either for one or for a pair of vessels involve great waste, both in construction and in supply of water. Thus the 454 ft. lock at Avonmouth could accommodate the largest vessel that is now likely to pass it if it were 45 ft., or, at the utmost, 50 ft. wide. A dock entering from the tideway can hardly be expected to admit two vessels at a time, convenient as this arrangement is on a canal; but if two vessels, say of 38-ft. beam, were docked at the same time at Avonmouth, there would be a useless length of 50 ft. or 60 ft. in the lock.

The want of intelligent foresight in the adoption of dimensions that shall be adequate, and not more than adequate, for the work that a structure is intended to facilitate, is remarkably evinced in the dimensions of our canal locks. Thus the line of canal communication between the water of the Thames and that of the Trent is made by two different lines. A boat arriving at Northampton by the Grand Junction Canal has to use the Grand Union Canal in order to go on to Leicester. But while the locks on the Grand Junction are 87 ft. 6 in. long, and 15 ft. wide, those on the Grand Union are only 78 ft. long, and 7 ft. 2 in. wide. As to the width, it may be urged that the narrow locks will admit a single boat, while the wide lock will admit either a barge or a pair of boats of the same width as will pass, singly, through the narrow lock. But as to length there is a positive discrepancy. A boat built for the Grand Junction lock will not pass through the Grand Union lock. A boat built for the latter, if it pass on the former canal, loses 10 or 15 per cent. in capacity, and involves a corresponding unnecessary loss of water at each locking.

In no case is this absence of proper engineering consideration more conspicuous than in that of the Suez Canal. After an expenditure of 20,000,000*l.* on a water-way of eighty-eight geographical miles in length, extreme difficulty is felt in passing a traffic of 7,000,000 tons of shipping through the canal in a year. In 1852, 3,198 ships, of an average tonnage of 2,150 tons each, made the transit of the canal. This is not quite nine vessels per day, and yet it has been decided to expend a million sterling on the inefficient palliatives of intermediate basins. "For all steam ships, or vessels towed, varying between 280 ft. and 300 ft. in length," reported the Hydrographer to the Navy, in February, 1870, "with 35 ft. beam, and a draught of 20 ft., it will, with the improvements and appliances earlier described, be a convenient highway. . . . For the transit of vessels larger than those described the canal is not so well adapted." That the Indian transports, of "about 400 ft. long, with a draught of 22 ft. water, and beam of nearly 50 ft., can pass through the canal is undeniable; but no practical seaman need be told that in steering through what may be called a continuous dock ninety miles in length, less than 100 ft. wide, and with nothing showing above water to mark the centre of it, frequent grounding and consequent delay may be anticipated, though every possible care and precaution be taken. It is to be considered, also, that the midship section of one of these vessels bears about an average proportion of 1 to 4 to the deep water of the canal."

And yet the cross section of the Suez Canal, according to the final determination, contains 3,862 square feet beneath the water-line. The midship section of H.M.S. *Warrior* is 1,219 square feet. This is a much closer fit than the

proportion named by the Hydrographer to the Navy. The *Warrior* made one of the fastest passages on record through the Canal, viz., in 12 hours 50 minutes. But her speed at sea was 14.35 knots per hour. But of the entire cross section of the Canal not more, in many parts, than 66 per cent. is in any way available for navigation. The only function performed by at least one-third of the area is that of allowing the water displaced by the passage of a vessel to return to the wake of the same or that of the protection of the banks from wash (as to the latter, however, revetting with stone is being partially carried out). The passage of vessels is restricted to a speed of five knots, and no two vessels are allowed to cross in the Canal unless one of them be moored in a lay-by.

Of these "gares," or passing places, there are fourteen. It will thus be seen that thirty vessels are the utmost that can at one time be in course of transit through the canal, viz., fifteen under steam and fifteen in the lay-byes or terminal basin. At five miles an hour (and allowing only twelve hours in the day) it would thus take nearly two days to go through 100 miles of canal. But, as for half the time of transit, the vessels are in the lay-byes, the speed is reduced to 2½ knots, and the time of passage is extended to four days. Hence the just complaints of the shipping trade.

By the use of a scientific cross section, of equal area to that actually excavated, but with revetted sides, the capacity of the Suez Canal would have been increased in a proportion which it may seem fabulous to state. In the first place two 2,000-ton vessels would have been able to pass one another in any part of the canal, the vessel which had the wind against her slackening or stopping for the time of passing. This would at once raise the capacity of the canal from 30 to 200 vessels,—as a line of ships might follow one another, in each direction, with perfect ease a mile apart. In the second place the time consumed in passing would have been reduced by one-half; as no time would be lost in lay-byes. In the third place the cost of propulsion would have been reduced, as the hydraulic mean depth of the scientifically designed canal (the area of water divided by the wetted perimeter) which is taken by hydraulicians as a measure of resistance, is double that of the actual cross-section. And in the fourth place, as a curved bottom would be substituted for the present flat bottom, vessels of 4 ft. more draught than could pass the French canal could pass one constructed with the true hydraulic cross-section.

Important as these considerations are to the shareholders who have sanctioned the expenditure of another million for the construction of intermediate basins, which will little, if at all, increase the actual capacity of the canal for traffic, as above shown, we have but little hope that any remonstrance expressed in the English language will be likely to reach them. But if traffic is impeded by the contempt shown by politicians for hydraulic rules, it is to be hoped that this will not be altogether the case in England. Not a week now passes without signs of the revival of the public interest in canals. What has been done in England by canals is now being investigated; and the return of a certain portion of traffic to these cheap and silent high roads is now anticipated by every writer who touches on the subject.

Since the days of Brindley and of Telford great advance has been made in mechanical and in hydraulic knowledge. It is sufficient to compare the experiments of Mr. Froude, as they are described in volume xviii. of the Transactions of the Institution of Naval Architects, with those of Mr. Palmer and Sir John MacNeill, as described in volume i. of the Transactions of the Institution of Civil Engineers, to see how much has been done to determine the true dimensions of vessels, and how little has been done to determine the true dimensions of canals. According to the formula now accepted, the resistance to the passage of a vessel through the Suez Canal is just double that which would be encountered if the cross section, when of the same area, was of a better shape. We do not say that this is the case,—we only say that it is so according to the accepted formula. But with millions in the course of expenditure on the waterways of Europe, is it not lamentable that we should have to look in vain for the inauguration of those experiments, for the guidance of the hydraulic architect and engineer, of which

every member of the profession who has turned his attention to the subject at once acknowledges the importance and deplorable absence?

SPRING GARDENS: SITE FOR THE NEW GOVERNMENT OFFICES.

"The fate of things lies always in the dark:
What cavalier would know St. James's Park?
For Locke's stanzas where gardens once did spring,
And wild ducks quack where grasshoppers did sing."
"Art of Cookery."—Dr. King.
"The manner is . . . to alight at the Spring-garden so-called, in order to the Parke, as on Thulleries is to the gourse; the inclosure not disagreeable, for the solemnness of the grove, the warbling of the birds, and suit opens into the spacious walks at St. James's."
"A Character of England, 1659."
(Ascribed to John Evelyn.)

Passing along the Duke Humphrey's walk on his way from St. James's Palace to the scaffold before Whitehall, the royal Martyr discoursed with Colonel Tomlinson, who walked by his side, concerning the manner of his burial. At Spring-gardens, where it is said he stopped to rest awhile and take a cup of water, he turned to Dr. Juxon and Herbert, following in his footsteps, and pointed out one or two trees in the inclosure where the cows now stand. As will happen at so solemn and awful a juncture the king's thoughts reverted to the days of his childhood; he indicated the trees which he and his elder brother had planted when they were boys together. Cromwell's edict of 1647 had checked for a while the gaieties of a place which had formed a favourite resort of the idler and upper classes from the time when King Henry VIII., entering into occupation of Wolsley's York Place, took it for his palace at Whitehall.

The spring or fountain whence the Gardens derive their name is mentioned in Hentzner's Latin journal of his journey in this country at the end of the sixteenth century. He speaks of the sun-dial,—not to be confounded with those of Gunter and the Jesuit Francis Hall in Whitehall Privy Garden,—which attracted the notice of strangers, and looking at which they were suddenly sprinkled with water from the spring turned over them by the gardener. The water for this and other fountains in the Garden ran through conduits from St. James's Fields, one supplying the old pump over against St. James's Church, Piccadilly. The Gardens themselves, together with the northern half of St. James's Park, lie within the ancient parish of St. Martin-in-the-Fields, in the year 1635 made independent of St. Margaret's, Westminster. The Egerton MSS. contain early notices affecting Spring-gardens: these include entries of payments for various works and repairs. One, of 29th November, 1601, is to George Johnson, keeper, for a scaffold he had erected against the Park wall here,—overlooking the Tilt Yard, now the Horse Guards Parade,* in order that the "Countie Sigmund" might the better see the tilts.

It is the sumptuous wall of brick, to use the Lord Treasurer Cromwell's words, which in 1593 his royal master set round "all the meadows about St. James's" according to Holinshed, when he "there made a faire mansion and a parke, for his greater commoditie and pleasure." The meadows, in fact, represent the swamps and marshes which by the thirteenth century had encompassed the Cowford Pool. This pool (site of the Green Park hollow) the Eia or Aye replenished in its course from Marylebone Park to the King's Scholars' Pond some two hundred yards above Vauxhall Bridge. The Thames occasionally overflowed this tract, the *locus terribilis* of Offa's charter, A.D. 785, and outskirts of those dense woods and forests which then and for centuries afterwards bounded the north-east of London. In this instance Henry acquired the land, being about eighty-three acres in extent, honestly enough. He exchanged part with Eton College for Chertis-ham and other lands in Suffolk, and part for Poughley Priory, in Berkshire,† with the abbot and convent of West Minster. His "faire mansion," made out of the lazar house which pious citizens had long ago endowed in a then desolate and remote region, is that same Palace which gives a name to the at once most brilliant and most august Court in Europe. The "commoditie and pleasure" provided are quaintly but graphically delineated by Aggas

in his map, for he fills the spot with stags and deer; Spring-gardens, too, he shows as well wooded and separately enclosed by a high wall.

Norden's plan of Westminster City (1633) gives the numerous water-courses branching off from Rosamond's Pond* at the Park's western end, haunt of the fish and water-fowl whose keeper is mentioned in State Papers of 1572. Close by is shown (as also in Hogarth's view) the mound stationed on which the Queen, on the 8th of May, 1593, had a goodly view of 15,000 citizens "besides wiffers and other awayters," all clad in "bright harness with coates of white silk or cloth and chaines of gold," as they marched in "three great batailles round about the Parke of St. James." Along the inclosure's eastern side were the cock-pit,† tennis-court, bowling-green, and tilt-yard, appertaining to Whitehall. Queen Elizabeth's "fortress or castle of perfect beauty" witnessed the jousts, military exercises, and similar displays of horsemanship so popular at that period; Gerard the while, in his search for similes, finding the small bugles or ox-tongue in the dry ditch banks about Pikadilla,—that is, in the Green-park. Either the redoubtable old knight Sir Henry Lee of Ditchling, came year after year to break a lance in championship of one who, at a revered stage of life, loved to hear Sir Walter Raleigh, as a despairing lover, address her as Venus or as Diana, away from whose sight he could not live. Over the entrance from Whitehall, where the Horse Guards is now, was a metrical inscription in Latin preserved by Hentzner, bidding its readers to beware of Acton's fate, and which probably referred to Elizabeth as the naturally pitying Virgin, to her rejection of Philip II. of Spain, and to the Armada's defeat. In the Queen's reign, and many years subsequently, the Park continued to be reserved for the royal family and household, being placed in charge of a keeper who received for salary £1. 5s. 6d. annually.‡

With King James I.'s accession we find a bathing pond in Spring-gardens, fruit-trees trained *en espalier* along the walls, and the walks covered over with gravel. About this period, too, eighteen loads of turf are brought from Tottill-fields, that Henry Prince of Wales might the better practise his favourite diversion of shooting at the butts. The subject of William Drummond's "Meliades" was wont to invite the foreign visitors at his father's court to share his prowess in the manly exercises. In the diary, for example, of Louis Frederick, Prince of Wurtemberg, we read that at eight o'clock on the morning of Thursday, the 3rd of May, 1610, he went to St. James's Park to run at the ring with the Prince, and afterwards breakfasted with him at Whitehall. King James doubled the keeper's salary, giving him the additional charge of his strange collection of pets, to which his sons and grandsons made many additions. These included, from time to time, the two antelopes presented by the Mogul, the hawks and sables from the Muscovite Czar, the King of Saxony's ounce-leopard, some crocodiles, the quana-quanas (cassowary), the Balearian crane for which a soldier fashioned a wooden leg, and the "four asses . . . tow bees and tow shees . . . and one elephant" of which Buckingham writes in that very curious letter he sent to James from Spain. The royal menagerie was for the most part lodged in Spring-gardens, as is evident from an order (of the 31st of January, 1626) among the State papers for the annual payment for life of 72l. 6s. 10d. to Philip Earl of Montgomery, for "keeping the Spring-gardens and the beasts and fowls there." Though the park and gardens still remained closed to the public in general, an exception was made in behalf of the inhabitants residing in Petty France, where the back doors of the houses,—Milton's, and after him Hazlitt's, amongst the number,—communicated with the inclosure. In contrast with Cromwell's wanderings through the deserted rooms at Whitehall, his mind tortured by anxiety and remorse, with his moody pacing up and down the Park walks, sounding Fleetwood or Whitelock as to "what if a man should

take upon him to be king?" is the picture of Elizabeth his wife playing at dairy-keeping in a cow-shed by Spring-gardens, or that other picture of King Charles II. now playing at pall-mall or sauntering with his spaniels and his courtiers by Le Notre's Canal and Decoy,—a scene so pleasantly sung by Waller and drawn by Hollar,—and now with rapid strides leaving them all far behind. Innumerable are the references made by the poets and dramatists, the diarists and De Grammonts of the time, to the Park and Spring-gardens in their altered aspect at the Restoration. Here the King uttered many of those witty sayings which go some little way in support of the dictum that Charles, in this the exact converse of his brother, could have been a good king if he would, and which redeem his personal memory in the judgment of a lenient posterity. Here he scandalises Evelyn, whose averted gaze perchance is fixed upon the lodging of yet another royal mistress, the Duchess of Cleveland, at Whitehall, by the tone of his discourse with pretty Nell at the garden of her house in Pall-mall, and here it was he bade Prince George of Denmark, who complained of growing too stout, to hunt with his brother James, to walk with him, and to do justice to his niece. As years go by we may picture the Gardens filled with the Silvias, Clarindas, and Elviras, their swains the Philanders and Strephons,—pretty fellows,—of the *Spectator*; we may see Swift and Prior trotting round the Park together, the one because he was too thin, the other because he was too fat; many a Sir Plume, with his amber snuff-box and clouded cane; many a Sir Fopling Flutter, redolent of pulvillio, with his Mrs. Lovest and Belinda; Queen Caroline's beautiful Marys; Hogarth sketching the landscape and company by Rosamond's Pond, pool of ill presage to dependant love; Richardson hoping Lady Bradshaigh will recognise in him the original of the description of himself, which she was "mighty curious to obtain"; "those goddesses," as Lady Mary Wortley Montague styles them, the Gummings,—fresh from the manor-house at Hemmingford Abbots by the Ouse; a Beau Tibbs, who "blasts himself with an air of vivacity at seeing nobody in town"; and but too often poor Goldsmith himself, *impræparatus*, in the character of his own famishing Jack Spindle.

It was in the Spring-gardens bowling-green that the loyal Scotsman Wilson snatched off the hat of the Duke of Buckingham, who alone stood covered in the presence. We are not told what followed upon Wilson's answer to King Charles that were he allowed he would tell that of this man which many knew though none durst speak. But we do know that Charles I. soon commanded the Gardens and bowling-green to be closed through the disorderly conduct of their frequenters.† These latter, however, were soon accommodated by an enterprising barber, servant to the above-named Lord Montgomery, who established between the Haymarket and Hedge-row (Whitcomb-street) a new gaming-house with two good bowling-greens, the popular Shavers' Hall, of which the tennis-court exists in James-street next door to the old barn and coach manufactory. Re-opened under conditions so more favourable that said John Evelyn could take the ladies of his family and collation, as he employs the term, there, Spring-gardens was again closed at Cromwell's order for a few months, when the Mulberry Garden formed "the only place of refreshment about the town for persons of the best quality to be cheated in."‡

The bricklayers and masons of the Restoration marked Spring-gardens for their own. In vain did the inhabitants of Charing-cross, taking alarm at the spread of houses in St. James's Fields and Pall Mall, petition against the invaders. Sir Charles Cotterell, his Majesty's Master of the Ceremonies, secures a building plot; the next year (1662), Thomas Elliott, groom porter, obtains another. Similar encroachments followed, and though the Gardens preserved to the last that aspect of rural beauty with their trees, flower-beds, and rose-tree hedges, which so delighted the author of

* Site of the Eagle Insurance Company's offices; the only freehold in this part of the Crown property. A prospect of this tract may be remembered her rejoinder on finding an absolute freehold was not, originally, granted to her.
† S. S. passim Garrard's letters in the Stafford Papers, vol. i.
‡ A plot of about four acres, so-called from the mulberry trees, co-eval with Shakespeare's, which William Stallenge planted for James I. at Goring House. Either the Duke would escort Mrs. Reeve, of Killigrew's company, to regale on the tarts. Buckingham Palace grounds cover the site.

* The infantry guard there is still called the Tilt-yard Guard.
† Cardinal Wolsey had dissolved the priory therewith to endow his projected colleges at Ipswich and Oxford.

* "Rosamond's Land" occurs in Abbot Islip's charter of feoffment to the king of certain lands, &c., adjoining the St. James's Hospital, 1531. Filled in and drained in 1770, the name was transferred to the pond in the north-eastern corner of the Green Park, which was filled in 1842. It was in this, of course, that Shelley's first wife put an end to her life.
† Another royal cock-pit stood at the northern end of Dartmouth-street, Westminster.
‡ See Peck's "Desiderata Curiosa," p. 68, from a MS. penes eum.

"Sylvia," the holiday-makers were driven away across the river to another garden, giving it the name of their former haunt, laid out by Sir Samuel Morland and which subsequently became Vauxhall. Amongst its last episodes of fashionable life was the quarrel between Capt. Thomas Howard and "invincible little Jermyn,"—the Countess of Shrewsbury the *terramina causa*,—resulting in a sanguinary duel between principals and seconds alike in the Fields hard by, since it constituted high misdemeanour to draw in the Park. Ere long there arose Buckingham-court, with the mews by the Rummerville Tavern* and Wallingford House; the Outer and Inner Spring-gardens; and Adam Locket opens his coffee-house by a house said to have been inhabited by Cromwell, and where at this day is Drummond & Co.'s bank, founded by Andrew Drummond of the line of Strathallan, circa 1710, who had for clients the Scottish peers that frequented the Jacobite British Coffee-house in Cockspur-street. The allurements of the Gardens are heard of no more, whilst its traces finally disappear in the grant to Lord Berkeley to build over the "Wilderness" in the year 1772.

An examination of some plans in our possession and those in the British Museum goes to show that Spring-gardens as we now see it dates from the beginning of the eighteenth century. William III. is said to have opened the passage from Charing-cross into the Mall in 1699; though an approach here clearly appears on a plan of 1690. But the footway from the Mall up the steps to the original gate in New-street would seem to have been constructed just eighty years ago, when they pulled down part of the old wall for the circular and of the street, leaving the 150 ft. of the wall which runs evenly with the Terrace. Mermaid, Stanhope, and Pump courts were removed by 1755. Lord Berkeley's house in Outer Spring-gardens came down in 1862 for the Office of the Metropolitan Board of Works; in this thoroughfare were the Bull Head Tavern, next door to which, at one Thomson's, Milton lodged during the writing of his "Johannis Philippi Angli Defensio"; also Egerton's, where James Thomson first stayed in London with his "Winter" on his hands; and the mean lodging whereat Dr. Isaac Barrow died. Prince Rupert, Mrs. Centlivre, Philip earl of Chesterfield, and Colley Cibber contribute to the renown of this quarter. In a dingy neglected house in New-street resided the Duke and Duchess of Brunswick, parents of Queen Caroline, whose daughter, Princess Charlotte, occupied the adjacent Warwick House. In this same street lived Sir Astley Cooper, "plain John Campbell," and his father-in-law when Sir James Scarlett. Nor should we omit to speak of a very celebrated personage who had his first habitat, in 1666, by the passage into Spring-gardens, namely our old friend Punch, on whose account there occur four entries in the overseers' of St. Martin's books for sums ranging from 22s. 6d. to 52s. 6d. as "received of Punchinello, the Italian popet-player, for his booth at Charing-cross."

SUBTERRANEAN WATER AND THE SUPPORT OF BUILDINGS.

THE public have lately been startled by the violent effect upon the Severn Tunnel of the tapping of a spring or a reservoir of subterranean water, and it is easy to understand from the injury caused by the active flow of a great mass of subterranean water the proportionate harm which may be done to the land from which that water has flowed, by the abstraction of large quantities of this element. Quite recently also the same subject was considerably discussed in the case of *Leighton v. The Royal Courts of Justice Chambers, Limited*, which involved the right of certain buildings opposite to the Royal Courts of Justice to support. That case, judging from the reports which appeared in the daily journals, was decided against the plaintiff, on the ground that he had not acquired the right to support for his warehouse and machinery, so that the question of support from water became immaterial; and it may be well here to remind our readers that a person may have a right to the support of the land in its natural state, but that for the support of buildings on land he must acquire a prescriptive

right. Passing, however, from this point, which we have discussed more than once in connexion with the celebrated case of *Angus v. Dalton*, it may be opportune to recite briefly, for the benefit of those who are interested in land and in buildings, the state of the law in regard to the right of support from subterranean water. The increase in the rights of the owner of land or buildings who depends for support upon his neighbour has been obvious since the case of *Angus v. Dalton*, which placed the right to lateral support on the same footing as that to vertical support. But the broad character of the law as it now stands may be apt to lead some to think that the right is more absolute than it is, and to consider they have a right to have their land or house supported in any eventuality. But there is nothing in any of the recent cases on the right of land to support, to upset, or detract from the authority of the case of *Popplewell v. Hodgkinson*, which, in 1869, authoritatively decided this point by means of a decision of a very strong court in the Exchequer Chamber. Indeed, the reasoning of many of the judges goes to support indirectly a law which has of late years never been doubted. It may, in half a dozen words, therefore, be said that the right to support from subterranean water is an exception to the general rule, and if it happens that A. drains his land or pumps water from it, and by so doing draws away water which is either stored beneath his neighbour's (B.'s) land and buildings, or percolates beneath them, and consequently causes a subsidence in B.'s property, he is under no liability to pay damages for what he has done. The principle was laid down in the clearest possible terms in this leading case. "Although," said Chief Justice Cockburn, "there is no doubt that a man has no right to withdraw from his neighbour the support of adjacent soil, there is nothing at common law to prevent his draining that soil if for any reason it becomes necessary or convenient for him so to do." Thus, if it becomes necessary for the purposes of building for him to drain away subterranean water, even though in so doing he damages adjoining property, he is free from any liability. In this very case the draining was done for the purpose of erecting a church in Manchester, and the buildings which were injured were adjoining cottages. It is only necessary, for "church" and "cottages," to read "chambers" and "warehouses," or other words, for this case to be applicable to almost any instance which can occur to a reader's mind.

But it should not, on the other hand, be forgotten that an exception is probably ingrafted on this main exception to the general rule of law. This exception arises when land has been granted for building purposes, and then the grantor, under the rule that a grantor cannot derogate from his grant, would not be allowed to use his land so as to injure his neighbour's property. But it is impossible to regard this as a settled legal rule, because in a more recent case in the Privy Council, *Lord Penzance's* judgment is in an opposite direction to that of the Exchequer Chamber in regard to this particular sub-exception, if we may so term it. It is true that in the actual case before the Privy Council, there had been only a grant of the surface, and not of the parts beneath, but on the other hand it was a derogation from the grant of a safe surface if water was abstracted so as to cause the top to descend. There is also this to be said in favour of the tendency of opinion in the Privy Council that there seems to be no reason why, if the case of subterranean water is an exception to the general rule in regard to support, equally also the same case should not be regarded as an exception to the general rule by which a man is not allowed to derogate from his own grant. In both instances the reason for the exception would seem to apply. That reason would seem to be that it is difficult to say if houses and land adjoining are in any way supported by subterranean water, and therefore that, in the case of houses at least, there is no way in which the neighbouring landowner can protect himself against the growth of a prescriptive right to support. But it is sometimes difficult to find reasons which will reconcile conflicting judgments, and it is useless to deny that the rule that land and houses have no right to support from subterranean water percolating through the soil is rather difficult to reconcile with the general rule that lands and houses (after twenty years' enjoyment) have an absolute right to vertical and adjacent support.

In the case of adjacent support, in nine instances out of ten, men do not consider if their land or houses are supporting adjoining land or houses, or if they do, they do not, by digging, endeavour to prevent the accretion of a prescriptive right. Neither do they know, or attempt to know, if there is a spring flowing beneath adjoining premises. But the exception to the general rule being as it is, only the Legislature or the highest Court of Appeal can alter it.

A SQUIRE-ARCHITECT.

STRAYING idly through the peaceful valleys of a Midland county on a perfect day in the pleasant month of October, noting the thatched-covered cottages, their whitewashed walls covered with trellises of climbing roses, and their patches of garden ground bright with dahlias, lighted into vivid beauty by the declining rays of an autumn sun, I came unawares upon a village whose modest houses bore there and there, as I thought, the marks of a well-known architect's hand. The church-door was open, and I entered. Remnants of the decorations of a harvest thanksgiving were being removed, and I could see, in the metalwork and other fittings of the sacred edifice, some characteristics which confirmed my surmise as to their authorship. A new vestry had been recently built, the chancel had been repaired, and a really handsome and costly floor had been laid. It was quite evident that the church was well cared for, and that the Apostolic precept to do all things decently and in order was scrupulously observed.

A prodigious elm stood in the centre of the village, and under its branches the smithy nestled picturesquely. Over a small newly-built shop adjoining were written the words, "Happyton Co-operative Stores."

"Are these really co-operative stores?" I asked, "or have you only adopted the title to attract customers?"

"No, sir! They are conducted on the co-operative principle; that is, purchasers all pay ready money, and receive at the end of the year a dividend according to their outlay."

"Who manages the affair?"

"Oh! the gentlefolks up at the House. They have set them going, and they look after them."

"That is a Well, I suppose, which I see on the green, enclosed and covered by a tiled roof?"

"Yes, sir; that was dug by the same gentleman, 150 ft. down into the chalk. Before that, Happyton had no water at all,—at least, only what was caught in the garden wells, which got very foul with the soakage. Now there ain't better water nowhere round, and there is always plenty of it."

"Did he also enlarge the schools which I passed just now?"

"Yes, sir, he did. This was a very different place before he took it in hand."

"What is that building opposite?"

"That is the Public Reading-room."

"Built by the same person?"

"Yes, sir."

"He seems to do everything!"

"Well, sir! he *do* do a great deal."

"In what sense is it public? Can I go in?"

"Oh dear, yes, sir, and welcome. You'll find everything there."

This sounded encouraging, and I entered through a honeysuckle-festooned porch into a moderate-sized room,—something like a village school, only it had a large alcove along one side furnished with fixed seats under a long low window, which looked out upon a pretty strip of garden. The room was filled with chairs packed pretty tightly in rows. I rang a hand-bell which I found upon a chair, and was answered by a young woman, good-looking, in every sense clean, well (that is appropriately) dressed, and the pink of courtesy. There was a card, on which I read, on entering:—"Tea, Coffee, Lemonade, &c.," and the *et cetera* lent a sort of colour to the statement of my informant that "everything" was here to be found.

I decide on coffee out of the possible variety of refreshments, and while it is being prepared I examine the room. Only one person at present enjoying these opportunities! Happyton still in the fields, I suppose, hard at work.

The first thing that strikes one is that the room is thoroughly well built and finished. Pitch pine joinery, painted walls, good comfort-

* According to a plan of 1734 Rummerville court lies between Buckingham-court and Cromwell's house (Biddulph's Bank).

able seats, and a magnificent fireplace,—lined with tiles and almost capacious enough to hold all Happtyton on winter evenings. It was designed for burning wood on its broad hearth, and it bore aloft the legend "WISE MEN LAY UP KNOWLEDGE."

And means for laying up knowledge were at hand in the shape of newspapers, books, and periodicals. On the walls were cases of birds and such like, their names and habitats duly set forth, and other aids to the satisfaction of the inquisitive. About one third of the room was shut off by some maroon drapery tastefully arranged,—and a card announced that "this evening" (lucky wanderer!) there would be an entertainment consisting of pastoral songs, &c., sung in costume. Here comes the coffee,—deliciously hot and fragrant,—accompanied by wholesome bread and genuine unsophisticated butter, a plentiful allowance of sugar and of milk above all suspicion.

"Who are to be the entertainers to-night,—may I ask?"

"The young ladies and gentlemen from 'the House,' sir."

"May any one come?"

"Well, sir! all the tickets have been sent for long ago, but you might be able to find room."

Leisurely and with much satisfaction I discuss the cheering up and its accompaniments—glancing the while at the papers about the room, and envying the bliss of these obscure villagers. The Happtytonian who was enjoying his solitary paper is shy and goes out. The tinkle of the forge under the great elm is just, and only just, heard, and the whole scene is one of perfect serenity and peace.

If there is a fault about the institution it is that the seats and all the surroundings are too seductive; and if Happtyton in a body should "refuse to labour more" and take to doing away its existence in this blessed retreat, I for one should say that in presence of such strong temptation the fault was venial.

Enter some of the young ladies,—apparently to rehearse. They are startled to find a stranger present at this time of day, and so I depart. The charge for my repast is—twopence! Think of that, ye City clerks who fill the *Daily News* with your unsatisfied yearnings after cheap dinners.

Clearly I must spend the night in this happy valley, to which chance has led me, and assist at the promised entertainment. It begins early, and I pass the short interval in prospecting, leaning over field-gates and watching the "glimmering landscape fade upon the sight."

The room is very early filled with an orderly and expectant audience, and I managed to squeeze myself into a corner. The stage has been decorated by the lady of "the House" with palms, and ferns, and flowers from her conservatory. The curtain is drawn aside, and discloses a sylvan scene with shepherds and shepherdesses à la Watteau, Damon and Phyllis, and Daphne and Chloe, attired in the most ravishing of costumes, with silver crooks garlanded with real flowers.

They sing old English songs and glees, and madrigals, and a few light French chansonsnettes with perfect simplicity and grace, to the manifold delight of all present. Part of Happtyton failed to obtain admittance, and the entertainment is to be repeated the following evening for their behoof.

With a little speech from the vicar, the proceedings terminate before nine o'clock, for late hours are not in favour here, and we step out into the night,—

"Blue and starry and cold,
Silver mists in the gray twilight
Over the level world."

Up betimes, I make a further survey of the village and explore its beauties, and amongst other things occupy a careless hour or two in making the accompanying pictorial memoranda of its church, club, and other points of interest.

"The House" is gloriously situated upon an eminence overlooking the whole neighbourhood. The road to it winds its way through beechen glades and groves of fir, past keepers' lodges with their rows of bee-hives already protected from the winter's cold, until we reach a plateau from which nearly the whole distant horizon is visible and we can see into I know not how many counties. A civil request brings prompt permission to look around and to make the rough sketch here given. The interior was also courteously shown, but that is sacred. Those who can guess the name of its owner

will readily believe it to be filled with all manner of delights, and that the old English virtue of hospitality was not wanting. Hither comes, as he can snatch the time, one of the most successful architects of the day. Busy with an amount of business which might tax the endurance of a Prime Minister, he recruits his strength in this delightful retreat, shoulders his gun for a day in his own stubbles, or directs in person the operations of his model farm.

Threading my way homewards through the village, I heard many tales of his philanthropic interest in the welfare of the dwellers therein. He knows them all, and they know him. For each and all he has a kind word,—which costs nothing,—and for their convenience he has inaugurated and carried out good works, which have cost a great deal. I might have listened long to an account of his many acts of not unremembered kindness. But the day is drawing to a close, clouds of rooks darken the air as they return gossiping from their daily work in the fallows. The mists are again rising in the valleys,—the robin peeps wistfully about, and the parter of the falling chestnuts breaks the

"Soft silence of the listening night."

I turn my face once more towards the Great City, and as I look regretfully back to the village, its smoke curling pale and blue against the dark foliage which girdles in "the House," I feel that it is something to belong to the profession which can claim as its own the Lord of the Manor of Happtyton.

CONTINENTAL NOTES.

No sooner were our Law Courts once more open, after the repose of the Long Vacation, than we had to listen to fresh, and this time certainly not unreasonable, complaints against Mr. Street's great building in Fleet-street. If companionship in suffering can offer any consolation, frequenters of the Law Courts may perhaps derive some satisfaction on hearing that the colossal Palais de Justice lately opened at Brussels is also far from meeting with the approbation of the legal fraternity and their clients, now that the admiration for the imposing exterior has cooled down and the courts have commenced their sittings. The rooms, it seems, like our own, are complained of as dark, and the network of staircases most confusing. An old lawyer writes to the Brussels papers stating that in passing from one court to another he has to ascend and descend no fewer than 276 steps; this is certainly trying. Such are the necessities of an imposing exterior. Perhaps the critic was not so far wrong who spoke of creations like M. Poelaert's Palais de Justice as belonging to the "elephantry" of art.

M. Edmond About, with his felicitous touch, has been recently describing, in the pages of the *XIXe Siècle*, a tour to Constantinople and back by the aid of the newly-established direct route in Pullman's ubiquitous cars; but it requires all the accomplished writer's graceful powers to rob the hurried journey over such picturesque ground of its objectionable elements. *En route* Roumania, at Sinaia, the completion of which was briefly referred to in these pages three weeks since.* The palace, perched 1,800 ft. above the Danube, is, after ten years' delay, at length ready to receive its royal hosts. M. About describes the palace as a modern fairy creation, a puzzle of learned archæology, of rare marbles, wood-carving, and metal-work. The decoration generally is spoken of as being of a taste "perhaps more original than classic," but most effective; in some cases an "orgy of wood-carving," several of the rooms being literally decorated from ceiling to floor "like a Renaissance cabinet." Windows open in every direction on to the exquisite views, the dashing torrents, and the vast forests which lie stretched at the foot of the palace. The concert-hall is described as magnificent in its decorative effect, rivaling in richness the state apartments, while the dining-room M. About characterises as "monumental."

While thus one palace of modern creation rises in the distant wilds of the border-land between the east and the west, we hear of the destruction by fire of one of the historic castles of Poland, the château of Sienawa belonging

to the Prince Czartoryski. The château was built early in the last century from the designs of Mansart, numerous costly additions by the late Viollet-le-Duc having been recently made, and not even yet completed. Art-lovers to whom the Czartoryski collections are well known will be pleased to hear that no works of art have been destroyed.

The Prince's Gallery is divided between London and Paris, and almost opposite the windows of his pleasant home on the banks of the Seine, the new Hôtel de Ville is rapidly approaching completion. The *employés* are already installed in the left wing, where, however, their labours have been pursued amidst all the bustle and mess of carpenters, upholsterers, painters, and decorators generally. As for the right wing, though externally it is completed, the whole interior remains to be fitted and furnished. The line of marble columns which support the vaulting of the vestibule leading to the prefect's apartments are at present in the hands of the polishers, while the transparent flooring is being laid which is to cover the inner courtyard from which access is afforded to every portion of the building. This inner courtyard promises to be as successful a feature as flower-beds and shrubbery can render it; something, in fact, like a reminiscence of the hanging gardens of Nineveh appears to be aimed at in this skilful collaboration of the gardener and the architect, or the effective introduction of greenery which all who know Rome may remember gives such a charm to the new Post-office.

In the mean time, while the Paris Hôtel de Ville is making accommodation for the civil necessities of the metropolis the stern logic of statistics tends to show that the Paris population, so far from increasing, has been within the last three years steadily decreasing, and the building mania appears to have reached its term, notwithstanding which fact we hear that in the first fortnight of September no fewer than sixty-nine building "authorisations" were issued by the authorities, representing a total of some 250 floors or "flats." Preparations have been made within recent years in Paris to house about 80,000 additional inhabitants annually, and now it is discovered that the population is diminishing. Speculation in real estate has been busy of late on the banks of the Seine, but fortunately without any of those concomitants of jerry building to which we are too accustomed on our side of the Channel in this species of commercial investment. In spite of the growing value of land on both banks of the Seine, and the continued demand on the part of a certain class of tenants for more luxurious accommodation, we learn that speculators have been comfortably making their 5 to 8 per cent. by the five-story stone-built *maisons de rapport* which are rising throughout Paris in every direction. The insurance companies have recently set an excellent example in investing their funds in this safe manner. At the same time there is a universal complaint in Paris, as in London, of a want of cheap accommodation, though the standards of rent singularly vary in each case. Much, however, is being done to satisfy these claims. We heard lately of a block erected in the new *quartier* Chignancourt, covering an area of about 25,000 square yards, on which have been built 100 houses (of the regular Paris type), able to accommodate something like 10,000 persons. This may be said to be approaching one ideal of civilisation, the skilful and healthful packing of a vast number of human beings, all within comfortable distance, not alone of their business and educational requirements, but of their equally requisite pleasures. None the less Paris has no more solved than ourselves the question of adequately housing the poor. Only very recently a motion was laid on the table of the French Chambers urging that special powers be given to the inspectors of unhealthy dwellings to directly question improperly-lodged tenants, a right so far denied to the authorities. Before leaving the question of building in Paris, we may mention that at a recent meeting of the *Fédération des Ouvriers du Bâtiment de France* it was decided to send three delegates of the association to the forthcoming Boston Exhibition, to represent there the very numerous interests of the French building and allied trades.

To fill the vacancy among the Foreign Associates of the French Academy of Fine Arts, caused by the death of the late lamented Viennese architect, Prof. von Ferstel, Señor

* See p. 548, ante.

Da Silva, a well-known Lisbon architect, has been elected. All lovers of art will also learn with pleasure that Paolo Mercurj, the Roman engraver, has been called upon to replace as Foreign Associate the late Herr Felsing, of Darmstadt.

The annual meeting of the French Academy of Fine Arts is one of the great solemnities of the Paris season; this year the distribution of prizes was presided over by M. Gounod, whose earnest words to the young pupils were received with more than usual interest, coming from so justly revered a source. In spite of his sixty-five years the composer still possesses all the warmth of youthful ardour, and much do we hope both young and old will take to heart the earnest words of the great musician. He need, however, have none of the fears he expressed that his views might be regarded as "old fogey" when he urges that there is no such thing as "modern" art, it is merely the art of the past, followed under different conditions. When we hear so much as we do in the present day about realism and its aims, with which many students are so apt to be fascinated, M. Gounod's is the voice of that minority which Mr. Matthew Arnold has recently told our American cousins has at all times saved the majority from the results of their own inevitable rashness. Nor can M. Gounod be too highly praised for urging on the young artist in the present day the value of conviction, ever guided by the dictates of truth, the inspiring motive of all eloquence and of all true art. Against the current of that realism for which the veteran academicien expresses his detestation, he would urge the continual necessity for study, the study of Greek art, the Old Testament or the worship of external beauty. Warm words were those of the composer of "Faust," on the vanity of fame and its train of emotions, and warmer still his reiteration of the ever-sustaining value of truth as the duty the artist owed to society, and as the ideal which should ever inspire him in his creations.

The statue to Alexandre Dumas, unveiled on the 4th inst., on the Place Malesherbes at Paris, was, it will be admitted, only a just tribute to the memory of the popular author of "Monte Christo." Poor Gustave Doré has not lived to see his work completed, but he will none the less share in the honour done to the industrious novelist, who died but thirteen short years ago. The Paris press of late has, of course, been re-telling the incidents of the singular life of the writer, who is as great a favourite in England as in his own country. At Lady Holland's receptions, arm in arm with Count D'Orsay in those bygone days of London "Society," Dumas, it may be remembered by old Londoners, was for one season a "lion." The French delight far more freely than we to honour their famous men, and this tribute to Dumas, not a statue to be huddled away in some dingy square, never to be seen, but conspicuously placed in one of the choicest quarters of Paris, is but justice done to an author who has helped so largely to bring before the world the peculiar interest which centres in the city on the banks of the Seine. It is for this reason that we approve of the project, now fairly set on foot, of erecting a statue to Balzac, a no less typical Parisian and typical French artist.

THE ARCHITECTURAL ASSOCIATION.

THE first ordinary meeting of Session 1883-84 of the Architectural Association was held on the 9th inst., at No. 9, Conduit-street, Mr. Cole A. Adams, President, in the chair.

Mr. James Morton Townsend, Mr. A. C. Conlery, and Mr. Basil A. Slade, were elected members.

Upon the motion of the President, it was resolved:—

"That the Architectural Association desires to place on record its feeling of indebtedness to the late Bowe A. Price and Richard C. Page for much good service, marked by courtesy and consideration, rendered by them in the past; and its sense of the loss to the profession of two men of such ability, cut off before they had opportunities of permanently showing their talent; and it tenders its respectful sympathy to the relatives of those gentlemen; and, further, that a copy of this resolution be sent by the hon. sec. to the friends of each of them."

The annual report and balance-sheet, together with the reports of the classes, which are contained in the Brown Book, were taken as read, and, on the motion of Mr. J. Douglass Mathews,

seconded by Mr. Stannus, were adopted. The balance-sheet shows a total income of 941l. 9s. 10d. (including a balance of 128l. 18s. 10d. brought forward last year), and a total expenditure of 724l. 13s. 3d., leaving a balance of 216l. 16s. 7d. in hand.

The President then proceeded to deliver his inaugural address. He commenced by reviewing the work of the Association, paying at the outset a warm tribute to the zeal, courtesy, and ability with which they voluntarily discharged the onerous duties of their office. The growth of the Association had, indeed, so added to the labour of carrying on the work of it, that, in the President's opinion, the time must shortly come when paid assistance would have to be resorted to to do such routine work as could be taken off the shoulders of the honorary secretaries. Taking the list of members from the last edition of the "Brown Book," it would be seen that 785 were resident in London and 174 elsewhere, making a total of 960. From statistics furnished him by the gentlemen acting as secretaries to the classes and lectures, he had ascertained that last session 190 members or thereabouts (including country members) availed themselves of the advantages offered by the classes and lectures, or about one-fifth of the entire number on the list. An analysis of the lists showed that, out of these, two members attended five classes and lectures, six attended four, nineteen attended three, and forty-one attended two. After making a fair deduction for members who were in practice and for those who had in previous years passed through the classes, he hardly thought these results were as satisfactory as they ought to be. Looking through the statistics given in the "Brown Book" he found that "Design" numbered 479 attendances; "Construction" 784, as against one previous session, when "Design" scored 711, or 232 more attendances, and "Construction" 763, or 21 less than last session. Thus for the past session "Construction" was 305 ahead of "Design," as against 52 the session before,—a majority six times larger.

No one, continued the President, will grudge "Construction" such very satisfactory results. The importance of science in relation to architecture no one will dispute; and those who have the management of the classes and lectures devoted to this branch are to be heartily congratulated, and we can only hope that this present session will swell the numbers still more. Why is it, however, that "Design" falls so far below the standard of the former session, and I fear far below previous ones, if the statistics were worked out? It is a question which we ought to face seriously. That the science of construction should claim the attention of more students than the art of design need surprise no one, I think, inasmuch as most minds are attracted to what can be demonstrated and proved,—science accepting nothing on faith; and with ordinary ability, coupled with perseverance, the principles and practice of construction may be mastered without much difficulty, though to succeed in the higher branches requires, of course, a higher order of intellect. The faculty of design is, as will be generally conceded, a much rarer gift, without which a man cannot be an architect in the true sense of the term. He may be able to raise a building fulfilling every condition of sound construction, but destitute of every quality which pleases the cultivated eye. Design not only demands the inventive faculty, but also the higher gift of imagination and the qualities of the poet and artist, and such gifts are rare.

If you admit this brief definition to be a correct one, we are still brought face to face with the problem, Why has our society so fallen in its "art" results this past session? A review of the progress of art generally, throughout all its branches, does not to my mind give a solution of it. The progress in architecture, sculpture, painting, and the decorative arts during the last quarter of a century has been great, and in our own art especially so. I think perhaps one,—if not the chief,—cause of the falling-off we are now considering, is due to the rather chaotic and transitional state which is now existing in the school of thought as applied to architecture. The great Gothic wave has spent itself, and though we have works and men of whom we may be justly proud, we cannot, enthusiasts though we may be for our first love, say that she claims the devotedness which characterised our admiration of a few years back; and

pursuing the metaphor, the heart has grown cold in many, and nothing has yet risen up to fill the void. History is again, in Gothic art, repeating itself. Our masters of the revival preached that the only salvation was in the pursuit of the earlier, and, as they thought, purer styles of the Christian art; and in these latter days a school has arisen which forsakes that teaching and preaches that the better art is in the later styles, and the "flat and pointed." Others worship at the Jacobean shrine, make votive offerings at the tomb of Queen Anne, find even something to admire in Georgian relics, until maybe the student shall wander into Gower-street, sketch book in hand, and there, let us hope, stop. Is such work followed with a tittle of the enthusiasm and love with which Gothic was? Is it a style from which the student of to-day can start on his career, feeling that he has found the truth, and, girding up his loins, through good and evil report follow in its path? I do not think so; and to the present unsettled state of our art I trace the coldness which has fallen upon the members of this society of late years, paralysing what should be the highest aim of its existence,—nobility of design. I take another cause may be a too great tendency to thoughtless study of ancient work. I mean by that that students think the one great aim is to fill their books with pretty sketches, jotted down because they took the fancy of the moment. This is very much like dipping into a book and indulging in desultory reading, picking out the light and amusing parts, but missing the author's teaching; skipping the chapters which imparted the great lessons the author had to teach. Depend upon it, if you want the secret of success which has produced the works of great architects you must seek it in a different fashion to the one too usually adopted. How can enthusiasm be once kindled in this Association? I hardly know. What would be the best course to adopt in teaching design? To this I would venture to say, let us in our classes commence with teaching those styles of architecture which, by a general consensus of authoritative teaching, are recognised as the *classics* of art, and, taking one of these styles in a session, let the student devote his whole energies to obtaining something more than a smattering of it. Looking at the syllabus for 1883-84 of the Elementary Class of Design, is it not rather appalling? Designs in eight styles, to be worked out in many months. Is this the best system we can adopt? Would it not be wiser to take one of them, and learn its grammar with a little more thoroughness, so that, being well grounded in the grammar of architecture, we may, at least, compose in language which shall be intelligible and appeal to cultivated minds?

One thing is clear, if we will only look at it steadily, and that is that the architect of the future must be much better educated and trained for his duties than he is at present. The whole scale of requirements considered necessary for the fight of life has so risen that, to hold any position at all, a man must be above his fellows, above the average scale. Mr. Aston Webb, in his presidential address,* fore-shadowed the time when we should possess an institution for the proper and more systematic education of the young men for the profession of architecture; and though that day is distant, I believe it will come, and if we had more *esprit de corps*, more unity, more belief in the greatness of our art, we could hasten that day and not let the century close without leaving behind us a college devoted to the teaching of architecture. But you must not wait for that. Take what you can get, and see that you make good use of it. You have the Association: join the classes, and do so now, attend the lectures, take off your kid gloves and coats, and, working. Never mind about clean paper and pretty sketches to show your friends, but bend your minds to a close study of parts on the principles I have suggested. A thorough acquaintance with mechanics is necessary, and in the reach of all; and if you will make these opportunities for the study of works in progress are at hand. All of you have some leisure; you must make up your minds in these days to give up a great deal of that to your work.

If any aim at following the profession in its highest branches, it behoves them not only to master the art and science of their profession.

* Builder, vol. xii., pp. 668, 627.

nt to fit themselves for the society of the men they must be thrown amongst. An architect in good practice will be called upon to mix with men of the highest refinement and culture, and to hold his own in society it is necessary that he be fitted for it. I note with satisfaction the entrance into the profession of more men from the universities. Such a training should give them an immense advantage in their intercourse with the world, and on social grounds also. The architect of the future will have to pursue the study of many things which, at the present time, he has not devoted so much attention to as he ought. A thorough knowledge of the principles and practice of sanitary science is simply indispensable, unless you are disposed to see this work drift into the hands of the outside specialist, and be looked upon by your clients as simply designers, who cannot be trusted with matters affecting the health of the people you build for. Is it wise to let a class of work of such paramount importance as life-saving go out of your hands? Then a knowledge of iron construction, building in concrete, electricity, warming, and ventilation will become more and more essential. Engineers recognise this, and seem to be looked upon as their peculiar province to deal with whatever modern science has added to our list of important building materials and appliances for modern building. Many architects, wedded to the old forms of construction, seem to think it derogatory to their art to expend any time or thought upon new materials, &c., and the science of using them; of course, if we do not the engineers will, and so little by little the field of architecture will be invaded still more, and the reproach of not being practical and up to the requirements of modern times will not be unmerited. In intelligent study of the architecture of past times teaches how endless is the combination of materials, forms, and modes of construction; he old builders appropriated always what came most readily to hand. Follow on those lines, and you will no longer neglect to use those lessons which modern discovery has placed ready to our use. We must use them, however, intelligently, and not be ever striving, in our love for that which is old, to try and make the new materials represent what is foreign to their nature. We must endeavour to get rid of this eternal plagiarism and imitation, which is the curse of so much modern design.

I have given a long list of requirements, but challenge any one who has given thought to the subject to say whether it is an exaggerated one. It certainly is enough to make the thinking student pause and ask himself whether, if he accomplish so much is necessary, he is strong enough for the fight. Look well to it now, unless you are strong in your determination to do this, you had better give it up, or you must be content to count only among the rank and file; a leader you can never be. To be a leader will require all your best energies, unflinching will, and a natural bent for your profession, together with that indispensable accompaniment for a life of work and hardship, a strong constitution; and you must make up your mind to endure many hardships and disappointments. Better face this at the outset.

I cannot help thinking that the tendency of modern times will, as I endeavoured to show in paper that I had the honour of reading here some time back,* be to create a class of specialists in our profession, and in collaboration; the latter view the late Mr. Page held very strongly. Make sanitary science, for example. We architects neglected it; a class of sanitary engineers arose, and have taken a great deal of such work out of our hands. Had we not better try and get it back again? An architect should be better able to do such work, in so far as it relates to architecture, than an engineer; and here is, as far as I can see, no reason why he should not. Here is an opening for special study and profitable practice. A man who has made a speciality of sanitary science may collaborate with a brother professional who cannot, perhaps, give his attention and time to a subject demanding so much thought and care. Colour-decoration, again, demands special study, and an architect in large practice frequently finds that he cannot, if he would, give to it all that is demanded, and so the painter and decorator is called in, who, unskilled in architecture, applies his decoration on no defined principles, and too often spoils a fine work by unintelligent use of colour. Is there not a field here for the

specialist to collaborate with his brother architect? Numerous other ways in which this principle could be brought to work will occur to you; time will only permit me to suggest them here.

When acting as president of the Class of Design, I was struck with much of the draughtsmanship which I saw. I can only use one word to describe it,—it was slovenly. There was too much attempt at picturesque, and that at the sacrifice of good line and accurate delineation. Designs for new buildings were drawn in the roughest manner, coloured like a sketch of an old building, and the lines of the roof, &c., positively drawn irregularly, so as to give the building the appearance of being old and weather-beaten. Surely this is an error. Would not such drawings puzzle the clerk of works or foreman when he reads in the specification, "No deviation of any kind is to be allowed from the drawings"?

I am tempted by recent remarks in the press, and circumstances which have come under my own notice, to refer to an ugly charge frequently made against us, and broadcast; one which makes the blood tingle in the veins of honest men. I mean that of taking commissions from others than the clients. It is said that the custom prevails largely amongst architects. I do not believe it. That it does exist to some extent is, I fear, too true. The temptation is a strong one, and so insidious that no great surprise need be felt that some men give way to it, and thereby swell their incomes. We have in our ranks young men in their articles, others acting as assistants, and some who are starting in practice, and I would fain, for their sake, raise a warning voice against this cancer, which, when once it has fastened on the system, grows and sends its poisonous fangs in all directions until all that is best and noblest in a man's nature gives way to it. Most of us who have had any experience of a professional life know that some tradesmen, in their desire to secure custom, offer the most advantageous terms to architects as a bait. It must only be met in one way, and that is absolutely to decline receiving payment in any form whatever except from your employer. Once pocket the bribe and you lose self-respect; you have accepted hush-money, and you become the servant of the briber. In electing to follow the profession of architecture you have chosen one which, with fair success and hard work, will give you a moderate income,—very rarely a large one,—but do not seek to swell it by illicit gains. You belong to the oldest and noblest of the arts, for she is the mother of them all; then, as true sons, refuse to bring discredit on her. If this evil does exist to any extent among architects,—and I repeat I believe it is a libellous and untruthful statement,—any words of warning that I may raise may not be without value to those who will be sure to have the temptation, sooner or later, thrust upon them.

In conclusion, the President reminded his hearers that in the Association they had advantages which were unknown to their predecessors, and it therefore behooved them to avail themselves to the full of their opportunities, remembering that the success of the Association and its usefulness to themselves and others depended upon every individual member no less than upon its office bearers.

Mr. J. Douglass Mathews, in proposing a vote of thanks to the President for his address, trusted that all the members would make use of the advantages offered by the Association. In regard to the losses by death which they had to deplore, he knew both Mr. Page and Mr. Paice well, and more earnest gentlemen never existed; they were earnest, painstaking, and conscientious. He thoroughly agreed with the remarks in the address as to specialists in the profession, and thought the time had come when it was desirable specialists should exist.

Mr. E. J. Tarver, as a past-President of the Association, had much pleasure in seconding the vote of thanks. He quite sympathised with the remarks made in that portion of the address which referred to the hurrying through of subjects which were treated in some of the classes. He thought that in a future session, if it could be arranged in the Elementary Class of Design that each style should spread over two or three lectures, it would be an advantage. He was somewhat at issue with the President as to the view he had taken of modern architecture, and contended that much of their domestic architecture was now essentially

modern, and that they only awaited a similar development of ecclesiastical architecture in order to possess an English nineteenth-century style. In support of this proposition he said that they became day by day less archaeological and more practical, as witness the Board Schools, the newly-built cistern tower close to Newgate, the Raikes Memorial in Essex-street, Strand, and some recently-constructed and quietly-designed private houses, all of which, he said, were essentially modern work. It was, of course, most necessary to study old work, not in order to base our practice on this or that particular style, but in order to get behind the style and to arrive at the reason of this or that particular feature in any style; not to say merely that Cinque-Cento glass is "out of style" in a lancet window, but that a narrow window requires a self-contained treatment, different from a broad one such as the east window of St. Margaret's, Westminster. Church restoration had probably been the drag upon advance in ecclesiastical architecture, for architects had not had the courage to make their work as different from the old styles as these were from each other. He considered that restoration, for its own sake, was surely a mistake; for instance, the proposal to pull down the store-house at the Tower of London in order to replace it by a copy of an ancient building. The result of this system of restoration was that the Society for the Protection of Ancient Buildings wildly urged us to prop up rather than rebuild, and recommended extremely plain props, whereas we found, from straining arches and flying buttresses, how beautifully props might be treated. He mentioned, *en passant*, Phiz's drawings of David Copperfield's wedding and the sermon, which showed church interiors that would be dear to the hearts of the Society, and he recommended a visit to the Exhibition of Phiz's Drawings at the Fine Art Society's Gallery, the artist (Hablott K. Browne) having been thoroughly acquainted with Medieval architecture, his name being at the foot of several plates in Winkles' "Cathedrals." To return to his argument, he said we knew that several eminent church architects were practising in a more modern fashion (the "They-all-do-it" style). Twenty years ago the cry among such men was, "One style for all buildings; Gothic is right for churches, and therefore for houses." They merely waited for these gentlemen to be consistent, and to show them that what was right for houses is therefore right for churches, and then all would be modern. Q. E. D.

Mr. G. H. Blagrove said that the Queen Anne revival had the merit of having introduced the free use of bricks to the neglect of the composition treatment. It had also directed the attention of architects to the use of colour in the treatment of the exterior of buildings.

Mr. Stannus thought that in regard to the new style the question would resolve itself into the "survival of the fittest." He was glad that reference had been made in the address to the question of sanitation, because there was a feeling among some architects that sanitary matters should be ignored altogether. There was a class of men called sanitary experts who were taking away the business of architects in this respect. He thought that, following the example of Mr. George Godwin, who had established a Bursary in another place, they might at some future time pay more attention to the important subject of sanitation, and have a class specially for its study. He was glad to notice that among the papers to be read during the session was one on "Water Supply to Country Houses and Isolated Public Buildings," the subject being one of great importance at the present time.

Mr. Aston Webb was glad that in the address special stress had been laid upon the value and importance of sanitary matters, but he believed that in the present day architects generally were fully alive to the importance of the subject.

Mr. W. H. A. Berry, in alluding to the loss of the two members, referred to the valuable work which had been done by Mr. Page in the interests of the Association.

Mr. J. A. Gutch said that the address had one valuable merit, for it set them thinking of the great principles of their profession and of their art. The picture drawn of the life of the young architect of the present day was a formidable one, but he urged that, while devoting their time to the profession, the necessity of relaxation should not be ignored. But relaxation they

* "Barnacles." See *Builder*, vol. xli., p. 750.

could often find in change of occupation. If they applied nearly the whole of the day to the routine work of the profession they could devote their leisure to its more pleasing or artistic sides, say, for instance, to the study of coloured decoration. He urged the establishment for young architects of a college similar to one that existed at Zurich for members of their profession.

The vote of thanks having been carried by acclamation,

The President, in reply, alluded to the remarks of Mr. Stannus, and stated that he had always been an advocate for the study of sanitation. In regard to the paper on "Water Supply," the author, Mr. W. E. Rich, was a member of the well-known firm of Easton & Anderson, and thoroughly conversant with the subject, which, as had been said, was one of the greatest importance.

ST. MATTHEW'S, FRIDAY STREET.

AFTER the Great Fire of London two of the Cheapside churches were not rebuilt. They were St. Peter's, of whose graveyard a small portion, overshadowed by the famous tree, remains at the corner of Wood-street, and St. Michael's-le-Querne, rebuilt in the year 1430, to the west of the Old Cross in West Chepe, where Sir Robert Peel's statue now stands. The two parishes were respectively united with those of St. Matthew's, Friday-street, and St. Vedast's, Foster-lane, of which the churches were both reconstructed by Wren. Next to St. Antholin's, Budge-row, which was wantonly pulled down about ten years since, St. Vedast's has the most beautiful of the minor stone steeples of Wren's rapidly-diminishing City churches, whilst the tower of St. Matthew's (75 ft. high) is plain, of brick, in three stages; there are some authorities, indeed, who deny it to be the handiwork of the great master at all.

Stow derives the name of Friday-street from the fishmongers who lived here, and provided fish for that weekly fast-day. However this may be, we have an interesting record of the street in the evidence given by Chaucer in his fortieth year (1368), respecting the first appearance on a sign here of the now historic *azure* a bond or,—“painted and put there by a knight of the county of Chester, called Sir Richard Grosvenor.”* Here too at the close of the seventeenth century were held the conferences which, under the direction of William Paterson, led to the establishment of the Bank of England. The old red brick house, with a sign of the Swan let into its wall, at the north-eastern corner of Friday-street, occupies the site of the old Nag's Head Tavern, pretended scene of Matthew Parker's consecration to Canterbury, of which the original sign forms a prominent object in La Serre's view of the "Entrée Royale de la Reine Mère du Roi, 1638."

Just forty-six years before Chaucer was examined as to his recollection of this street we have mention,—and it would seem to be the earliest,—of St. Matthew's in the matter of its patronage, which then vested in the abbot and chapter of West Minster. King Henry VIII. gave the living to the bishop of that diocese, but his successor, dissolving the see of Westminster, bestowed the living upon the Bishop of London, with whom it has since remained alternately with the Duke of Buccleuch, patron of St. Peter's in the Chepe.

In pursuance of the scheme for uniting St. Matthew's with St. Vedast's, the materials of the former church, built in 1685 at a cost of nearly 2,400l., were sold by tender on the 22nd of October last. The fabric, it is true, presents no very striking features, owing, perhaps, to the retirement of its situation, or to the haste with which it was erected. The most conspicuous portion is the eastern end, of stone, consisting of six lofty round-headed windows placed upon a high stylobate, and surmounted by a bold cornice and fine massive balustrade, this last-named being an adjunct for which, as is well known, Wren had no great love. The body of the church is like to the tower, of brick, and has a plain flat ceiling, slightly coved at the sides. It is about 60 ft. long by a width (30 ft.) equal to half the length. The interior calls for little remark, though the altar-piece and railings,—the gift of James Smyth, in 1685, are good examples of carving; and a large monu-

ment was set up here to Sir E. Clark, knight, Lord Mayor in 1690. Sir Hugh Myddelton is said to have served in the parish as churchwarden, whilst the registers contain many entries relating to members of his family. It is understood that the Ecclesiastical Commissioners have made grants for the removal of certain unclaimed monuments and memorials to St. Vedast's, and that re-interments have been provided for in the city cemetery at Ilford.

OBITUARY.

The Late Mr. John Lessels, Architect, Edinburgh.—This gentleman, who had achieved a marked position as a local architect, died in his residence, Heriot-row, Edinburgh, on the 12th instant, at the age of seventy-four years. Mr. Lessels was a native of Kirkcaldy, where he received the rudiments of his education in the school which was taught successively by two of the most remarkable men of the period,—Edward Irving and Thomas Carlyle. At an early age he showed a predilection for drawing, and desired to be a painter. His father, however, preferred that he should be trained as an architect, and he entered the office of the late Mr. Burn. In due course Mr. Lessels became a clerk of works, and acquired thereby that practical knowledge which was of the utmost value to him in his future career, and gained him the confidence of his clients when he started as an architect in 1846. On the passing of the Edinburgh Improvement Act he was singled out to act in conjunction with the late Mr. David Cousin in carrying out the provisions of the Act. His recommendations were always characterised by practical good sense, but he had withal an eye to the æsthetic bearings of the matter, considering it true economy that the *duties* should be combined with the *utile*; and it is generally conceded that the works carried out under his supervision are worthy of commendation in both respects. It was in his rendering of the Scottish Baronial style that Mr. Lessels was most successful, and in the immediate vicinity of Edinburgh are two noteworthy examples in different phases of that style, the mansion houses of St. Leonard's and Salisbury-green. The Palace Hotel, Princes-street, Edinburgh, the most important street frontage which he designed, is a pleasing example of the manner in which he interpreted the Renaissance; and the Smith Institute at Stirling shows his adaptation of classical features to the requirements of a fine-art gallery. Mr. Lessels retained his early predilection for painting, and delighted in depicting the picturesque interiors which came under his view during his frequent visits to the Continent. As a member of the Architectural Association Mr. Lessels did good service and materially assisted in carrying out the recent exhibition of architectural drawings in Edinburgh.

Mr. S. Pointney Smith, architect, of Shrewsbury, died on the 5th inst., in his 72nd year. He had been largely engaged in the restoration of ecclesiastical buildings. In Shrewsbury St. Mary's Church and the Abbey Church are amongst the buildings in the town restored by him. Many of the modern buildings of Shrewsbury were executed from his designs. He has been an alderman of the borough since 1877. His eldest son is Mr. Smalman Smith, barrister-at-law, who was recently appointed to a judgeship on the Gold Coast.

Mr. Jeremiah Mathews, surveyor, died on the 4th inst. at his residence in Edgbaston, at the age of 84. Mr. Mathews was the son of Mr. Daniel Mathews, of Hagley. He was born at Hagley in 1799, and was articled to a surveyor in Birmingham. On completing his articles Mr. Mathews began practice on his own account at Stourbridge, as agent to Lord Lyttelton, the grandfather of the present peer of that name. He was also appointed agent to Lord Foley. In 1849 he removed to Birmingham, and established a practice there as an agent and land surveyor, which he continued until his final retirement,—for some years past in conjunction with his sons, Mr. William Mathews and Mr. George S. Mathews.

The House of Lords.—A series of papers on the "History and Antiquities of the House of Lords," by Mr. J. Gairdner, Mr. J. R. Round, Miss Toulmin Smith, and Mr. J. S. Udall, will appear in the *Antiquary* for next year.

BUILDING AGREEMENTS AND BILLS OF SALE.

As we shall presently briefly point out, the clause in building agreements which usually gives the building owner a right to the materials brought on to the ground by the contractor is not a bill of sale within the meaning of the Bills of Sale Act, 1882. It was decided in 1880 in the case of *ex parte Newitt* that this stipulation was also not a bill of sale within the Act of 1854, but it has usually been considered that it fell within the Act of 1878. The words of that statute which have been regarded as applicable to these agreements are contained in the fourth section, and run thus: "And also any agreement, whether intended or not to be followed by the execution of any other instrument by which a right in equity to any personal chattels, or to any charge or security thereon, shall be conferred." This view, however, has now been upset by the recent case of *Reeves v. Barlow* (Law Reports 11, Queen's Bench Division, p. 610), and it is clear that as long as this decision remains unreversed by a court of appeal these agreements do not fall within the meaning of the Act of 1878. The importance of this decision is that these agreements are not made as security for a debt, and are therefore, by Section 3 of the Act of 1882, excluded from the operation of this last statute, and were, if bills of sale at all, absolute bills of sale within the Act of 1878. But now comes this last decision of the Queen's Bench Division, by which it is decided that they are not bills of sale at all. The result, therefore, is to make these very important agreements more secure than ever in favour of the building owner. The facts of this last case show this, for there an execution creditor desired to obtain possession of some thousands of bricks which had been brought upon the landowner's ground for the purpose of erecting some houses at Tunbridge Wells. But the landowner having an agreement such as we have mentioned, asserted his right to them on the ground that by this agreement "all building and other materials brought upon the land should become the property" of him, the landowner and intended lessor. Then came the reply from the execution creditor that this was a bill of sale, and as such never having been registered, was void against him. The County-Court judge held that it was a bill of sale, but the Divisional Court reversed his judgment. This example is sufficient therefore to show that landowners are strengthened in their position, and have a securer hold over a speculative builder than before this recent judgment. The case has been set down for appeal, and it remains to be seen whether this time next year the law will be the same. Meanwhile the decision of the Divisional Court will for a considerable time have to be regarded as having settled the law on this subject.

THE DESTRUCTION OF TOWN REFUSE.

The question of the disposal of the enormous accumulation of vegetable, animal, and other refuse of a large town has always been a source of difficulty to town councils and local authorities, but when the majority of the closets in a town are on what is known as the pall system, the difficulty is enormously aggravated. Wherever the refuse is deposited, it is an evil to the neighbourhood, the pestilential vapours and obnoxious odours which ascend from these heaps of organic refuse, in various stages of decomposition, make the neighbourhood in their immediate locality anything but a sweet-smelling and hygienic elysium, and the town authorities are overwhelmed with indignant effusions from aggrieved ratepayers, who, naturally enough, object to be made olfactory martyrs for the convenience of their fellow townsmen; besides, the fumes from these refuse-heaps often propagate some form of disease of the zymotic class.

By the term "refuse" the writer refers to the indiscriminate materials which are useless from an agricultural point of view, such as some of the accumulations of the ashbins and dust-bins. The indescribable nature of such renders their utilisation for agricultural or other utilitarian purposes impossible; and when Mr. Fryer brought out his furnace for the destruction of such refuse by burning, the problem received for the first time a practical solution, and one in accordance with the remarkably hygienic

* *Vide the Scope and Grosvenor Roll, i., 178.*

regulations of the Mosaic codes, as given in the book of Deuteronomy.

The furnace, or destructor, as it is appropriately termed, consists of a series of inclined chambers, having at their lower ends ordinary registers also inclined; at the upper ends of these inclined chambers the inlet-holes are placed for the reception of the refuse, which is tipped from the carts, and the refuse gradually gravitates downwards until it comes in contact with the fire, and by which it is consumed. Even if the refuse is very damp the radiation of the heat accumulated in the arches of the destructor soon evaporates this moisture. Coal or other fuel is only used to commence the working of the furnace. Afterwards the refuse, *per se*, is sufficiently combustible to continue in a state of combustion. The products of combustion descend by a port or outlet at the upper ends of the chambers into the chimney-flue, where they are led into a lofty chimney to be dispersed into the atmosphere.

The destructor generally consists of a nest of six of the inclined chambers placed back to back, two chambers inclining right and left from each inlet for refuse; the chimney-flue traverses the destructor centrally, and at right angles to the inclined chambers, and is very large, as much as 9 ft. by 4 ft. 6 in. This great size is necessary owing to the vast accumulation of dust, which is deposited by the sweeping products of combustion. An ordinary destructor will consume forty-two tons of refuse in twenty-four hours.

The highly-heated products of combustion from the destructor are generally economised for the purpose of generating steam to drive mortar-mills, clinker hoists, &c. Mr. Fryer's destructors are generally constructed above the ground floor, necessitating the construction of an inclined roadway to their summit. This latter detail of construction is not only a very expensive item of first cost, but adding as it does to the labour of carting the refuse, is a permanent and expensive disadvantage.

Lately a furnace has been constructed for the Bradford Corporation which presents considerable improvements on that of Mr. Fryer. In this furnace or destructor the refuse-destroying chambers are inclined similarly to those already described, but instead of the chambers being placed back to back, they only incline on one side, so that all the fires are on one side only; by this plan a considerable increase of space at the top of the destructor is obtained for storing the refuse intended to be destroyed.

Further, the top of the destructor is not 12 ft. above the ground as is that of Fryer's destructor, but some 18 in. below it, so that the refuse material can be immediately tipped from the carts into the charging hoppers of the destructor, without the necessity of the ascension of the carts up a steep approach. The light clinkers, the remnants of the refuse, which are drawn from the fires, can easily be hoisted up to the ground level, or be forced up by one of Morton's team ejectors. An admirable feature in this furnace is the arrangement of a reverberatory arch, which divides each of the inclined chambers into two vertical parts in such a way as to compel the heated products of combustion to ascend to the upper parts of the chambers, and then descend over the arch to the foot of the incline, where they escape to the chimney-flue, by means of this arch placed directly over the fire, and acting as an accumulator of heat. The escaping vapours are highly superheated, and any obnoxious constituents they may contain are rendered utterly inodorous and inert.

All the exterior work of the Bradford destructor subject to wear and tear is faced with metaline bricks, and the interior is built with firebricks characteristically acid and fire-resistant. The inventor of this improved destructor is Mr. B. D. Healey, Assoc. M. Inst. C.E., of Liverpool.

The clinkers, which are regularly withdrawn from the fires, make excellent mortar; indeed, the destructors are carefully worked, and there is a good demand for mortar, the sale of the clinkers may produce an income sufficient to clear working expenses. The proportion of destructor clinkers to slacked lime is forty shovelfuls of the former to twelve of the latter, making 7 cwt. of mortar.

By grinding or crushing the clinkers dry, a clean sharp gravel is produced, suitable for all purposes for which a superior gravel is required. Of course, the steam generated by the waste heat from the destructors can be utilised for any

desired purpose, such as, for instance, the driving of a dynamo for producing electricity for lighting and other purposes.

B. H. THWAITE, C.E., F.C.S.

JESUS COLLEGE, CAMBRIDGE.

THE corner-stone of new buildings for the accommodation of undergraduates was laid by the Senior Fellow, Mr. D. Westmorland, on the 7th inst.; and there will very shortly be commenced two houses for married Fellows and Tutors. Jesus College has a very large extent of vacant land reaching down behind the

College towards the river,—part of it used as a cricket-ground,—and has magnificent rows of trees along its boundaries. The new buildings form the eastern side, about 240 ft. long, of a new court, about 250 by 200 on this land. The choir of the chapel, formerly the conventual church of St. Radegund (admirably restored by Pugin), forms a portion of the south side, while the College buildings, erected by the founder, Bishop Alcock, and their northern extension, form the west side. The north, excepting where the new buildings return for some 25 ft., is open towards the cricket-field and avenues of trees.

The interior of the court will be laid out and planted, and will be joined to the cloister of the old chapel court by a connecting passage. The new court is also reached by a road with gates in Jesus-lane. The new buildings comprise thirty-six sets of rooms for undergraduates, with servants' and porters' rooms, and a water-closet to each set of six rooms, opening off the ground-floor of the staircases. There is also a lecture-room included. The style follows very nearly that of the founder, Bishop Alcock, with some modifications, as the new buildings are of three stories, while his were originally of only two, with a high roof. The new central entrance tower is, therefore, proportionately higher than Alcock's entrance tower now is, with regard to its adjacent buildings; for, like it, it is finished with a stepped battlemented parapet, and has archways with niches over, and shields for coats of arms of benefactors. Comparatively few of Alcock's windows had cusped heads, but all the new windows have cusps, and are of three, two, or one light, as required. The wings project slightly, and are furnished with low stepped parapet gables, following the precedent of the founder's work in the College dining-hall. The material used is red Suffolk brick, with quoins and dressings of Ancaster stone. The paving, as a rule, will be of concrete. Near the south-east angle will be one of the Fellows' houses, the other will be near the block executed some years ago from the designs of Mr. Waterhouse. Both will be in red brick, but of a simpler design than the other new buildings. They will be so arranged that undergraduates can always have access to them when the College gates are closed. The works are from the designs of Mr. R. Herbert Carpenter and Mr. B. Ingelow, of Carlton Chambers, London. The builder is Mr. Bentley, of Waltham Abbey, and the clerk of works is Mr. Higgs.

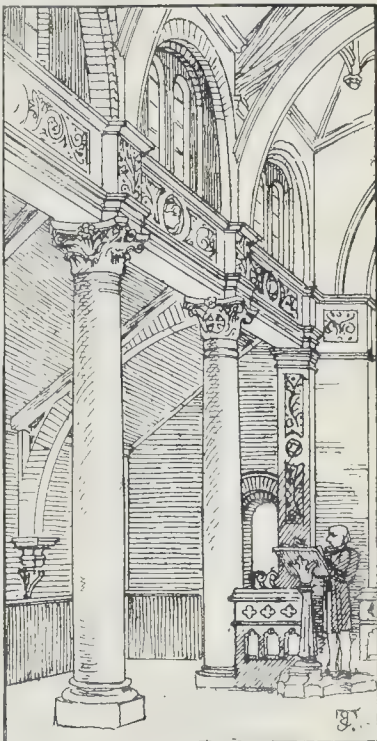
IRON AND CONCRETE.

SIR,—It appears to me that a combination of iron and concrete is the building material of the future for spans and supports, and consequently, that it should be used in churches as well as in buildings of a less monumental character. The result should be a return to a trabeated style of architecture, with far better capabilities than were possessed by the ancient Greeks or other nations who adopted that method of construction.

Having some time before me in which to prepare the working drawings of a proposed church, I take the opportunity, with your permission, of appealing to the experience of your readers in order to arrive at the best manner of combining the two materials; for the opinions of experts seem to differ on the subject.

One shudders at the idea of naked iron in the construction of a church, and the many years during which iron girders have been in use have failed to reconcile us to their appearance, except in bridges and works of a kindred nature. And our instinctive dislike is borne out by practical reasons, for naked iron is found to be a most treacherous material in case of fire. The clothing with concrete not only affords the necessary protection from this danger, but supplies a surface which is capable of receiving dignified architectural treatment.

The question seems to be whether the surrounding concrete adds to the strength of the iron, or adds to the weight that the iron has to



carry, in the case of spans. One expert proposes to embed an ordinary rolled iron joist in the concrete; another suggests a top-and-bottom flange only, of blade iron, leaving the concrete to form the web. If the latter be the right method, the former involves a waste of iron. There can be no doubt as to the strength of Portland cement concrete in compression, and the problem to be solved is its proper application for tensile strength. The accompanying illustration is a portion of the first sketch for the church, in which the pillars are 15 ft. apart from centre to centre, and the clearstory relieving arches bring nearly the whole of the superincumbent weight upon these pillars; the question therefore is, what should be the dimensions and construction of an iron and concrete beam to carry its own weight and that of the clearstory windows and the pressure of the slate roof?

As to the "style," it must result from the materials, and, if it be less Gothic than Basilican, it will not therefore be any less Christian,—the great object, however, is that it should be essentially modern.

EDWARD J. TARVER.

Holloway.—A new church, to be called All Saints, is going to be erected in the parish of St. John, Upper Holloway. The design has been selected in a limited competition (under motto) of five architects, Mr. J. E. K. Cutts, of Southampton-street, Strand, being the successful competitor. The church is to seat 700 at a cost of 5,000.

BUILDERS' BENEVOLENT INSTITUTION. ANNUAL DINNER.

THE thirty-sixth anniversary dinner in aid of funds of this institution was held at the Freemasons' Tavern on the 8th inst. (as briefly mentioned in our last), Mr. Henry G. Smith, president, in the chair. There was an unusually large attendance of subscribers and friends.

The usual loyal and patriotic toasts were duly honoured, Major Bruton, secretary of the Institution, responding for the "Army and Navy," and Major Stanley G. Bird for the "Reserve Forces," the chairman making kindly allusion to Major Bird's gallant rescue of four persons from drowning in the Avon recently, for which service he was awarded the medal of the Royal Humane Society, as mentioned in the *Builder* of the 6th ult.

In proposing the toast of the evening, "Prosperity to the Builders' Benevolent Institution," the chairman said that it was encouraging to trace the history and growth of the Institution since its establishment in 1847. Not only had it grown in the sense of being able to maintain an increasing number of pensioners on its books, but the amounts of the pensions had been considerably increased of late years. Some few statistics as to the pensioners themselves might be mentioned. In 1877 the average age of the pensioners was from sixty-nine to seventy; the average age of the pensioners now on the funds was between seventy-two and seventy-three. The average age of pensioners who had died was from seventy-nine to eighty. It could not but be gratifying to the subscribers to know that they were ministering to the real necessities of these old men and women, and he trusted that the Institution would be well supported by the building trades, as it deserved to be. During his year of office he intended to do all he could in support of the Institution, but he could not expect to approach to the success of his predecessors during the last three years, who had succeeded in obtaining abnormally large amounts for the funds of the Institution. Nevertheless, despite dulness of trade, he had received very encouraging promises of help. He was especially desirous of increasing the number of annual subscribers. A frequent excuse for not giving a subscription to the Institution was that "trade had not been so bad for very many years," but that was really a reason why master builders should subscribe, for if times were so bad there was no knowing what might be the future necessities of those who were at present well-to-do. Unfortunately he could recall many instances in which master builders, owing to losses in trade, had been glad in their old age to seek the help of the Institution. Many men struggled on for years against adverse circumstances, but when old age and infirmity came upon them they were able to struggle no longer. He regretted to see that at the ensuing election of pensioners there were twelve candidates for the five vacancies on the list. Some of these candidates were men well known to many of them, and men who, in the days of their prosperity, had been subscribers to the funds of the Institution, little thinking that they themselves would ever need its aid. In view of the vicissitudes of a builder's career, he thought the Institution ought to be much more largely supported by the building trades than was really the case, and he hoped that those who only gave an occasional donation would give an annual subscription instead. At the same time they should be glad if any annual subscribers could see their way to increase the amount of their subscriptions. He regretted that the esteemed Treasurer of the Institution, Mr. Plucknett, was absent owing to illness. As everybody knew, Mr. Plucknett had for many years past rendered great service to the Institution, and they all hoped for his speedy recovery, and trusted that he would be spared to them for many years yet to come.

The toast was very heartily received.

The next toast was "The Chairman and President," proposed by Mr. J. T. Chappell, who spoke of Mr. Smith as the representative of a good old firm,—a firm which was held in high repute not only by the trade, but by Government departments and other clients for whom they had executed contracts.

The Chairman, in responding, referred to the fact that his grandfather took an active part in the founding of the Institution.

Mr. Foundriner proposed "The Vice-Presidents and Trustees," coupled with the name of Mr. Thomas F. Rider, who briefly responded.

Mr. F. J. Dove proposed "The Treasurer" (Mr. George Plucknett, J.P.), and spoke of the value of his services to the Institution.

Mr. Howard Colls, in proposing "The Architects and Surveyors," said he was glad to find that, in spite of Sir Edmund Beckett, the architects were still alive, and, as far as he could see, they were likely to live for some time yet,—at any rate, so long as the conditions of life remained as they were at present. Of course, builders were bound to confess that there were architects of various kinds. There were some, for instance who could smile blandly while rejecting several barge-loads of bricks, and some who would think nothing of telling a builder to cart away several thousand pounds' worth of valuable stone. But he had no doubt that the architects who were present on that occasion were gentlemen who were desirous of holding the happy medium between the rights of builder and client. With "The Architects" he begged to couple the name of Mr. Barry, whose grandfather's name was identified with what was by a long way the finest modern public building in London. But just as the architect should be the means of settling difficulties between builder and client, the quantity surveyor was a necessary mediator between builder and architect. Speaking as a builder, he felt strongly that all architects who worked on the principle that a quantity-surveyor was not needed should be avoided by builders as they would avoid a pestilence. In these times it was very difficult indeed to make a profit in the building trade. Mr. Labouchere had stated that the average profit of a builder's business was 30 per cent. He regretted to say that his own experience was that a builder's profits did not average 30 per cent. With "The Surveyors" he begged to couple the name of Mr. H. P. Foster.

Mr. Barry and Mr. Foster having briefly responded, the concluding toast ("The Committee and Stewards") was given by Mr. Alfred Smith and responded to by Mr. James Blyth.

During the evening subscriptions and donations, amounting to a total of 854l. 10s. 6d. were announced.

ARCHÆOLOGICAL LECTURES AT THE BRITISH MUSEUM.

ON Wednesday last the first of what promises to be a very interesting and valuable course of lectures was given in the new Anglo-Saxon room at the British Museum, by Mr. J. Frederick Hodgatta, late Examiner in English to the University and district of Moscow, and Professor of the English Language and Literature in the Imperial College of Practical Science and in the Imperial Usatcheffskie Tschernyafskie College of Moscow. The object of these lectures has been thus stated in the prospectus announcing them:—"In view of the great importance to the English public of becoming better acquainted with the *Early English Antiquities* (commonly called Anglo-Saxon), preserved in the national collection at the British Museum, a course of lectures will be delivered on the antiquities in question, as illustrative of certain interesting points in English History." The first lecture, on "The Sword," illustrated by direct reference to the case of Early English swords in the centre of the room, was delivered to a far too small but very appreciative audience. Among those present were the Rev. Prebendary Sir Talbot Baker, Bart. (in the chair), Mr. Ruskin, General Sir John Armstrong, and several ladies and gentlemen whose names are known as interested in questions both of social and artistic history. In the course of his address the lecturer called attention to the special form of the Early English sword, especially as contrasted with the short Roman sword, and pointed out its similarity to, or rather identity with, the Scandinavian type, and threw some brilliant and striking side-lights on the philology and the original meaning and bearing of various words and expressions into which the name of the time-honoured weapon treated of has entered, in one form or another.

We may have opportunity on another occasion to give a somewhat detailed résumé of this and the succeeding lectures of the course. In the meantime we may express emphatically our

concurrence in the opinion expressed by the chairman, and subsequently by Mr. Ruskin, in regard to the value of such lectures as these in giving real and vital interest to such a collection as that which now occupies, in the Anglo-Saxon room, part of the space long usurped by stuffed animals. Mr. Ruskin admitted that the lecturer had brought forward facts which had overturned or shaken "some of his most cherished opinions," and suggested the advisability of engaging a permanent lecturer, thoroughly imbued with the importance of the subjects under his special charge, regularly to explain them to the public; an institution by which the value of such collections would be greatly enhanced.

That is a matter for the British Museum authorities to consider; but we are very glad to take the opportunity of at least drawing further attention to this course of lectures on a collection which is still comparatively a novelty in the British Museum, and is of the greatest interest in its bearings on Early English history. The lectures in question are not intended exactly to be "popular" (nor, indeed, does the gallery in which they are given afford space for a large audience); but there must be many in London who would think an hour well employed in listening to a discourse on English archæology, in which real information is invested with the additional interest which a lecturer who thoroughly cares for his subject knows how to impart.

The lectures are given in the Anglo-Saxon Room at the British Museum, at two p.m. on Wednesdays, and the remaining subjects and dates are as follow:—

- Nov. 21.—"The Shield."
- Nov. 23.—"The Spear, Javelin, and Arrow."
- Dec. 5.—"The Brooch."
- Dec. 12.—"The Ring."
- Dec. 19.—"Beads, Glasses, Drinking-vessels, and Burial."

Tickets (one guinea for the course) can be obtained at Mudie's Library, or from Mr. J. F. Hodgatta, 53, Finborough-road, South Kensington.

ARCHITECTURAL ASSOCIATION SKETCHES, 1883.

THESE few details of some of the buildings visited by the Association during their week at Yeovil, were, of necessity, somewhat hurriedly measured, but have been carefully worked out by Mr. Stonier, and sufficiently explain themselves.

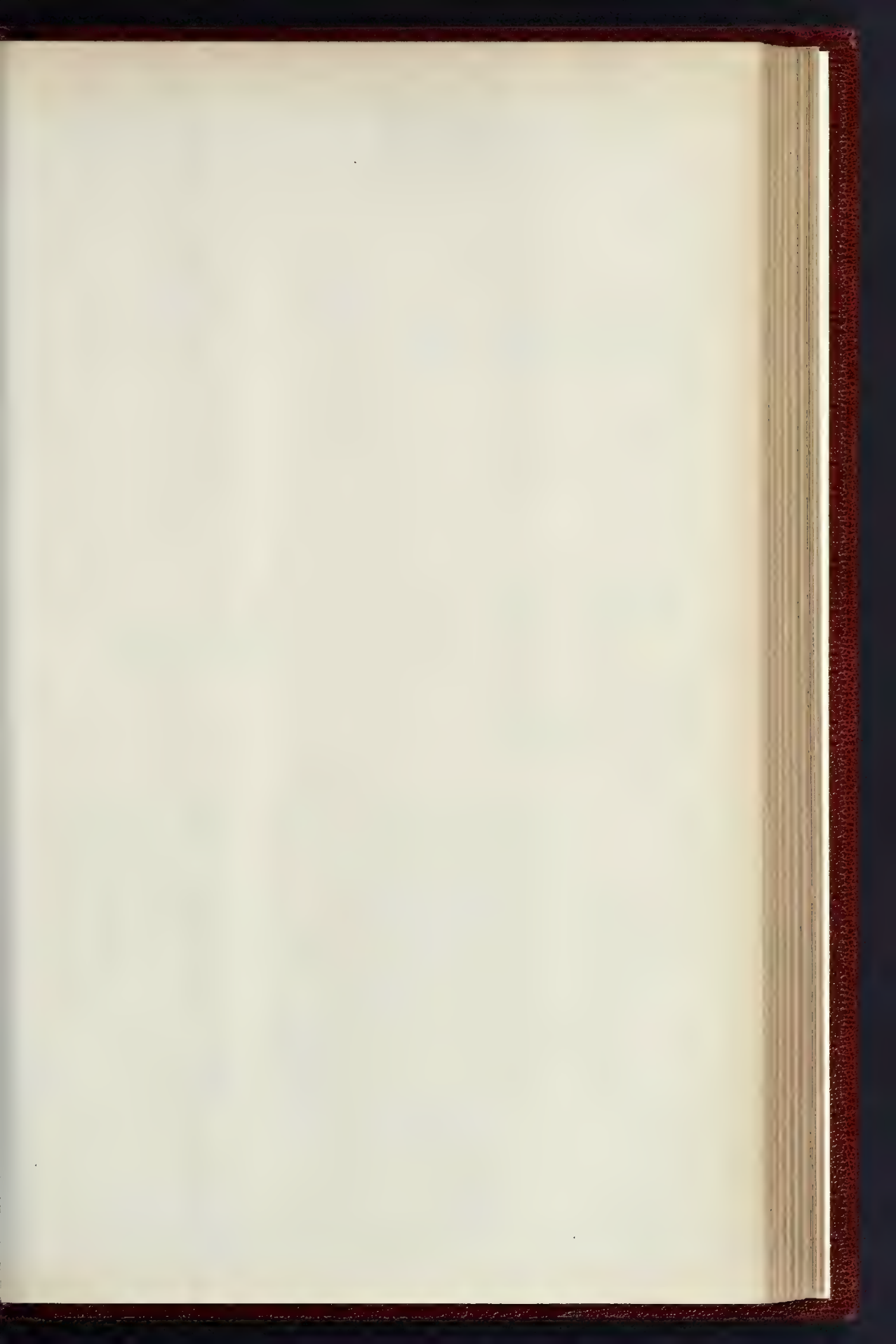
The most interesting of them is the screen from Bradford-Abbas Church, which, until the year 1859, carried a solid wall, some 2 ft. thick, dividing the chancel from the nave; but at that date the wall was removed, and the usual chancel arch inserted. The church contains a fine stone font, square on plan, with carved figures of mitred bishops at the angles, one being said to represent William of Wykeham. There are also some very good oak seat-ends, a few of which have been reproduced at Sherborne Abbey during the recent restoration. One of these bears a full-length figure of St. Paul with sword and book; another showing an oak tree, on the topmost branch of which sits a bird having an acorn in its bill, while beneath a pig appears to be spending a good time among other fallen acorns.

C. W. MOUNTFORD.

VILLA RESIDENCES AT ADDLESTONE, SURREY.

THESE villa residences, which have been recently erected for Mr. T. Snowden, are built of good red brick to the height of the string-course above the windows, and above that of yellow brick, the roofs being covered with slate. They comprise drawing-room, dining-room, library, hall and porch, kitchen, &c., on the ground-floor, and on the first-floor five bedrooms, dressing-room, bath-room, and water-closet, and two bed-rooms for servants in the attic. The stables have each one stall and coach-house, with hay-loft above.

The joiners' work in the principal rooms is of pitch-pine, varnished. The whole of the works have been satisfactorily carried out by Mr. Gale, builder, Woking, at the cost of 2,100l., Mr. Charles H. Cooke, F.S.A., Burlington Chambers, 180, New Bond-street, being the

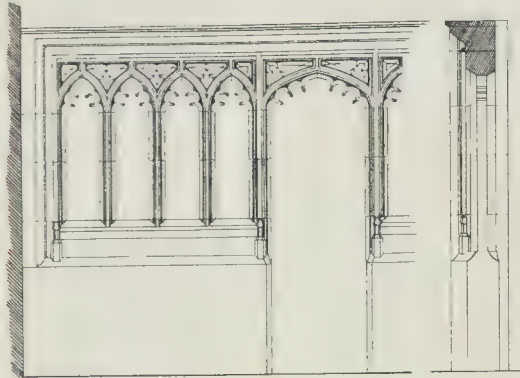


SKETCHES AT ARCHITECTURAL ASSOCIATION EXCURSION, 1883.

By MR. E. W. MOUNTFORD.

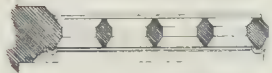
Chancel Screen

Bradford Abbas Church.
Somersetshire.



Elevation

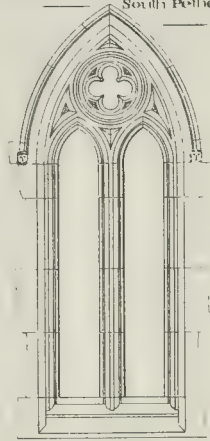
Section



Plan

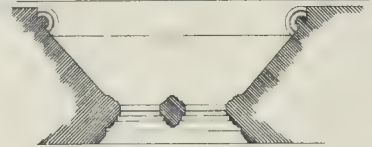
South Window of Chancel

South Petherton Church.
Somersetshire.



Elevation

Section



Plan

Newton House

Detail of Bay Window

Ground Floor



Half Plan

Front Elevation

Section

Plan

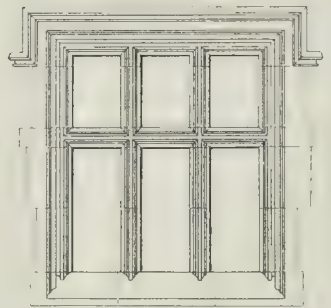
Drawn by
W. Stanger



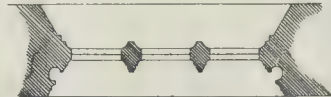
Measured by
E. W. Mountford.

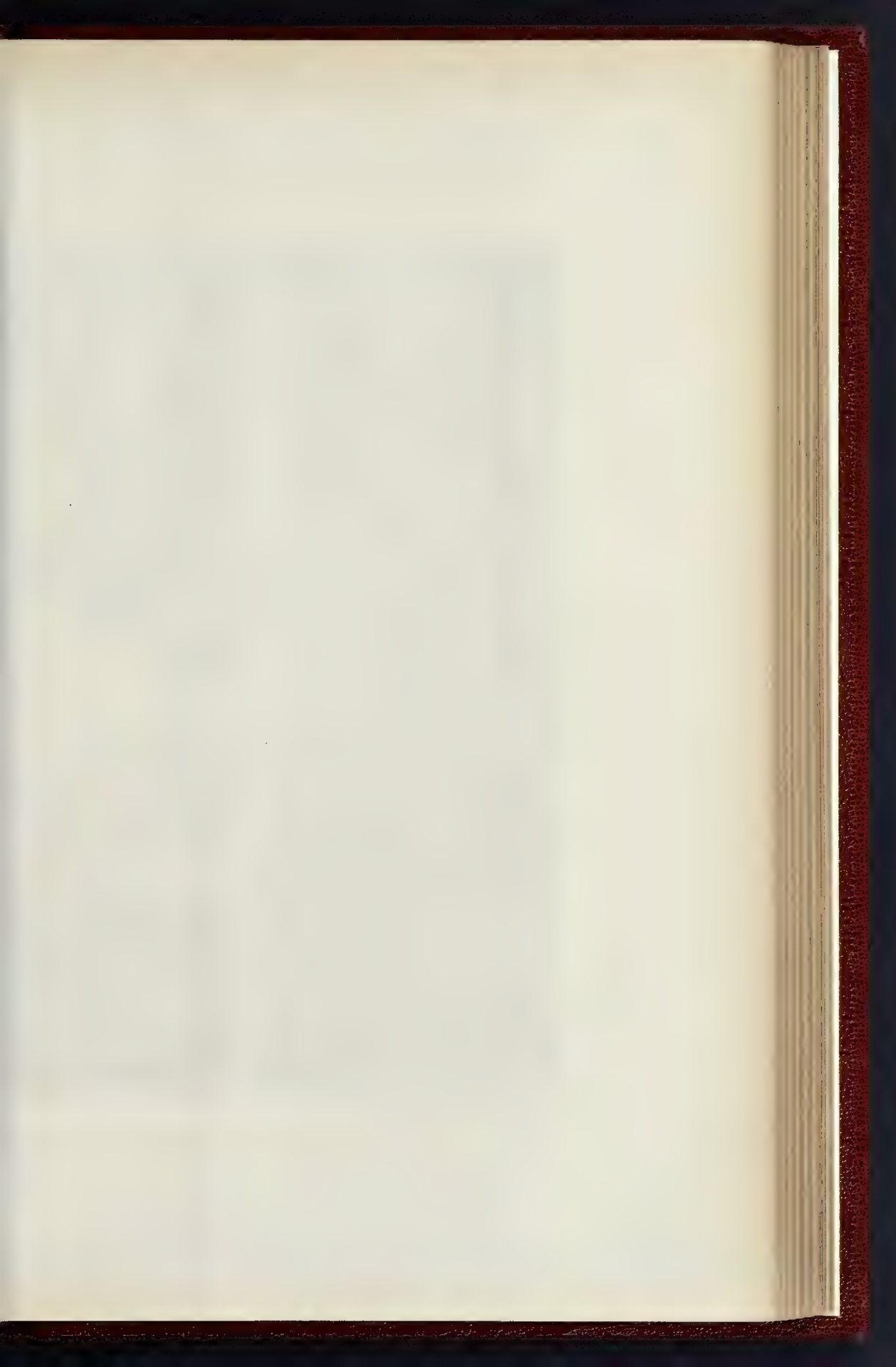
Window on Ground Floor

Monkwearmouth Priory
Somersetshire



Elevation



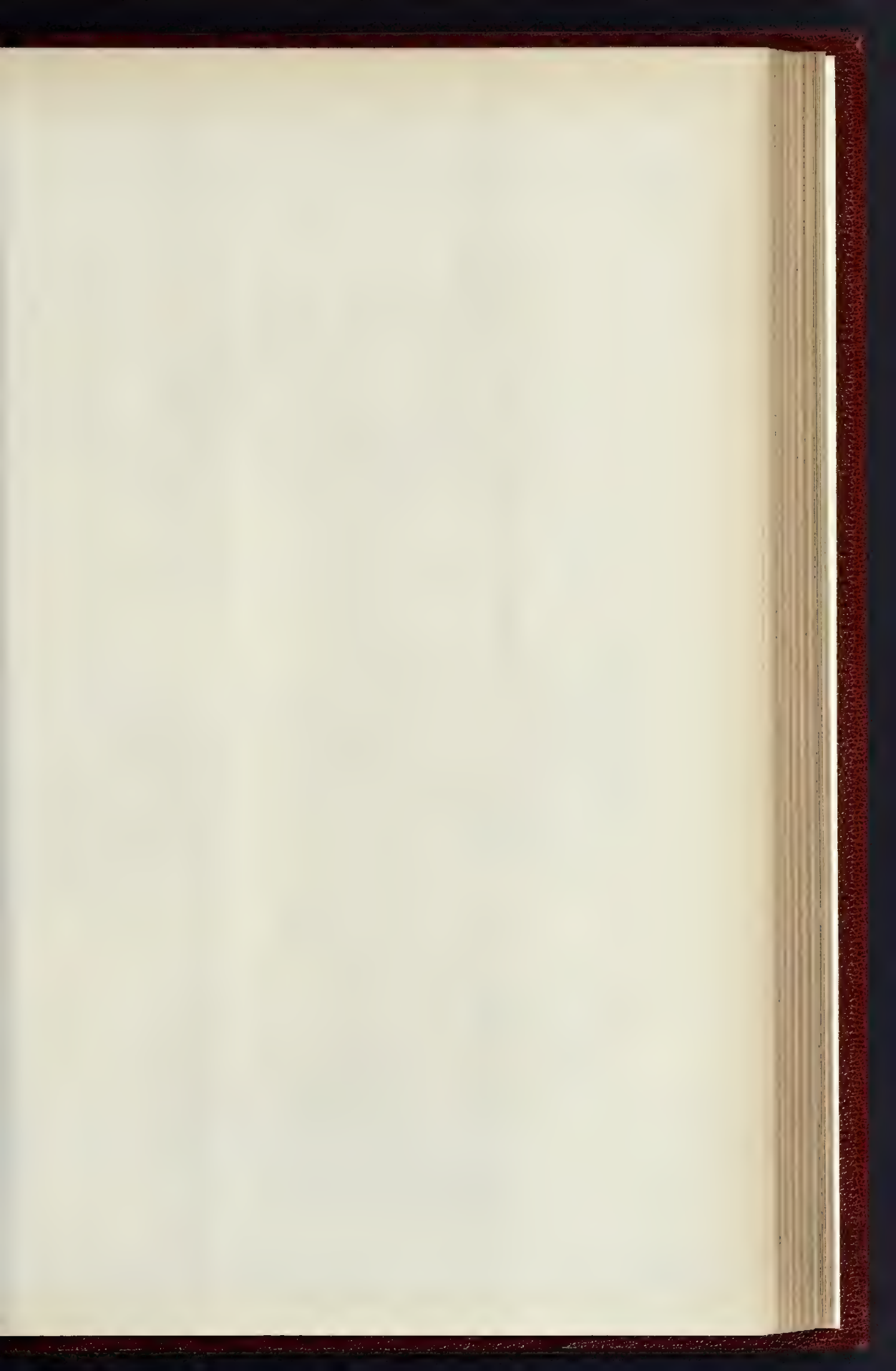




COUNCIL CHAMBER, NEW YORK



NA.—HERR F. SCHMIDT, ARCHITECT.



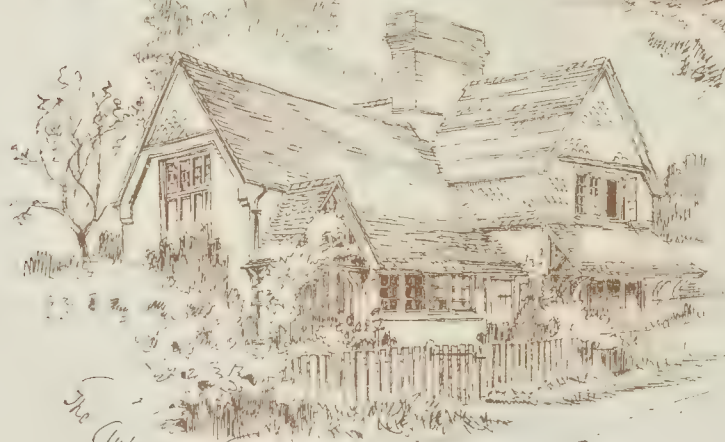


2. Village

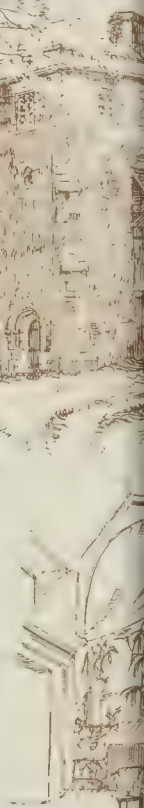
SKETCHES



3. Stable



The Club and Reading-room



The Shop

PRYSTON?

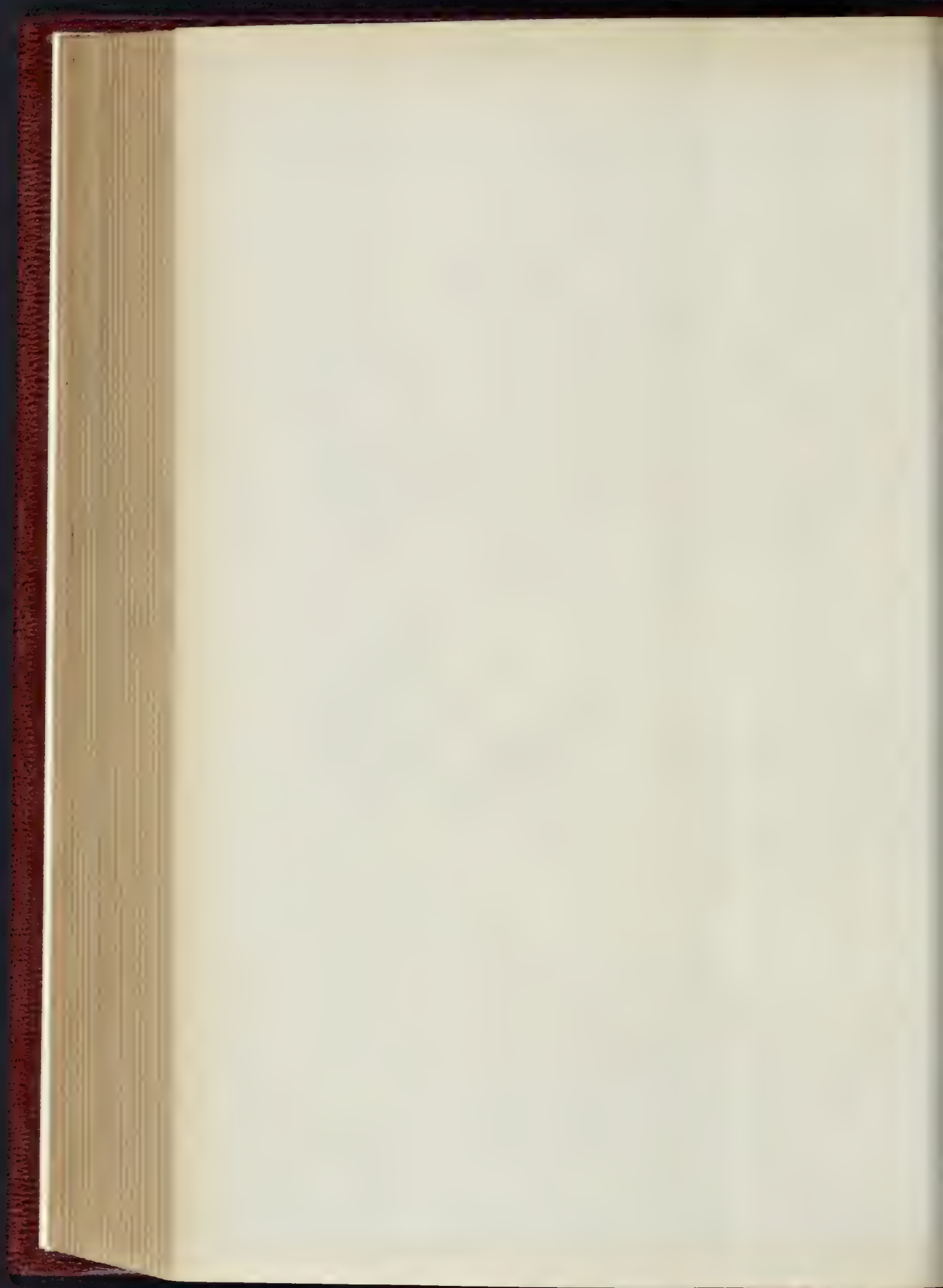
OCTOBER 1883 -

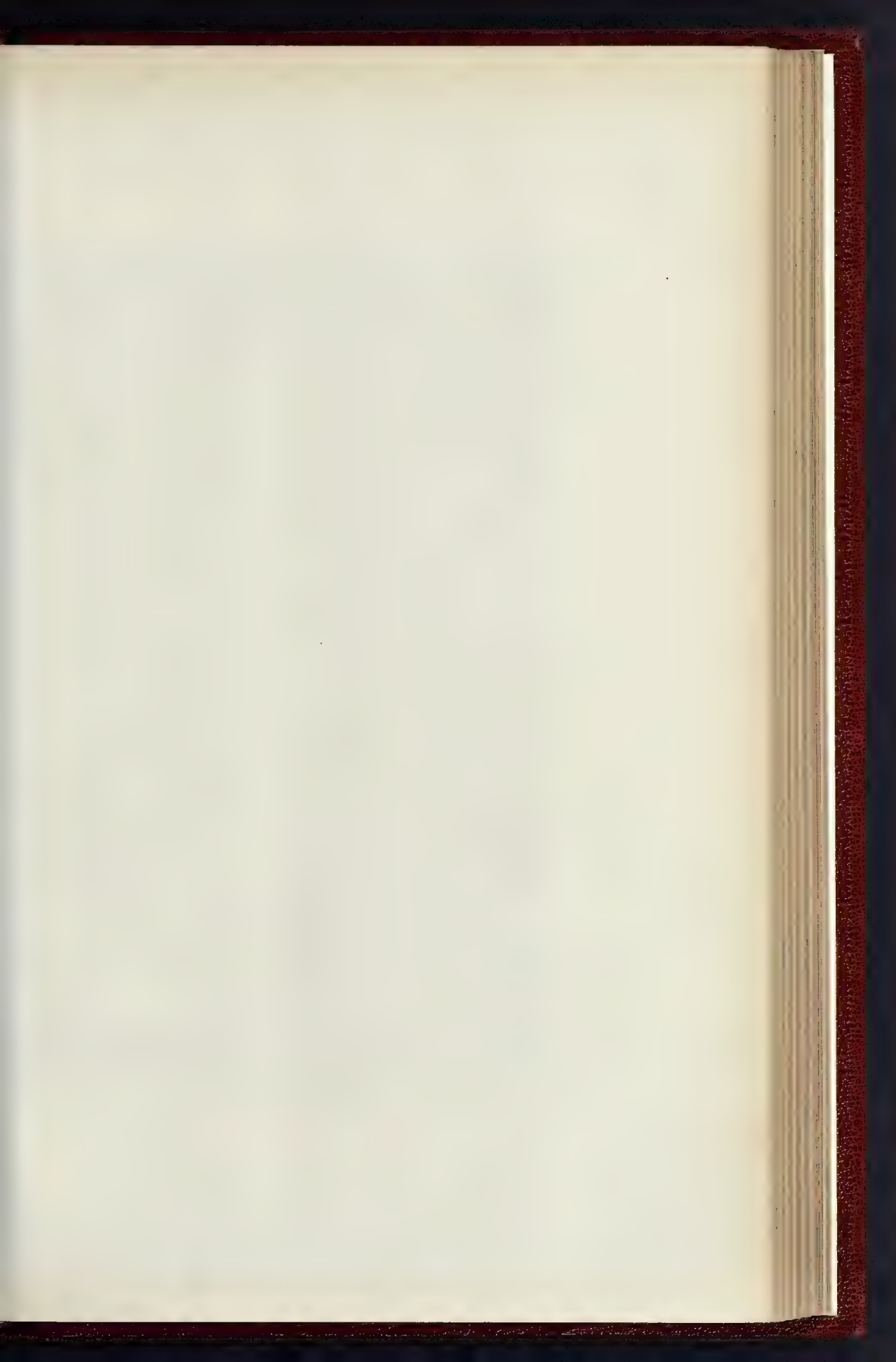


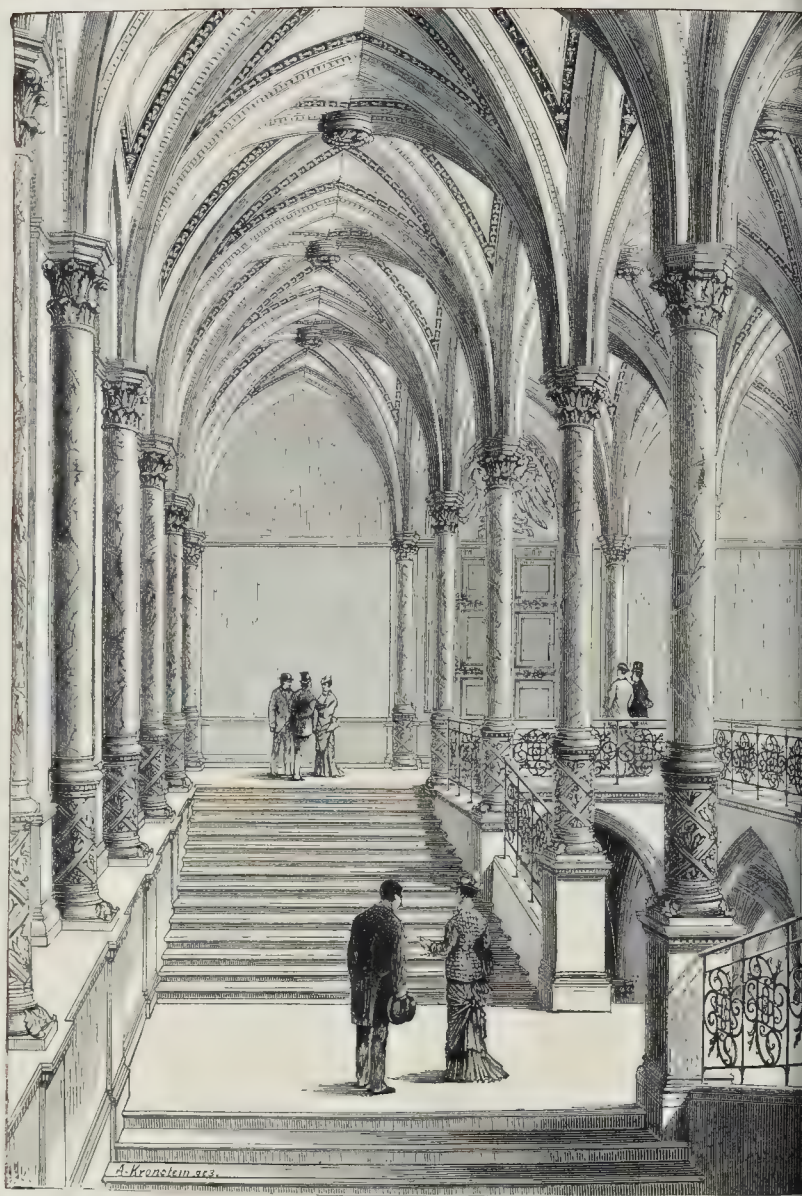
A cottage - old style -
Picturesque, perhaps; but -



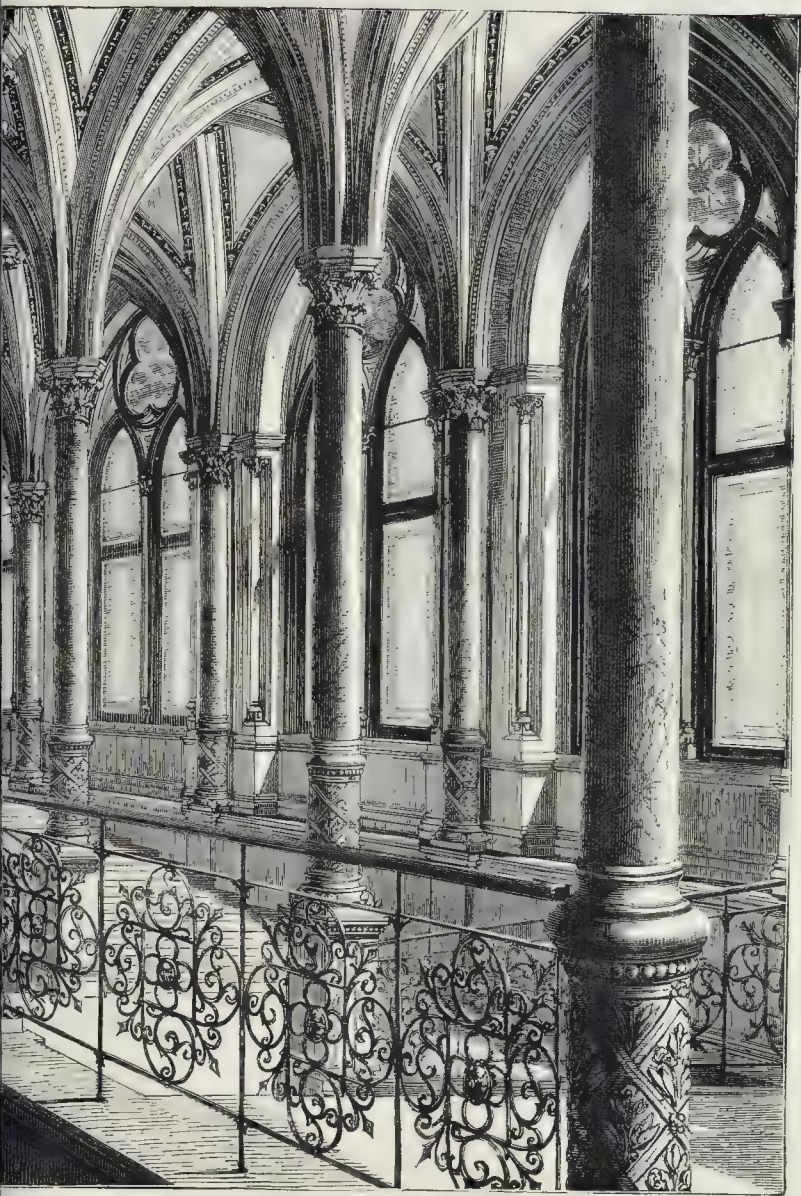
A cottage on the Estate - New style



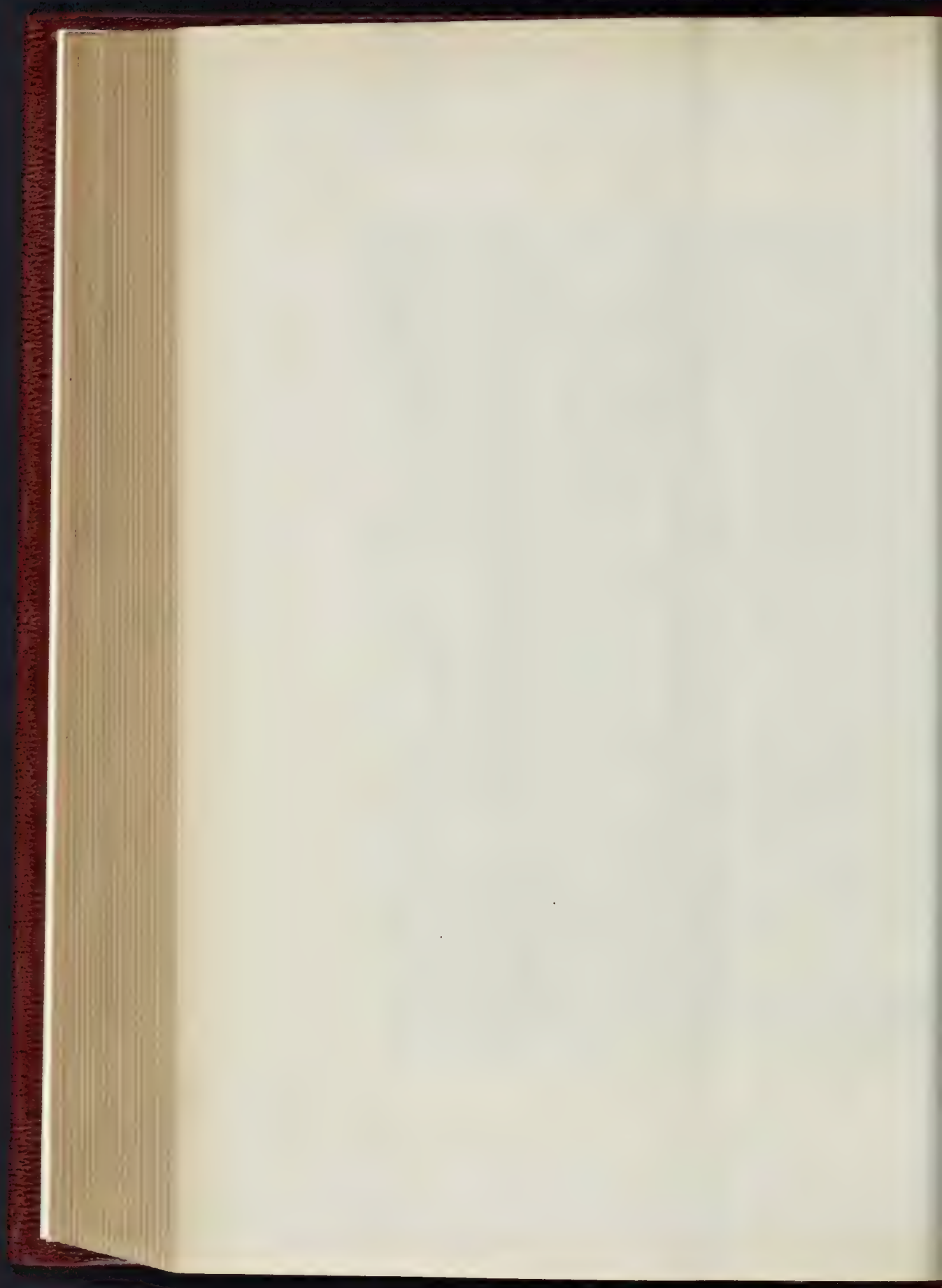




PRINCIPAL STAIRCASE, NEW TOWN



A.—HERR F. SCHMIDT, ARCHITECT.



GROUND PLAN.



Vincent, Brooks, Day & Son, Photo litho

VILLAS AT ADDLESTONE, SURREY MR. CHAS. H. COOKE, ARCHT.



THE NEW TOWN-HALL, VIENNA.

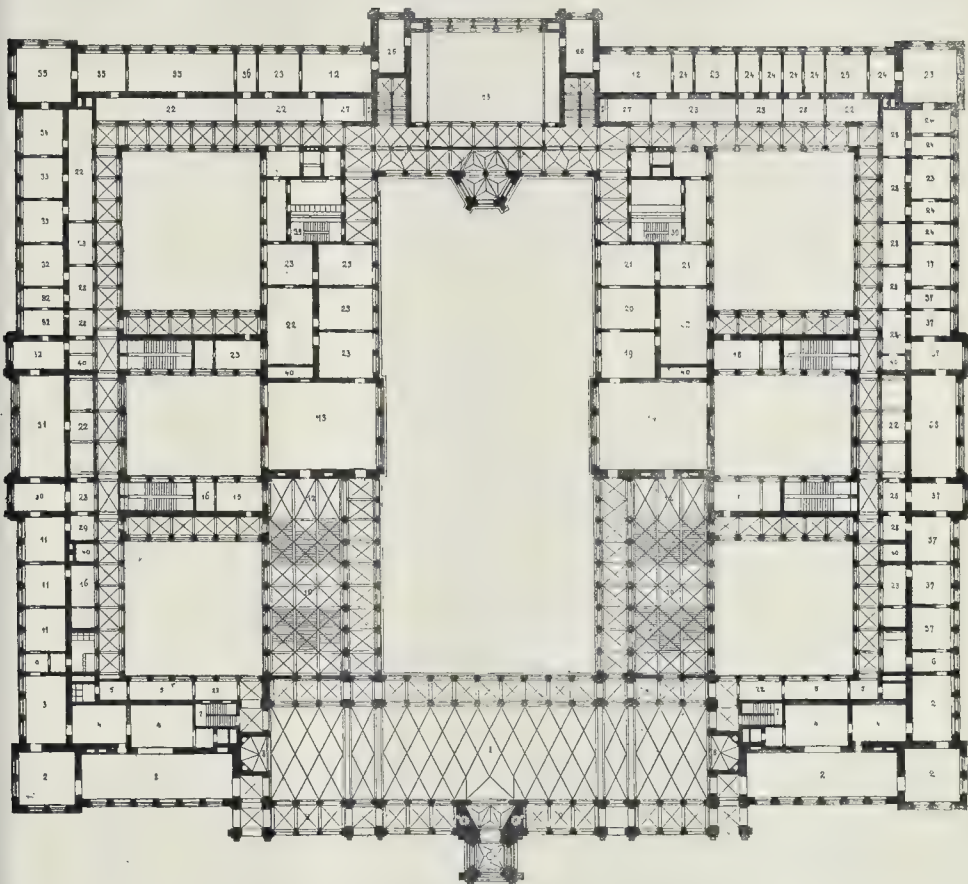
THE new Town-hall, or Rathhaus, of Vienna was begun thirteen years ago. The first sod was turned on May 23, 1872, and on June 14, 1873, the foundation-stone was laid. Oberbaurath Friedrich Schmidt, who, amongst a crowd of competitors, native and foreign, was selected as the architect of the building, directed operations until its completion. Although his design was accepted almost in its entirety, the architect was controlled by a board of inspection, the municipality having decided to be their own builders,—that is to say, they did not let the construction of the whole building at a

building. In two places only mines (dating from the siege by the Turks) were discovered.

The new Rathhaus lies in the centre of the great square, between the Ringstrasse and Lastenstrasse, and has on its right the new university buildings, on its left the new houses of parliament. It forms a parallelogram 499 ft. by 404 ft., covering an area of over 4½ acres. As will be seen from the plan of the first floor, which we give in this week's *Builder*, the building encloses seven courtyards, a larger central one, and, separated from it by wings, three smaller ones on each side. The centre courtyard is 197 ft. long by 115 ft. wide. The principal hall is in the first floor, on

over the principal floor is 16 ft. 6 in. high, and is surmounted by a moulding 4 ft. 3 in. high. The roofs, partly mansarda, partly hip roofs, are richly adorned by oriels and louvres. The four corners end in pavilions.

On the principal front, geometrical stairs of fourteen steps with terrace lead to the arcades of the ground floor. The vault of the great tower forms the principal entrance to a large vaulted vestibule, called the "public hall" (Volkschalle), 111 ft. 6 in. long and 36 ft. wide. It opens to the right and left into smaller vestibules leading to the principal staircase. Through the large public hall, which, as its name implies, serves for public meetings, the large



THE NEW TOWN-HALL VIENNA.—Plan of Principal Floor.

- | | | | |
|---------------------------|---|---|--------------------------------|
| 1. Principal hall. | 11. Drawing-rooms. | 20. Magisterial director. | 31. Reception-room. |
| 2. Refreshment-rooms. | 12. Ante-halls. | 21. Offices of the municipality. | 32. Rooms of the presidency. |
| 3. Smoking-room. | 13. Ceremonial hall. | 22. Waiting-rooms. | 33. Secretary's rooms. |
| 4. Serving-rooms. | 14. Magistrates' room. | 23. Sectional rooms (offices). | 34. Attendants' rooms. |
| 5. Ladies' cloak-rooms. | 15. Clock-room. | 24. Offices. | 35. Municipal offices. |
| 6. Passage. | 16. Closet. | 25. Common-council hall. | 36. shorthand-writers' room. |
| 7. Gallery stairs. | 17. Consulting-room. | 26. Consulting-rooms. | 37. Offices of the magistracy. |
| 8. Orchestras. | 18. Room of the burgo-master for receiving deputations. | 27. Clock-rooms. | 38. Committee-room. |
| 9. Loggia. | 19. Council-room. | 28. Ante-rooms. | 39. Stairs for the staff. |
| 10. Principal staircases. | | 29. Attendants' rooms. | 40. Heating-rooms. |
| | | 30. Private office of the burgo-master. | |

contract price, but carried it out on their own account, even supplying their own materials as they wanted them, and thus taking advantage of the fluctuations of the market. At the same time, whilst having due regard to the important question of expense, they were by no means "stingy" in doing the work. Everything was to be, and is, of the best description. Only the finest hydraulic lime is used for the substructure, and all the ironwork is of the best Styrian iron. The façades and ornamentation are throughout in freestone, which has added considerably to the cost of the building. The site chosen on the so-called "Paradeplatz" turned out to be of an excellent nature for a large

the side facing the Ringstrasse. It is marked by a projecting loggia, and in its centre by the principal tower, 328 ft. high. The whole centre plot is, besides, distinguished by four smaller towers, 200 ft. high, two on each side. Owing to the great number of offices required, it was found necessary to have five floors, only the principal one of which has a considerable elevation, 25 ft. The ground floor has a height of 14 ft.; the floor above it, of 15 ft. 6 in. Next follows the mezzanine story of the same elevation. The two lower floors form arcades both on the principal façade and towards the great courtyard. The mezzanine forms a kind of frieze between the two principal stories. The story

central courtyard may be reached, which may also be entered by the arcades. Two large vestibules, one in each of the side fronts, serve as carriage approaches which, passing through the smaller courts, lead into the principal courtyards. The principal staircase has been given such a form, and is so placed, that it may be reached both by persons entering by foot from the principal entrance and by those arriving in carriages.

The principal hall (Festhalle) is located, as already remarked, on the first floor, and is carried up through the next floor; it is approached by the great staircase (of which we give a view). It covers an area of 11,621 square feet, is

187 ft. long and 64 ft. wide, and has a height of 45 ft. On the side towards the Ringstrasse an open loggia is placed; towards the principal courtyard an arcade supported on arches. Choir-like structures on each end of the hall are intended for the orchestras. A gallery on a level with the top floor runs round the three inner sides. The common-council hall (of which we also give a view) has been placed in the centre of the first floor of the rear front. It runs through two stories, has an area of 37,122 ft., and provides ample sitting-room for 150 persons. There are galleries in three sides. The ceiling is carved in wood. The hall may be lighted by gas or the electric light, and this arrangement is carried out throughout the building, which is heated by steam.

Other particulars respecting the new town-hall, with views, may be found in former volumes of the *Builder*.*

Although the new town-hall was substantially completed, as far as its exterior is concerned, last year, the interior was not finished until this summer, and the whole building was formally handed over to the City of Vienna on September 12 last, when the Emperor himself attended, and performed the ceremony of inserting the last stone in a corner of the principal tower. The total cost of the building is close upon 900,000!

WEST FRONT OF MILAN CATHEDRAL.

IN the limited competition for designs for completing the west front of Milan Cathedral, the result has proved anything but satisfactory. The only drawings of importance sent in by the competitors were those of Professors Beltrami and Ferrario. The former confines himself chiefly to certain alterations in the existing façade designed to correct or remove the absurdities perpetrated in it at the time of Napoleon I. Signor Ferrario, on the other hand, whose design obtained the premium, proposes to erect two small towers at the opposite corners of the façade, between which there is a pediment with the three windows at the ends of the three middle aisles. The successful design, however, is spoken of by independent critics in no very favourable terms. The towers are too small for bells, though the architect designed them as bell-towers; while as merely ornamental additions to the façade they appear too large. The pediment is too bald and trivial. Owing to the unsatisfactory character of these designs, the authorities are strongly urged to open a new general competition, and to invite architects of all countries to compete. It is, however, doubtful whether the advice will be accepted.

SURVEYORSHIP ITEMS.

Tunbridge Wells.—At a meeting of the Tunbridge Wells Improvement Commissioners, on the 7th inst., the salary of Mr. P. Dodd, Assistant Surveyor, was increased to 155*l.* per annum.

Brackley.—At a meeting of the Brackley Highway Board, on the 6th inst., the Clerk said he had received twenty-five applications for the post of surveyor, four of whom had been selected and requested to attend the meeting of the Board that day. The four candidates were Mr. W. A. Lloyd, St. Anne's-on-Sea, Lancashire; Mr. Ricks, Walsall; Mr. Ralph Phipps, Staines; and Mr. J. Bourne, of Matlock. Mr. Lloyd and Mr. Ricks were present, and he had received a letter from Mr. Bourne stating that he was obliged to attend a meeting of the Board with which he was connected, and could not possibly attend, but would do so upon another occasion if it was the wish of the Board. Mr. Judge moved that Mr. Lloyd be appointed, at a salary of 200*l.* a year. The Chairman, however, said that as far as testimonials went Mr. Bourne was the most suitable candidate, and it was suggested that the consideration of the question should be adjourned to some other day for the attendance of Mr. Bourne. After some discussion as to the payment of candidates' expenses, the question was adjourned for a week.

Sanitary Institute of Great Britain.—The Autumn Congress and Sanitary Exhibition of this Institute will be held in Dublin in the year 1884.

* See *Builder*, vol. xxxv., p. 980; and vol. xli., p. 516.

THE DISINFECTION OF THE ATMOSPHERE.

DR. ROBERT J. LEE gave an interesting lecture on this subject at the Parkes Museum on Thursday evening last. He began by explaining what is the chief cause of putrefaction, and showed it could be prevented by removing from the air those minute bodies, bacteria and their germs, in which it originates. The mode in which so-called antiseptic agents produce effects was explained, and the products of coal-tar distillation, especially of carbolic acid, were mentioned as most powerful in antiseptic properties. The difference between the use of antiseptics in fluid and in the state of vapour was demonstrated, and the burning of a substance was proved to be unscientific; as the antiseptic properties were thus destroyed, instead of being converted into vapour or smoke, in which form it would act upon the organic particles floating in the atmosphere. The principal question discussed by Dr. Lee was whether it was possible to disinfect the air and thus prevent the spread of some of those diseases, the germs of which are conveyed in the atmosphere. He considered that it was most important to decide upon the principles first, and then put them into practice; and not delude ourselves with the idea that some particular plan in which we had confidence was really useful when it was unscientific, and quite valueless; for example, trying to disinfect a sick-room by keeping water mixed with Condy's fluid, or carbolic acid, was shown to be of no practical use.

COMPETITIONS.

Board Schools, Carlisle.—The Carlisle School Board have awarded the first premium and adopted the designs of Mr. George Dale Oliver, of Carlisle and Workington, for the new Schools in Lowther-street. The second premium has been awarded to Mr. T. T. Scott, of Carlisle.

Frodingham Cemetery.—Messrs. Bellamy & Hardy, of Lincoln, have been awarded the first premium for designs for the New Cemetery for the Frodingham and Brumby Burial Board, and Mr. R. Clapp, of Hull, the second.

DANGERS TO HEALTH ARISING FROM WHITEWASH, &c.

THE *Deutsche Bauzeitung* lately remarked that the danger to health arising from the whitewash usually employed, (as well as from the substances used in causing wall-paper to adhere, and the binding materials in paints) have frequently been commented upon. On account of the injury done to brushes by the freshly-slaked lime, it is but seldom that lime-whitewash is employed. It is, of course, difficult to exercise control on this subject, when it is a question of disinfection. Binding materials of an organic nature, serizin, size, or paste, are used to secure better adhesion. Thus it is remarked that there is in some cases the danger of infection from the substances used in the preparation and fixing of wall paper. The addition of 2½ lb. of boracic acid for each 22 gallons of ordinary whitewash is said to be a sure preventive of dangerous results. This admixture will, it is said, tend to obviate in many cases the injury which the colours suffer when paper is put on a recently plastered wall, or when size-colour is used for a similar purpose.

NEW BUILDINGS IN ST. SWITHIN'S LANE.

BETWEEN Messrs. Rothschild's offices and Salters' Hall, in St. Swithin's-lane, and opposite to the City Carlton Club, a handsome new block of shop and office premises has just been erected. The shops, three in number, are divided in the front by polished red Aberdeen granite columns. The entrance to the offices in the upper part of the buildings is near the King William-street end of St. Swithin's-lane, between the shops. There are two stories above the ground-floor, the elevations are faced with Portland stone, decorated with a good deal of carved work.

Mr. W. Wimble, of Queen Victoria-street, is the architect, and Mr. W. Brass, of Old-street, the contractor. The cost of the buildings is upwards of 7,000*l.*

RESTORATIONS AT THE CHURCH OF ST. ANDREW UNDERSHAFT.

SOME two or three years ago the ancient Church of St. Andrew Undershaft, St. Mary-axe, in which lie the remains of Stow, the historian of London, as well as many other celebrities known to fame, was to a great extent internally reconstructed from the designs and under the superintendence of Mr. Blomfield.

During the last three months the church has again been closed for the purpose of undergoing alterations and internal decoration. The former consist of the reconstruction of the upper portion of the tower, and the addition of a new vestry. The old materials of the upper part of the tower have been removed to the extent of several feet in depth, and the structure is in course of being restored, and to some extent modernised, by the erection of three lofty pinnacles, and a bell-turret at the north-west angle. The new vestry which has been erected is at the north-east angle of the church. It is faced with Kentish rag stone, and has a parapet in Portland stone. The interior decorations consist of the removal of all the colouring and whitewash from the walls and arcade columns and arches, all of which have been painted and flatted, the arcade columns and arches in pale buff and the walls in a delicate grey tint. In the spandrels of the arches there are mural oil paintings representative of sculptural subjects and characters, but for many years past these have been entirely hidden from view, being obscured by a facing of whitewash. This has now all been cleared away, and the paintings restored by having been cleaned and varnished. The panels of the ceiling have also been varnished, the bosses re-gilt, and the shields picked out in colours. The shields include, amongst others, those of St. Andrew, St. George, and the City of London, and a new shield has been introduced,—that of the Bishop of Bedford, now rector of the parish. The shield, which is in blue, white, and gold, is surmounted by a mitre. The organ, which is now placed on the south side of the chancel, has been taken down, cleaned and enlarged. The interior decorations are now almost completed, but the restorations at the tower and the new vestry will take some time longer to complete.

Mr. Chatfield Clarke is the architect for the present works, which are being carried out, those of the tower by Mr. Ansted, of Battersea, and the vestry and internal decorations by Mr. Heeps, of London-wall.

NEW MODEL LODGING BUILDINGS IN LAMBETH.

UNDER the designation of "Westminster Chambers," a new block of buildings has just been erected in Westminster Bridge-road, near Messrs. Maudslay's engineering works, which are chiefly intended for the accommodation of unmarried artisans. The building has a frontage of 30 ft. to Westminster Bridge-road, with a return frontage in France-street, 70 ft. in depth, and contains four floors and a basement. It is faced with stock brick, relieved by red brick string-courses and window-heads. There is a main ventilator rising from the roof connected with ventilating-shafts from each floor in the building. The internal arrangements provide for the general convenience and comfort of the lodgers, the basement being arranged as a large and well-appointed kitchen, with every facility for cooking, the establishment likewise including a reading-room.

The building has been erected by Mr. Lewis Levy, under the superintendence of Mr. Hebden as clerk of the works.

Presentation to an Employer.—The workpeople of Messrs. Minton, Hollins, & Company, the well-known encaustic tile manufacturers, have presented Mr. W. C. Hollins, son of the senior partner of the firm, with an elaborately-worked silver epergne, on the occasion of his marriage. The presentation took place on the work, and in the presence of nearly all the hands employed. Mr. Mason, manager, introduced the oldest servant of the firm, who made the presentation. Mr. Hollins briefly expressed his recognition of the kindly feeling which had been manifested.

THE ALBERT EXHIBITION PALACE, BATTERSEA PARK.

The spacious new building on the border of Battersea Park, designated the Albert Exhibition Palace, of which Messrs. Bell, Miller, & Bell are the architects, and Messrs. Bywater & Sons the contractors, is making satisfactory progress, and it is expected that the building will be completed and opened in the spring. The principal entrances are intended to be on the north side, approached from Battersea Park, but there will also be entrances from the south and east and west sides of the structure. With the exception of the south elevation, the building, like the Crystal Palace, will be almost entirely constructed of iron and glass; and all the iron columns, girders, and other materials which formed part of the Dublin Exhibition building, and which were purchased for the Battersea Park structure, are now in position, including the lofty transept at the west end. The south frontage has already been carried up to a height of nearly 30 ft. This elevation is mainly in Portland stone, and the stone from the old law courts at Westminster is being re-used for it.

BUILDING PATENT RECORD.*

APPLICATIONS FOR LETTERS PATENT.

- 5,097. G. Asher, Balsall Heath. Ash-pans, &c. Oct. 26, 1883.
5,102. G. Davies, Manchester. Stoves, ranges, &c. (Com. by F. Jackson, San Francisco, U.S.A.) Oct. 27, 1881.
5,112. J. W. Gibbs, Liverpool. Ventilation for buildings, &c. Oct. 29, 1883.
5,167. E. E. Allen, London. Construction of portable buildings. Oct. 31, 1883.
5,211. G. W. von Nawrook, Berlin. Floors, thresholds, staircase steps, &c. (Com. by Messrs. F. Arnocke & Co., Blankenburg, Germany.) Nov. 2, 1883.
5,216. F. A. Wendt, Croydon. Ventilating rooms and buildings. Nov. 2, 1883.
5,221. F. N. Seyde, Birmingham. Preventing the spread of fire in buildings, &c. Nov. 2, 1883.
5,270. T. Bauehop, Alloa. Ventilator. Nov. 7, 1883.
5,281. J. S. Stevens and C. G. Major, London. Spring hinges for doors. Nov. 8, 1883.
5,285. E. Barber and B. Barber, Tring. Blinds. Nov. 8, 1883.

NOTICES TO PROCEED

have been given by the following applicants on the dates named:—

- Oct. 30, 1883.
3,151. W. Corliss, Providence, U.S.A. Fire-proof buildings, vaults, &c. June 26, 1883.
3,157. T. H. Rees, London. Manufacture of tiles, slabs, panels, &c. for walls, floors, hearths, ceilings, &c. June 26, 1883.
3,204. J. Farrimond and J. Whitaker, Southampton. Ventilating closets. June 28, 1883.
Nov. 2, 1883.
3,247. J. Carrick, Glasgow. Cooking-ranges and ovens. June 30, 1883.
3,311. D. C. Cameron, London. Flushing apparatus. July 4, 1883.
4,697. W. B. Lake, London. Water-closets, &c. (Com. by J. P. Putnam, Boston, U.S.A.) Oct. 2, 1883.
Nov. 6, 1883.
3,064. J. D. Sprague, London. Latches for doors, windows, &c. June 20, 1883.
3,296. E. M. Lee, London. Window-fastenings. (Com. by W. C. Lee, Paris.) July 3, 1883.
3,309. A. Tylor, London. Preventing waste of water in water-closets, urinals, &c. July 4, 1883.
3,315. W. Wade, Crewe. Fire-grates, &c. July 4, 1883.
Nov. 9, 1883.
3,467. H. J. Haddon, London. Grates. (Com. by E. Breslau, Berlin.) July 13, 1883.
3,469. H. J. Haddon, London. Cord-fastener for window-blinds, &c. (Com. by D. W. Erasting, Bremen.) July 13, 1883.
3,512. E. Gilbert and A. E. Gilbert, Dundee. Water-closets. July 17, 1883.

ABRIDGMENTS OF SPECIFICATIONS,

Published during the week ending November 3, 1883.

- 1,216. G. Napier, Manchester. Construction of walls, partitions, and ceilings of buildings. March 7, 1883. Price 2d.
These walls, &c., are made of slabs of concrete or cement, with V edges which fit into each other. (Pro. Pro.)
1,234. J. M. Boekbinder, London. Process of treating plaster of Paris for use in building, &c. March 7, 1883. Price 2d.
To indurate the plaster, a solution of dextrine is added to it. (Pro. Pro.)
1,265. T. C. Olney, Manchester. Construction of hot-water apparatus for heating buildings. March 9, 1883. Price 2d.
Closed pipes are used, but as the water expands under the influence of the heat, a spring safety-valve is lifted, and the surplus water passes into the supply cistern. (Pro. Pro.)
1,271. C. K. Lawton, Manchester. Receptacles used in what are known as "sanitary closets." March 9, 1883. Price 6d.
These have a curved bottom, in which are perforations to allow the liquid to drain off. In a hollow in the bottom may be placed a filtering medium, such as charcoal.
1,282. C. E. Mineard and T. Crapper, London. Ventilating house-drains, &c. March 10, 1883. Price 8d.
This is an improvement on Patent No. 1,623, of 1881, in placing a hot-water circulating cistern round the upper shaft to induce an upward current of air from the drain. This cistern is fitted with a casing, by passing through which air is warmed before it enters the house or rooms.
1,302. R. Whiston, Wolverhampton. Fastenings for doors, windows, and shutters. March 12, 1883. Price 6d.
The bolts are shot by a worm which is revolved, and thereby made to act against the bolt tail. A frame with teeth thereon is placed in the frame of the window, and an eccentric forces it forward until the teeth engage the sliding sash.
1,317. J. Harsand, London. Apparatus connected with the handle of a valve or other closet, for preventing waste of water. March 13, 1883. Price 6d.
The handle spindle is hollow, and inside slides another spindle, to which is connected the bottom valve lever. On the hollow spindle is pivoted a double stirrup, the lower part of which engages over a projection on the loose spindle, and a stud on the loose spindle actuates the water-supply valve lever. When the handle is lifted the loose spindle is also lifted, until the upper part of the double stirrup comes in contact with a projection on the standard, when the lower part is disengaged, and the loose spindle falls, closing the bottom valve, and allowing the water supply to be shut off as the bellows regulator will allow. In a modification an air cylinder is pivoted on the end of the water-supply valve lever in the upper end, being a small discharge-cock. The piston of this cylinder is lifted by the loose spindle, and the compressed air in the cylinder lifts the lever until the air escapes through the small cock, when the lever descends and shuts off the water supply.
1,337. T. J. Saunders and H. W. Allan, Glasgow. Baths, washing-troughs, &c. March 13, 1883. Price 2d.
The discharge-valve is a tubular plunger, which fits an annular valve seat in the bottom of the bath. The top of the plunger is at the overflow level, and holes are cut therein so that it acts also as an overflow-pipe. (Pro. Pro.)
1,363. J. Inray, London. Manufacture of a compound applicable as cement or mortar. (Com. by E. Pick, Paris.) March 14, 1883. Price 4d.
This is composed of gypsum, sulphate of lime, coke dust, and marl, ground and then mixed together while in a heated state.
1,372. J. E. Rendle and F. B. Rendle, London. Glazed structures for horticultural purposes, &c. March 14, 1883. Price 8d.
This relates to the form of the astragals which carry the edges of the sheets of glass, and which are made of sheet metal with flat bearing surfaces for the glass to rest on, and troughs or channels underneath carry off any water. The glass is held in position by strips of metal bent down on the upper surface thereof.
Published during the week ending November 10, 1883.
1,390. A. J. Boul, London. Material or composition to be used as a substitute for plaster of Paris, Tripoli, or the like and manufacture of the same. (Com. by E. Caspari, Paris.) March 15, 1883. Price 2d.
The plaster stone is burned and then ground together with burned clay and gas-coke.
1,391. E. R. Wethered, Woolwich. Latches, locks, and lock-furniture. March 15, 1883. Price 6d.
This is an improvement on Patent No. 483, of 1882, in forming the incline so that the bolt drops behind it when the door is closed.
1,406. W. Jones, Bangor. Flushing Apparatus. March 16, 1883. Price 2d.
The stand-pipe of the cistern rises a little above the overflow level, and a cap is fitted over its end, which can be raised by a lever, thereby drawing the water up and starting the syphonic action that empties the cistern. (Pro. Pro.)
1,426. G. Gore, Balsall Heath. Domestic and

like stoves and furnaces, and means for feeding fuel thereto or therein. March 17, 1883. Price 6d.

Behind the grate is a hopper which contains the fuel supply, and the mouth of the hopper opens up through the bottom of the grate. A roller is fitted near the mouth, in which is a long slot carrying a plate of metal which exactly fits the bottom passage, and in front of the roller at the back of the bottom of the grate is a wedge-shaped piece of metal. When the roller is made to revolve the plate forces the fuel up into the bottom of the fire, and it then comes in contact with the wedge-shaped piece and is thereby made to slide in the slot, the other edge projecting out the other side of the roller ready for the next supply of fuel.

1,451. J. H. Johnson, London. Manufacture of Portland cement. (Com. by E. J. De Smedt, Washington, and R. W. Lesley, Philadelphia, U.S.A.) March 20, 1883. Price 4d.

A liquid hydro carbon, or other combustible, is mixed with the cement material prior to the calcining operation. Lime is also combined with the cement rocks when required, to form the cement.

1,488. A. M. Clark, London. Construction of stables drains and floors. (Com. by P. A. H. Basserie, Le Mans, France.) March 21, 1883. Price 6d.

The floors are laid level, and a drain is formed along the length of the stable with a branch into the middle of each stall. These drains are covered by perforated plates.

SEWERAGE MATTERS.

Wolverhampton.—Mr. E. Pritchard, C.E., has prepared a report upon the Wolverhampton sewerage, in which he recommends the expenditure of about 44,000l. in new works.

Darlington.—At a meeting of the Darlington Local Board last week, a scheme which Mr. E. Pritchard, C.E., had prepared for the sewerage of the district and purification of the sewage, was adopted, and ordered to be forwarded to the Local Government Board for approval. The scheme includes the complete sewerage of the town upon the partial separate system; the conveyance of the sewage to outfall works, there, in tanks, by precipitation and quiescence, to be clarified and partially purified, and afterwards to be filtered through a small area of land, and poured into the Tame, in the parish of Walsall. The total cost of the scheme, exclusive of purchase of land and compensation, was estimated at 18,555l.

Wigton (Cumberland).—The inauguration of the recently completed works of sewerage and sewage-disposal for this town has just taken place. The works were designed in 1879 by Mr. John S. Hodgson, C.E., Hexham, and include a complete separate system of new surface-water sewers and street-gullies, the subsoil drainage of the site of the town being likewise separately provided for. The system of sewage purification adopted is irrigation and intermittent downward filtration upon a total area of about twelve acres. The total cost of the works, including purchase of land, has been about 8,600l. Mr. Thos. Bennett acted as clerk of works throughout.

Willesden.—Sanction has been accorded by the Local Government Board to a scheme of sewerage for a portion of the Willesden district. The cost of the works is estimated at 33,000l. The district proposed to be drained is that portion of the Willesden parish lying upon the watershed of the Brent, and comprising about 3,290 acres. The sewage is proposed to be treated by a combined system of chemicals and intermittent filtration through land. The scheme has been prepared by Mr. O. Claude Robson, Engineer to the Willesden Local Board.

CHIMNEYS AT HAMPTON COURT.

Sir,—I fail to see that I have made any mistake in reference to these chimneys. I was fully aware that a restoration had taken place, but, as it appeared to be a genuine one, I said nothing about it in the notes you published with my sketch. The present chimney-tops are, I presume, line-for-line reproductions of others about the Palace, and so are, for the purposes of a sketch, as good as the original ones.

ARTHUR KEEN.

Nov. 12.
* * We fear we cannot quite accept our correspondent's view of the matter.

KIRBY LONSDALE BRIDGE.

Sir,—If you, or any of your readers, will inform me of the year in which the stone bridge was built over the River Lune, at Kirby Lonsdale, and the name of the builder, I shall be greatly obliged.

ANDREW ROBINSON.

Alexandria-terrace, Lostock Hall,
near Preston, Nov. 13, 1883.

* Compiled by Hart & Co., Patent Agents, 186, Fleet-street.

GRAPHIC AND ANALYTIC STATICS.

SIR,—I make it a rule not to reply to criticism on my own writings; but there appears in your esteemed journal (Nov. 10th) a review of my book on "Graphic and Analytic Statics," which, though generally favourable, seems to betray a want of appreciation in one or two particulars. I pass over the matter of words, all of which I used advisedly, with the exception of the term "got at." This is an expression which, if it occurs, I have used inadvertently, and should therefore be obliged if your critic would indicate the page and line where it is employed.

In the instances given where I introduce the double integral methods in preference to shorter methods, I have an object in view; and on pp. 140 and 142 I clearly state what that object is, viz., to accustom the student to the use of double limits, in order that he may be able to follow my reasoning in the analytical parts of my work when double integration becomes absolutely necessary.

Regarding the longitudinal slip in straight beams under vertical loading (p. 263), the writer of the article confounds the separate and distinct phenomena of tendency to slip and strain, or tendency to rupture. The strain in a loaded beam is greatest at its upper and lower limits; but it is evident that, as the strain changes sign at the neutral axis, being compressive above and tensional below, the slip will take place along that axis. Further, let us suppose the beam to be cut in two along the line of the neutral fibre and the two divisions to rest in contact one above the other, in their straight, unloaded condition. Bring a weight to bear at the centre of span, or, in fact, anywhere along the beam, and it will be found that the two beams will slide relatively to each other along their line of tangency or contact. This is the reason why composite beams are sometimes dovetailed or step-jointed together along their lines of connexion.

R. H. GRAMAM.

"LUNCHES."

SIR,—I noticed in your paper of the 10th inst. [p. 637] the letter of "A. H." on this word, in which he mentions the Anglo-Saxon "*Alinc*," which he says means "a ridge of land," and that lunch approximates to lump.

I write to suggest the Scottish word "links" as we find it in the "Links of St. Andrews," the "Links of Montrose," the "Links of Musselburgh," "Bristlefield Links" in Edinburgh, &c. These are large open spaces corresponding to the English heaths and commons, where the game of golf is played. Some of these are by the seashore, and some inland, but they are all rolling ground, in a natural, uncultivated state, abounding with ridges and hollows, and so far agreeing with the definition of the Anglo-Saxon word "*Alinc*." BELIZE.

"YE GODS, IT DOTH AMAZE ME!"

SIR,—On reading the address of the President of the Royal Institute of British Architects, as reported in last week's *Builder*, I was surprised at his silence on the question of the New Admiralty and War Offices Competition; and also at the hope he expressed that the model by a foreigner would soon be placed in position on one of the pedestals of Blackfriars Bridge.

I for one sincerely trust that nothing of the sort will occur; but that whatever works of art ultimately adorn the bridge will be from the studio of an English artist.

I note that the vote of thanks to the President for his address (embodying this hope) was carried by acclamation. B. WILKINSON.

10, John-street, Adelphi, W.C.

WHAT IS A NEW STREET?

At the Hammersmith Police Court on the 7th inst. Mr. Compton Read appeared to answer an adjourned summons which had been taken out at the instance of the Fulham Board of Works, who sought to recover the sum of 90s. apportioned upon him for the paving of Goodwin-road, Shepherd's-bush.

Mr. Besley supported the summons, and said the question for the magistrate to consider was whether Goodwin-road was a street. If it was a street, it followed by law that it was a new street. He read the remarks of Lord Justice Brett in a case to show that a street was formed when the first house was built. Mr. Besley contended that there was not any necessity to show there was a front door opening to the street. Where there were houses on both sides, in common parlance, it was a new street.

Mr. T. E. Jones, clerk of the Board, said the defendant's house, which was in the Coningham-

road, flanked on the Goodwin-road, having a side entrance in it, and access to a stable. He showed by a plan that back walls of other houses abutted on the same road, with back entrances.

Mr. Shell wished to know how many front doors opened to the road, and was told that there were four. He decided it was not a street, but a back lane, having four houses fronting it. Mr. Besley applied to the magistrate to state a case, but he refused, as he decided upon a question of fact, leaving him to his remedy by *mandamus*.

CASE UNDER THE EMPLOYERS' LIABILITY ACT.

STEPHENS v. SIMPSON.

At the Leeds County Court, on the 9th inst., before Mr. W. T. Greenhow, judge, and a jury, Whiteley Stephens, labourer, Foundry-street, Baulk, Leeds, brought an action against Mr. John Simpson, contractor, Vincent-place, Hunslet, to recover 49l. 8s. as damages for injuries alleged to have been sustained by him while in the defendant's employ, and through the defendant's negligence. The sum claimed represented one year's wages at 19s. per week. It appeared that on the 20th of August, Stephens, with a number of other men, was engaged in making an excavation in Worrell's-lane, Bramley, for the purpose of laying a drain. The trench was about 4 ft. deep, and to prevent the sides caving in, a stretcher had been placed across to support the earth. Into this hole Stephens was ordered to descend, in order to lay some timber, but in descending he put his foot on the stretcher, which gave way, and he was thrown to the bottom, breaking his right arm. He went to the Leeds Infirmary, where his injury was attended to, and he had not been able to resume work until the 15th of October. It was contended for the plaintiff that the stretcher had been insecurely fastened, and that a ladder ought to have been provided.

For the defence, evidence was called to show that proper stretchers and a ladder had been provided, and that the plaintiff had been guilty of contributory negligence.

The jury, after a short consultation, found a verdict for the defendant.

PROVINCIAL NEWS.

Bury St. Edmunds.—The West Suffolk County Clubhouse, now completed, occupies a site at the corner of Abbeygate-street and Hatter-street. Portions of the old house at the Hatter-street end of the site have been utilised in the new work, the first floor coming in very conveniently as a mezzanine, and thereby saving cost. The front wall, however, has been pulled down and rebuilt from the ground, so that an entirely new facade is obtained in Hatter-street, a length of 87 ft., with 31 ft. on the Abbeygate-street frontage. Isleham stone lime has been used for the mortar. The principal entrance to the club is in Hatter-street, 22 ft. from the corner, through a circular-headed arched doorway, 5 ft. 6 in. wide, leading into a vestibule 8 ft. 6 in. square. Passing through the vestibule, the hall is entered through a screen in wainscot oak with swing-doors. The greatest width and length of the hall is 19 ft. 6 in. by 19 ft. Directly in front of the screen rises the principal staircase, with a width of 5 ft., in three easy flights, with wide landings between. The floor of the hall is of Hungarian oak parquetry, with border in oak and walnut, wax-polished, and was supplied and laid by Mr. Ebner, of London. The reading-room occupies the whole of the Abbeygate-street frontage. It is 29 ft. long by 18 ft. wide. The dining-room occupies 23 ft. of the Hatter-street frontage; it has an arched recess 14 ft. wide, in which will be placed the sideboard. The whole of the first floor is devoted to the use of the members, and contains a fine suite of apartments. Occupying the whole top of the old house, and projected 9 ft. beyond over the yard at the back is the billiard-room, an apartment 33 ft. long, 24 ft. wide, and 13 ft. 6 in. high. The floor and back wall are carried by deep flitch girders, supported at one end by massive brick and cement piers rising from the yard, and at the other by the main front wall. The floor is double and perfectly rigid. At the suggestion of a member of the club, the architect has prepared a scheme for the decoration of this room, illustrating in its details field sports and the four seasons. The rooms are ventilated by special air-shafts and flues with mica flap outlet ventilators, and terminated at the top by Boyle's extracting ventilators. The style is "Queen Anne." The fronts are faced with the best picked Suffolk facing bricks, set in white mortar with a good bold joint, the only stonework in the front facades being the red Mansfield plinth and ground-floor moulded

window-sills. These windows have also moulded and mitred red brick architraves, rubbed and gauged, set in cement, working five courses to the foot, and moulded keys. The arches to the upper windows are circular and recessed, the outer arch moulded and enriched with the egg-and-dart ornament springing from a moulded string-course similarly treated, whilst the whole of the window-frames are exposed to view, and painted white. A cornice and parapet complete the elevation, the former richly moulded, supported by cantilevers with dentils and the egg-and-dart ornament, the latter terminated with a boldly-moulded capping, the whole in brickwork. The moulded bricks were made from the special designs of the architect, during the winter, at Mr. James Brown's works at Braintree. They are lighter in colour than the main body of the work. The whole of the work has been carried out from the designs and under the superintendence of Mr. E. F. Bishop, architect, Ipswich. Messrs. Saunders & Sons, of Dedham, Essex, are the contractors. The tiles in the friezes were supplied by Messrs. W. B. Simpson & Sons. Mr. F. C. Andrews, of Bury, has executed the bell-hanging and gas-fitting, and he has also supplied the stoves, gasfittings, &c. Mr. Moore was the foreman of the works.

Bramley (Surrey).—A dinner was given a few days since to the employers of Messrs. Charles Drake & Co., concrete builders, by Mr. Charles Ede, of Wonerah Lodge, Guildford, for whom Messrs. Drake & Co. have built a large residence, stables, and cottage, &c., in concrete, at Bramley, Surrey.

St. Mary Church, Torquay.—The new town-hall and public offices which the St. Mary Church Local Board decided to build about a year and a half ago have been completed, and were formally opened on the 13th inst. In the spring of 1882 the Board advertised for competitive designs for a new townhall on the site of the present building. Several architects submitted drawings, and those under the motto of "Justitia" were adopted by the committee, whose selection was duly ratified by the Board. Instructions were given to Mr. G. S. Bridgman, architect, of Torquay,—the author of these plans,—to prepare contract drawings and invite tenders; the result being that the contract for the new building was entrusted to Mr. A. Harris, a local builder. The building is in the Classic style of architecture, freely treated. The elevation in the Babbacombe-road is three stories high, the upper portion being designed as an art school, with north lights. A circular portico with tower connects the two elevations at the main corner. The tower is surmounted by a bold stone-corbelled cornice and slated circular roof, with long iron ornamental finial. The material used for general wall purposes is Barton limestone, with pilasters of finely-dressed material of the same character. The material constituting the mouldings, arches, and other trimmings is rich brown Ham Hill stone supplied by Messrs. Staple & Hann, of Ilminster. The terminals and terra-cotta urn vases, which are of clear cream colour, were manufactured at the Lee Moor Terra Cotta Company's Works, in Cornwall. The windows are glazed with plate glass, with the exception of the sunlights to the first floor, which are glazed with lead lights by Messrs. Beer & Driffield, of Exeter. The ground-floor comprises circular vestibule, surveyor's office, medical officer's room, collector's office, committee-room, parish or general meeting-room, and various offices and ante-rooms. The entrance-hall and staircase landings are laid with tiles, while the staircase leading to the upper hall is of Forest of Dean stone. On this floor is the board-room, the clerk's room, and public hall, 63 ft. by 32 ft., with cloak and dressing-rooms and other offices adjoining. The fittings on the first-floor landings and in the board-room and large hall are made of pitch-pine. The gas-fittings have been manufactured and supplied by Messrs. Willey & Co., of Exeter. To Mr. Harris, the contractor, has been entrusted the work of furnishing the whole building. The entire cost of the building, including the furniture and the stables adjoining, has been about 3,250l.

Bedford.—On the 7th inst. the foundation-stone of a new bridge over the Ouse at Bedford was laid by the Marquis of Tavistock. The bridge is to consist of three wrought-iron segmental arches, with ornamental cast-iron spandrels and parapets, the width of the river being 200 ft. The piers and abutments are to be of concrete, with stone and brick facings. The

roadway is to be 40 ft. wide between parapets, having new approaches on the north and south sides of the river of about 200 yards each. The whole cost of the bridge and approaches will be about 10,000. The engineer for the works is Mr. John J. Webster, Assoc. M. Inst. C.E., of Stephenson Chambers, Lord-street, Liverpool. The contracts include the cost of making the approaches which will cause the bridge to connect Prebend and Little Butt streets, which thoroughfares will open upon Cauldwell-street on the one hand and the Midland-road on the other. For the brickwork, stonework, and making the approaches, the contract of Messrs. Pilling & Co., Manchester, at 3,657l. 18s. 3d., has been accepted; and for the ironwork, that of Messrs. Goddard & Massey, Nottingham, at 3,150l.; total, 6,807l.

Bridgwater.—A new bridge over the river Parrett to connect the eastern and western parts of the town was formally opened by the Mayor on the 5th inst. It is 36 ft. wide, and consists of seven wrought-iron elliptical ribs, 75 ft. span, with Westwood & Bailey's corrugated road plates, and ornamental cast iron cornice and handrailing. It was erected on the site of a cast-iron bridge, constructed by the Coalbrookdale Company in 1795, which was interesting as one of the first iron bridges in this country. The abutments of the old bridge were extended and utilised for the new one. The work was carried out by Mr. Geo. Moss, contractor, of Liverpool, at a cost of 3,200l., from plans prepared by Mr. G. B. Laffan, the borough surveyor, with Mr. R. C. Elso, of Bridgwater, as consulting engineer. The wrought-iron work was executed by Messrs. Brettell, of Worcester, and the castings by Messrs. Butl, of Gloucester.

CHURCH-BUILDING NEWS.

Selborne.—The reparation of the south aisle of Selborne Church has been completed, and opened with the harvest thanksgiving. It was necessary to rebuild the east wall, and most of the south wall, which had gone as much as 16 in. and 18 in. from the perpendicular. The roof had slipped still more, and continued to spread. Every feature has been exactly replaced, and the old surface of the stonework, except where whitewashed, has been left, as far as possible, untouched. In taking down the work, jambs of old windows were discovered *in situ*, together with pieces of tracery heads built into rebuilt parts, and these have been reconstructed in the place of the two modern windows. It was not possible to re-use any of the old oak roof except the braced wall-plate on the north side, which, though presenting serious difficulties from its crookedness, has been retained and repaired. The work has been carried out under the direction of Mr. Wm. White, F.S.A., the grand-nephew of the great naturalist of Selborne.

Adlington.—On the 3rd inst., Col. Stanley, M.P., laid the foundation-stone of a new church at Adlington, near Chorley, which is designed to meet the wants of a rapidly-increasing population. The new church is estimated to cost about 7,000l., and will accommodate 700 worshippers. The style of the edifice will be of a Gothic character. The site has been given by the vicar. The church will consist of chancel, 32 ft. by 25 ft.; nave, 82 ft. by 25 ft.; north and south aisles, 61 ft. by 10 ft. 6 in.; north and south transepts, 25 ft. by 21 ft.; organ-chamber at the north-east, and clergy vestry and choir vestry (these are at the south-east, and can be thrown into one when required). In the plans the tower is placed in the second bay of the south aisle, and the principal entrance is through it. The font is placed in the centre of the nave, near the west wall, and is of Caen stone. The nave will have an arcade of five pointed arches, supported by moulded pillars. The pulpit will be placed on the north side against the jamb of the chancel arch. The whole of the interior will be lined with Farleigh Down Bath stone, and the exterior is to be faced with Yorkshire purpoints, the dressings and mouldings being of red sandstone. The roofs will be open timbered and boarded, and these, together with the benches and choir fittings, will be of pitch-pine varnished. The roofs will be covered with Bangor slates. The tower, which is 19 ft. square and 63 ft. high, is surmounted by a stone spire 72 ft. high. Mr. William Winnard, of Wigan, is the contractor. Mr. Thomas is the clerk of works, and the whole is being carried out under the direction of the architects, Messrs. Thomas D. Barry & Son, of Liverpool.

Oxford.—The new Church of St. Mary and St. John, situate on the Cowley-road, was consecrated on the 6th inst. by the bishop of the diocese. The chancel was erected seven years ago as a memorial to the late Archbishop Longley, and the works since in hand include a nave, north and south aisles, north and south transepts, vestry, organ-chamber, south-west porch, and west end tower and spire. The nave consists of five bays on each side, with an arcade clearstory over, and the roofs are panelled and boarded. The ground-floor of the tower will form a baptistery, the font standing in the centre, well in view of the congregation. The ringing-floor above is open to the nave on the east side, with a stone gallery front, adding about sixty extra seats when required. The church is warmed by one of Messrs. Haden & Son's combined hot-air and water heating apparatus, placed in a damp-proof chamber under the south transept, and the circulating pipes under gratings in the passage. Special attention has been paid to the ventilation of the church, fresh air from outside being warmed and passed into the church at frequent intervals, three of Buchan's fixed induced self-acting air-ventilators being used for the extraction of the foul air. This church has been designed so as to receive considerable future adornments by carving and stained glass, as thank-offerings or memorials. The scheme for the carving and stained glass has been prepared, by which the Old Testament will form the subjects for the lower part of the carving throughout the nave, the seven orders of angels the middle, and the Benedicti the upper part, angels with musical instruments and emblems of the Passion being carved throughout the chancel. The New Testament will furnish the subjects for all the stained glass figuring, the Old Testament (as shown in the white carving), having pale before the glowing colours and light of the New Testament. The carving has been done by Mr. J. McCulloch, of London. Messrs. Symm & Co. are the builders, and the work has been carried out under the direction of Mr. A. Mardon Mowbray, architect, of Eastbourne.

Rostrevor.—On the 7th inst. the ancient parish church of Rostrevor, in the North of Ireland, was re-opened after restoration. The old roof has been entirely removed, and a high, open, pitch-pine roof, supported upon moulded stone corbels, substituted. The former western gallery and its low, flat, plaster-work, has disappeared, and in its place has been erected an octagonal-shaped organ and choir gallery, supported by iron columns and moulded beams. The constructional works have been carried out by Mr. Alexander Whelan, builder, Newry, from the designs and under the professional supervision of Mr. William James Watson, architect, Newry.

Stoke Bishop.—The church of St. Mary Magdalene, Stoke Bishop, has just been enlarged by the extension of the chancel and the addition of a transept chapel. The chancel has been extended 12 ft. The choir-stalls have been extended, thus affording room for more chorists. The new chapel is on the south side of the chancel, from which it is divided by double-pointed arches, supported by clustered columns of Devonshire marble, and a light open screen of pitch-pine, varnished; and it opens to the south aisle by a bold arch, Tudor in character. In the south wall of the chapel is a triple lancet window, with a small circular window above, and in the east wall is placed the coloured lancet windows which formerly were in the wall at the east end of the south aisle. The ceiling is of pointed and ribbed timber, stained of a dark colour, similar in character to the other parts of the church, and the floor is laid with parquetry work. The clergy vestry on the north side has been enlarged, and a recess, which was formerly open to the church, has been screened off for the use of the church. The extension of the chancel and other work has cost about 1,300l. It was accomplished by Mr. J. Wilcox, of Weston-super-Mare, from the design of Mr. John Norton, of Bond-street, London, the architect of the church.

Builth.—On the 9th inst., the Bishop of St. David's consecrated the new church which has been built on the site of an old ruined chapel at Bettws-Dissert, an outlying district of the parish of Dissert, about seven miles from the town of Builth. The old chapel had been disused for many years, and when the present vicar of the parish, the Rev. W. E. Pickard, took steps for its restoration it was found

necessary to rebuild it entirely. The new church was designed by Mr. J. B. Fowler, architect, of Brecon, and provides accommodation for sixty persons. The stone of the old chapel was used for the walling, as far as it would go, with some new stone from a neighbouring quarry. The window-jambs and doorways, &c., are of red brick, to avoid the expense of stone dressings; the roofs are of open-timber construction, in pitch-pine varnished; the seats, pulpit, lectern, altar-rail, and other fittings being all of the same material. A simple reredos of pitch-pine framing, with illuminated panels of sacred emblems, has been placed at the east end. The old font,—which was found in the churchyard,—has been restored to its proper place. The contractors were Messrs. W. Bowers & Co., of Hereford.

Wandsworth.—Mr. Clay has just executed, from the designs and cartoons of Mr. W. White, F.S.A., some decorations to the ceiling of the apse of St. Michael's, Wandsworth-common. The design represents two tiers of angels, the upper portion including the subject of "St. Michael slaying the dragon"; and in the centre space beneath is a golden cross, crowned by two angels with a golden and jewelled crown, and the legend "I will give thee a crown of glory which fadeth not." The timbers have been picked out with ornamental borders. The work was presented to the church as a dedication gift, on the anniversary of its opening, by Miss Mary Cazenove.

Books.

Five Great Painters. By LADY EASTLAKE.

London: Longmans & Co.
IN collecting into two dainty volumes half a dozen essays contributed to the quarterly reviews at various dates within the past ten years, Lady Eastlake has followed an example which is to be commended, and one which might with advantage be still more generally imitated.

It is unpleasant to think of the amount of careful, able, and even brilliant, literary work which is practically consigned to oblivion in neglected magazines and reviews,—work which may perhaps have escaped notice at the time of publication, overshadowed by some subject of passing but all-absorbing interest, and which wants but a second hearing to meet with proper recognition. The review article is the direct descendant of the eighteenth-century essay; and of all forms of literary exercise the biographical essay is the most delightful. When it is found in the pages of a high-class periodical the mere fact of its admission is a guarantee of merit, and the subject is always one of a nature which, even in comparatively incompetent hands, can scarcely be robbed of all interest. It has all the qualifications for effective literary treatment; a central figure of historic interest, an *entourage* which can be brought into light or thrown into shade as the exigencies of the composition may dictate, it is exempt from the unavoidable prolixity and wearisome detail which must go to the making of a complete "Life," and the style may be embellished with anecdote and illustration at will. All the world is curious about the lives, the habits, and the appearance of great men, and the mere announcement of the attempt to exhibit such bespeaks attention and half insures success.

For this class of essay the lives of the great Italian artists of the Renaissance present special attractions, and the group of painters which shed a lustre on the fifteenth and sixteenth centuries have in many respects an unrivalled claim upon our sympathy and admiration. The great names chosen by Lady Eastlake are typical of the highest qualities of art, and almost the only criticism we have to offer on this part of the work is that the word "painter" does not exactly describe their various and marvellous gifts. They were all painters, it is true; but, with two exceptions, they were a great deal besides.

Da Vinci was a painter only by the accident of the time and place of his birth. His few accredited works, and foremost amongst them his immortal *Cena*, show him to have been a painter of the first rank; but he was almost as distinguished as a philosopher, a physicist, and an engineer, and he possessed many other accomplishments. It was his proficiency in music which led to his invitation to settle

in Milan under the patronage of the Grand Duke, and in the list of Da Vinci's attainments which he submitted to Lodovico Sforza he sets out in nine paragraphs his engineering skill, gives one paragraph to architecture, in which he alleges he is "equal to any one in constructing buildings, public and private, and in conducting water from one place to another"; but it is only incidentally, and as a kind of afterthought, that he lays claim to the ability to "do as much as another" in painting.

Employment as a painter came in his way and he accepted it; but he abandoned painting without a murmur and occupied himself on military engineering when called upon. Michelangelo, it is true, acted in a similar capacity, but he accepted such work reluctantly and under protest, as "it was not his profession,"—and he returned to his true profession of a sculptor at the first opportunity. It is probable that if our Shakespeare had been a Florentine and a Cinquecentist he would, from the force of circumstances, have been a painter,—and it is almost certain that if Da Vinci had been an Englishman of Elizabeth's time he would have been distinguished with Shakespeare as a dramatist, or with Bacon as a philosopher.

His special characteristics are versatility and thoroughness, and the completeness with which he did all that he undertook to do is the reason why he has left so small a quantity of accomplished work behind him. Of his architectural skill no practical evidence remains; but his sketches recently collected in a magnificent work by Jean Paul Richter show that he had thoroughly mastered the conventional quasi-classical architecture of his day, and that the statement that he was "equal to any one" in constructing buildings was no idle boast. It was in construction that his real strength lay. Amongst the sketches before referred to is one for a dome identical with the system used by Sir C. Wren at St. Paul's; an intermediate truncated cone carrying the crowning cupola and supporting the centre for the outer visible dome. Every detail is worked out with the minutest care, and not a point is left unprovided for.

Of his want of moral fibre and the light-hearted way in which he changed sides, transferring his allegiance to the enemies of his country, Lady Eastlake speaks without reserve; and we suppose that the charges of turpitude must be admitted. He was a courtier living in a scandalously corrupt age. His favourite motto was, "Flee from storms"; and when social or political storms began to gather, he was off at once. His power of observation was astounding, and no less so his wonderful penetration and generalisation. He had trained his left hand to an amazing precision of draughtsmanship, and he had studied with unflagging patience all the possibilities of pictorial composition. But he was no colourist, and a sceptic at heart, he was moved by no religious fervour such as that which vivified the works of his less accomplished predecessors. He has left almost the greatest name in the world of art, and a unique reputation for the variety and perfection of his multitudinous attainments.

There can be no stronger contrast to the handsome, accomplished, courtly, and unprincipled Da Vinci than the rugged figure of Michelangelo, whose reputation, won amidst hardships, sorrows, and discouragements such as would have broken any other heart, is, like his works, colossal. His character had all the firmness and consistency which Da Vinci lacked, and he scorned to compromise his conscience for fear or favour. He was passionately attached to the sculptors' art which was, he said, "his profession." And although he became in turn painter, architect, and engineer, and overcame the difficulties of each, his heart was in his own proper work.

Only one other form of art really engaged his affection, that of poetry; and in his sonnets he has reached a level of excellence which would have gone far to immortalise him if his stupendous achievements as a sculptor had not eclipsed his fame as a poet.

Of his love of truth in a lying age,—of his courage and manliness amongst cowards and time-servers,—of his deep religious sense in an age of scoffing infidelity, Lady Eastlake gives a vigorous and touching picture; and it is easy to see that her warmest sympathies are with this grand old Puritan of the Italian Renaissance. His career was an unvarying succession of calamity and vexation, of labours unrequited and unrequited,—of public injustice and domestic ingratitude. His image is at once the grandest

and the saddest in the whole range of Italian art. His solitary life was protracted beyond the allotted span, and with accumulating wrongs gnawing at his heart, he went to his grave "bowled down with the contemplation of human wickedness and woe."

Raffaello, who was eight years the junior of Michelangelo, lived but thirty-seven years, but they were years, as far as we can judge, of unalloyed happiness. No painter has left such unmistakable signs of the thorough enjoyment of his life and his art. Lady Eastlake is at some pains to dispel the fables which have clustered round his remarkable career, and especially the discreditable story of the Fornarina. Her portrait of him is singularly clear and graphic, and shows us a handsome young man, scarcely reaching the middle height, slight of build, yet graceful and lithe of figure, variously accomplished, and passing with airy tread amongst the flowers with which his path is strewn, pushing on from success to success with full assurance of his mastery and his reward. His industry was amazing, and he has left us a legacy of works which are as numerous as they are excellent. He is a painter *par excellence*, and although by the accident of his position in the Papal court he was on the Commission for rebuilding St. Peter's, and although he tried his hand at poetry, as was the fashion of his time, it is as a painter, and a painter only, that he will be for ever remembered.

The great master of colour receives the honour of two separate essays from Lady Eastlake's pen; and his abnormally long and varied life, and the supreme quality of his art, deserve no less. In treating of this artist the writer's style seems almost to have caught the glow of his incomparable gift, so vividly does she bring before us the characteristics of his life and work. His personal character is not free from the charges which have been brought against Da Vinci, and his suspicious intimacy with the dissolute and unprincipled Artetino gives a colour to the surmise that his private life was far from respectable. His constitution was of adamant; he never knew an illness; and on the threshold of his hundredth year he was carried off, not by declining health or strength, which had scarcely shown themselves, but by the swift and awful terrors of the plague.

One only Italian seems out of place in this collection of Italian painters, the strange figure and personality of Albert Dürer. One cannot help wishing that the series had included a devotional painter, such as Angelico or Bartolommeo, or even a Giotto or Perugino, and had thus been confined to Italy. The genius of Nuremberg might well have formed one of another group. He combined the rough integrity of Michelangelo with some of the grace of Raffaello, the versatility of Da Vinci, and the possession of a colour-sense not far inferior to Titian himself. And he had a vein of humour (often, it must be admitted, by no means delicate or refined) which none of these possessed. But in spite of his skill as a painter, his reputation rests mainly on his power of draughtsmanship, and his facility as an engraver, and on the mixture of the profoundest religious feeling with a grotesque method of expression. It is a satisfaction to learn from Lady Eastlake that the stories of the shrewishness of his wife rest on no better foundation than many another long-lived conjugal scandal.

In spite of some very minute criticisms, the perusal of Lady Eastlake's charming studies does not greatly disturb the traditional aspect of the subjects of the mark of Michelangelo, and grace that of Raffaello; that Da Vinci was the great master of line and expression, and Titian the king of colourists. All these great men,—save one,—pursued their art under disadvantages, and surrounded by discouragements and privations. If they could return to us nothing would strike them with greater wonderment than the easy lives and assured reward of their fellow artists. No "English nobleman" would now think of remunerating our Dürer with "a florin" (or its modern equivalent) for a portrait, even if only done in chalk; and the Titian of to-day who, like the Vecelli of old, is the friend and associate of princes, is at least free from the necessity of presenting his royal patron with fourteen pictures in succession, as gentle reminders that his first commission still remains unpaid for.

Lady Eastlake ascribes with almost too much modesty her success in the task she has under-

taken to the teaching and example of her accomplished husband. But it is evident that she possesses special qualifications for the work,—a clearness of vision, a feminine curiosity concerning personal traits, a delicate grace of expression, and, moreover, a keen sense of the humorous which lights up her work with pleasant passages such as those in which she proves, with mischievous ingenuity, that Dürer's long ringlets were due to art and not the gift of nature.

We shall greet with pleasure every fresh essay by the same pen; and in concluding our notice of what she has already given us, we must not omit to mention the excellent manner in which the publishers have performed their part of the work. It is hardly necessary to open these volumes to see that a nice taste has presided over their production.

Miscellaneous.

Exhibition of Architectural Drawings at Bradford.—An interesting collection of drawings is now on view in the Art Gallery of the Free Library, Bradford, the work of articulated pupils in the offices of the architects and surveyors of the town. Some months ago the Council of the Bradford Society of Architects and Surveyors, with a view to promote increased study and interest in their profession on the part of the pupils, invited a competition, by offering prizes and certificates of success to the authors of the best drawings of certain specified subjects. In response to their invitation thirteen sets of designs have been received, numbering altogether about fifty drawings, and, after careful consideration, the prizes have been awarded as follows:—Architectural subjects: First prize, Mr. A. A. France, pupil with Messrs. Milnes & France; second prize, Mr. Louis Ambler, pupil with Messrs. W. & R. Mawson; third prize, Mr. W. Broderick Clarkson, pupil with Messrs. T. H. & F. Healey. Surveying subjects: First prize, Mr. Thomas H. Smith, pupil with Messrs. Smith, Gotthardt, & Co.; second prize, Mr. W. H. S. Dawson, pupil with Mr. Joseph Cowgill. All the competitors are under twenty-two years of age. They met the members of the society at the Alexandra Hotel on the 8th inst., when Messrs. W. T. McGowan, Town Clerk, and Mr. J. H. Cox, Borough Surveyor, were present. After tea a short meeting was held, when the secretary read the report and award of the judges, and each of the successful competitors received from the president (Mr. T. H. Healey) a certificate and cheque for the amount of his prize. Mr. McGowan gave an interesting address to the students.

The Cork Exhibition Buildings.—A meeting of the Corporation of Cork was held on the 9th inst., when the question of purchasing the Exhibition buildings and site came on for decision. Mr. John O'Brien proposed, and Alderman Nagle seconded, the adoption of the offer of the Corn Market Trustees to give the premises for 10,000l., and that the Corporate seal be attached thereto. Mr. P. O'Sullivan proposed, and Mr. J. H. Scott seconded, an amendment to the effect that the matter be postponed to the first Friday in December. After a warm debate, continuing for two hours and a half, a division was taken, and a tie was the result, twenty-three members voting for the amendment and as many more for the original resolution. The Mayor declined to give a casting vote. A special meeting of the Council was held on Tuesday last, when another tie resulted, and it was subsequently decided to leave the question for the consideration of the new Council in December.

Insanitary Dwellings in St. Luke's, Middlesex.—The Vestry of St. Luke's, Middlesex, immediately adjoining the City, have decided to apply to the Home Secretary for power to enforce the 35th section of the Sanitary Act, 1866, which requires houses let in tenements, which abound in this parish, to be properly registered, enables the parochial sanitary authorities to inspect the apartments and ascertain the number of their inmates, and to call upon the owners to render them fit for human habitation. The completion of the Golden-lane improvement, at a cost of 80,000l., resulting in the demolition of former dwellings, has led to disgraceful overcrowding of the neighbouring tenement property, with which the Vestry seeks enlarged powers to deal.

"Bath in 1883."—This was the title of a paper read by the Rev. George Tugwell at a meeting of the Bath Literary and Philosophical Association on the 9th inst. Describing his vision of Bath a hundred years hence, he said:—

"We see a star-like series of wide and stately streets radiating from the central tower of our grand old abbey church; noiseless streets, paved with a material at once yielding and indestructible, streets shaded with avenues of flowering shrubs and evergreen trees, streets cooled in summer with fountains and rivulets of plashing water, and lighted from unseen sources by a diffused radiance which cannot be distinguished from the sheen of a clouded summer's noon. The houses are constructed inside and out of the brick of the future,—hard and glossy as a flint, many-coloured as a chameleon, always beautiful and always clean. Stretching far away into the neighbouring shady combs, and beyond the surrounding sunny heights, we behold an intricate expanse of isolated mansions for the rich, and groups of comfortable cottages for the poor. Each block of buildings stands in its own ground of scented garden and verdant meadow. Each house is supplied with all the necessities of food by means of underground parcels railways, orders being telephoned and delivery advised by the same means. There are no coals, gas, or candles in the city. Heat, light, and motion being merely correlative forms of force, a single wire transmits the required amount of energy, which is differentiated by a simple mechanical arrangement, so that by turning one tap heat passes into every room, by turning another electric lamps are kindled, and from a third sufficient power is obtained to drive the machinery which effects the cleaning, the carrying, and the other like operations of every household."

The Surveyors' Institution.—At the opening meeting of this Institution on the 12th ult., an address was read by the President, Mr. Thomas Smith Woolley. The address, which was a very able and well-written one, dealt mainly with subjects connected with the landed interest. In addressing the students of the Institution, Mr. Woolley said,—"I shall venture, in virtue of my office, and by reason of the great interest and hearty pride which I take in my profession, to tender some earnest advice to the students of the Institution, those alike who are preparing for the important duties of urban surveyors of all classes, and for the branches of the profession more immediately connected with land,—I say to each, use all possible energy to become a master in your craft, but do not stop there; find time and make opportunity for culture in other directions. It is one of the singular advantages of our profession, that even the smallest smattering of, *a fortiori*, a real acquaintance with geology, archaeology, botany, or natural history, and notably a knowledge of the chronicles of England, the historic sites, including those of the great baronial and ecclesiastical establishments, and the homes of our great men, add immensely to the interest of our professional vocations."

The late Mr. E. C. Page.—A committee has been formed, of which the President of the Architectural Association is chairman, to raise a fund for a memorial to the late Richard C. Page, who for so many years was an active and energetic member of the Architectural Association, and for four years one of the Hon. Secretaries, and last Session a Vice-President. It is proposed to publish twenty-five photo-lithographic copies of his Pugin drawings, the originals of which were exhibited at the last *conversations*. They will be printed on stout paper, interleaved with a photo-portrait of Mr. Page, preface, index, and list of original subscribers; the book will be handsomely bound in cloth, with gilt lettering and edges. Subscribers of 12s. 6d. and upwards will receive gratis a copy of this memorial work; and the surplus funds will be devoted to raising a permanent memorial, the terms of which must depend upon the amount collected. Mr. Arthur E. Northcote, 120, Belgrave-road, S.W., is acting as hon. secretary of the committee.

Munificent Gift to Glasgow University.—Mr. John Elder, Claremont House, Glasgow, has given 12,500*l.* to the Senate of Glasgow University for the endowment of a Chair of Aerial Architecture. Several years ago Mrs. Elder, whose husband was the head of the famous Clyde shipbuilding company of John Elder & Co., gave 5,000*l.* to the Chair of Civil Engineering in the University.

A London Music Hall Burned Down.—A fire broke out, shortly before five o'clock on Tuesday morning, at the Raglan Music-hall, Norton-street, Borough, and it resulted in the total destruction of the building. A fire of a destructive nature occurred at the hall on September 28, 1871.

Institution of Civil Engineers.—The success which attended the course of lectures delivered this year has induced the Council to make arrangements for a similar series next session. Electricity, one of "The Great Sources of Power in Nature," which, according to the charter, it is the object of the civil engineer to direct,—was then dealt with. Another most important source will now be treated, namely, Heat in its Mechanical Applications."

The lectures will be delivered on Thursday evenings, at eight p.m., in the months from November to April, as under. The first lecture, on "The General Theory of Thermodynamics," was delivered on the 15th by Professor Osborne Reynolds, F.R.S.; the remainder of the course will include the following lectures:—

Dec. 6th.—"The Generation of Steam, and the Thermodynamic Problems involved." By Mr. W. Anderson, M. Inst. C.E.

Jan. 17th, 1884.—"The Steam Engine." By Mr. E. A. Cooper, M. Inst. C.E.

Feb. 21st.—"Gas and Caloric Engines." By Professor Fleming Jenkin, F.R.S., L. & E., M. Inst. C.E.

March 20th.—"Compressed Air and other Refrigerating Machinery." By Mr. A. C. Kirk, M. Inst. C.E.

April 3rd.—"Heat-Action of Explosives." By Captain Andrew Noble, F.R.S., M. Inst. C.E.

The Council also invite original communications on any one of a very long and varied list of subjects, to be obtained from the secretary, for which premiums may be awarded from funds entrusted to them under the provisions of the "Telford Fund," the "Manly Decoration," the "Miller Fund," and the "Howard Bequest."

Wooden-Fronted Houses in Edinburgh.—A correspondent of the *Scotsman* lately called attention to one of these houses in the Lawnmarket (next to the back of the Free Church Assembly Hall), in the demolition of which, he thought, evidence was afforded of the correctness of Dr. Robert Chambers's theory that the wooden fronts were not an afterthought, but formed part of the original design. A popular tradition is that, to clear the Borough Muir of Wood, the citizens were allowed timber free to form *sills* to their houses, and hence the wooden fronts. Dr. R. Chambers, after careful examination, pointed out that this was not so, but that the fronts were originally open verandahs (one for each flat), and that they were, in more recent times, plastered up. Messrs. Kinnear & Peddie, architects, write to say that they are preparing minute drawings of the house in question in all its details, which they intend shall form the subject of a paper to be communicated to the Royal Society of Antiquaries. They cannot agree with the previous correspondent that the wooden construction corroborates Dr. Chambers's theory that the fronts of these houses were open verandahs. The timber framework as it is now seen differs widely from that of the original structure.

A New Residential Locality.—We notice that the locality of the famous residence of Horace Walpole is now being invaded by the sound of the workmen's hammer. A considerable portion of the Waldegrave Park Estate, formerly the grounds of the Strawberry Hill Mansion, was some months since laid out for building purposes, and the residences now being erected thereon are letting and selling rapidly. A further portion is about to be sold by auction in freshhold building plots. The lovely scenery of the neighbourhood and the direct railway communication to the City and West End render the locality a suitable one for the erection of residences of a superior class.

"Heath's Fern Portfolio" is the general title of a series of life-size reproductions of ferns, in which the author of "The Fern World" will give what has never before been attempted, namely, absolute *facsimiles* in form, colour, and variation of those beautiful plants, together with letterpress descriptions on the same plates. Mr. Heath's new serial will be published monthly, by Messrs. Sampson Low, Marston, & Co.

Rome.—An important discovery has been made in the Forum, of some rectangular marble pedestals, stumbled upon by mere chance in the course of clearing away the rubbish from what were believed to be only brick piers, of no special interest. These were found to be resting on marble blocks, bearing inscriptions implying their connexion with the Temple of Vesta.

Penselwood.—General Pitt-Rivers has been some days occupied, with eight or nine excavators, in researches at Penselwood, the British city anciently called "Caen Penselwit," and which was invested for seven days, A.D. 47, by Vespasian, under Claudius.

Glasgow Iron Moulders' Wages.—The iron moulders in the northern district of Glasgow have just received an increase of pay, which raises the minimum wage to 7*d.* per hour.

TENDERS.

For Presbyterian Church, Richmond. Messrs. Wallace & Flockhart, architects, Old Bond-street. Quantities by Mr. J. Warrington Morris:—
Wall Bros., Kentish-town £4,152 0 0
Dowling & Sons, Notting-hill 4,140 0 0
Robertson, Edgware-road 4,100 0 0
Tavener & Sons, St. John's Wood 3,960 0 0
Adamson & Sons, Putney 3,880 0 0
D. D. & A. Brown, Camberwell 3,680 0 0
Carless & Co., Richmond 3,620 0 0
F. Sims, Richmond 3,465 0 0

For the erection of the new Post-office at Waltham-cross, on the Estate of Mr. R. B. Colvin, J.P. Mr. John Hudson, architect, 80, Leaman-street, E.:—
J. Bentley, Waltham Abbey £1,650 0 0
* Accepted.

For the erection of a villa residence, Grove-road, George-lane, Woodford, for Mr. C. Collins. Mr. John Hudson, architect:—
J. R. Robson, Woodford (accepted) ... 2,970 0 0

For erecting a new infants' school and altering the boys' and girls' schools, for the Twerton School Board. Messrs. Brown & Gill, architects:—
Williams, Bristol £1,943 0 0
Bladwell & Parsons, Bath 1,865 0 0
W. Birch, Bath 1,860 0 0
Mercer, Bath 1,677 10 0
Mann, Bath 1,664 0 0
Jarvis, Weston 1,663 0 0
Morgan & Lovell, Bath 1,635 10 0
Chancellor, Twerton 1,565 0 0
Emery, Bath 1,506 0 0
Laver, Bath 1,474 0 0
Wibley, Bath 469 10 0
* Provisionally accepted.

† Only for alteration of the present schools.

For rebuilding Nos. 104 & 106, Salmon's-lane, Limehouse. Messrs. T. & W. Stone, architects. No quantities.—
Lewin £430 0 0
Walker 840 0 0
Beale 826 0 0
Higgs 823 0 0
Forrest 787 0 0
Johnson 757 0 0
Thomson & Tweed 751 0 0
Young 749 0 0
Thomson & Son 734 0 0
Plant 725 0 0
Salt 690 0 0
Howlett 607 0 0

For alterations to stables, for Messrs. Carter, Paterson, & Co., Croydon. Mr. W. E. Eve, architect. Quantities not supplied:—
Smith & Son £263 0 0
Maides & Harper 488 0 0
Duggan 483 0 0
Higgs 410 0 0
Harris & Wardrop 419 0 0
D. D. & A. Brown 399 0 0

For the erection of artisans' dwellings, in Walnut-tree-walk, Lambeth, for Mr. A. Mackenzie. Messrs. Snook & Stock, architects. Quantities by Messrs. Lindell & Giffard:—
Holland & Haumen £4,236 0 0
Carless & Co. 4,215 0 0
Chasen 4,150 0 0
Park 4,015 0 0
Haines 3,997 0 0
Nightingale 3,987 0 0
Rider & Son 3,978 0 0
J. & J. Greenwood 3,969 0 0
Marland 3,953 0 0
D. D. & A. Brown 3,758 0 0
Ford & Son 3,745 0 0

For works at the Masons' Arms Public-house, Upper Berkeley-street, for Mr. G. Steer. Messrs. Bird & Walters, architects:—
Godden £335 0 0
Schluter 435 0 0
Williams & Son 420 0 0
Jackson & Todd 389 0 0
Anley 380 0 0
Mark 379 0 0

For repairs and alterations at the Cemetery Lodge, Brookley, for the st. Paul's Deptford Burial Board. Mr. W. T. Hunt, architect:—
Rees £200 0 0
H. L. Holloway 173 0 0
Mark Redman 169 0 0
George Hall (accepted) 167 0 0

For alterations and additions, including new shop front, at 75, Westbourne-grove. Mr. Spencer W. Grant, architect, 63, Finsbury-pavement, E.C.:—
Aisford £285 0 0
Emery 925 0 0
Sage 885 0 0
Brew & Cadman 892 0 0
Bray & Pope (accepted) 679 0 0

For fittings at the Storey's Gate Public-house, for Mr. T. S. Manley. Mr. H. I. Newton, architect, 27, Great George-street:—
Godden £273 0 0
Lambie 570 0 0
Wood (accepted) 507 0 0

Peacemakers' Work.
Mason £97 15 0
Rogers 85 0 0
Warne 89 0 0
Heath (accepted) 80 0 0

For making, sewerage, and kerbing road, on the New Malden Estate. Mr. J. R. Gayer, surveyor, 5, Guildhall-chambers, Basinghall-street, E.C.4.:-

Use	£819 0 0
Marshall	679 13 6
Carter	661 0 0
Lloyd	635 0 0
Rowland Bros.	527 0 0
Williams	527 0 0
Harris	540 0 0
Woodham & Fry	540 0 0
Bell	540 0 0
Nicholls	499 5 0
Capper	475 0 0
Pursey	465 0 0
Illes	441 15 0
Free	430 0 0
Atkins	430 0 0
Strachan	410 0 0

For new building in London-wall. Mr. Lewis Solomon, architect, 7, Gray's Inn-square. Quantities supplied by Messrs. Williams & Gritten.:-

Smith Bros.	£3,865 0 0
Palmer & Sons	3,550 0 0
Corder	3,539 0 0
Roberts	3,443 0 0
Downs	3,387 0 0
Simpson & Son	3,374 0 0
Mortimer	3,313 0 0
Patman & Fotheringham (accepted).	3,293 0 0

For alterations and additions to three shops in Seven Sisters-road, Holloway, for Mr. Wood. Mr. Wm. Smith, architect. No quantities.:-

J. O. Richardson	£239 0 0
Wilkinson	851 11 0
Wood	775 0 0
Dunford & Langham	719 0 0
Mattock Bros.	677 0 0
Lark & Son	670 0 0
Steel Bros.	663 0 0
Shurmer	645 0 0
Harper	637 0 0
Stevens	539 0 0

For works at the Clarendon Public-house, Mildmay Park-road, for Mr. R. C. Wilson. Mr. G. Edwards, architect.:-

Homan & Co.	£470 0 0
Green	335 0 0
Rayment & Son	284 0 0
Burton	242 0 0
Scharien & Williams	216 0 0

For the erection of a block of school buildings, in Carpenter's-road, Stratford, E., for the West Ham School Board. Mr. J. T. Newman, architect, 2, Pen-court, Fenchurch-street. Quantities supplied by Messrs. Curtis & Sons.:-

	Superstructure.	Foundations.
W. J. Hack	£10,398	£1,187
Martin, Wells, & Co.	9,598	1,187
B. E. Nightingale	9,884	1,187
F. E. Holding	9,977	937
W. D. Hook	8,237	891
Hearle & Son	9,292	891
J. Parfitt	8,897	1,423
J. W. Hobbs	9,200	859
J. G. Hookham	9,317	716
J. Morter	9,117	743
C. Cox	9,100	709
A. Reed	8,890	700
O. T. Gibbons	8,900	700
W. Grear (accepted)	8,867	670
D. D. & A. Brown	8,998	539
M. Gentry	8,500	720

[Total cost per head, including extra foundations, owing to site being 4 ft. 6 in. below the level of road, 7l. 15s. 6d.]

For the enlargement of St. Mark's Church, Dawlish, and the re-seating of the new aisle.:-

H. Baker, Dawlish	£1,269 0 0
S. Friend, Dawlish	1,250 0 0
Stevens & Bastow, Bristol	1,249 0 0
James Loreys, Dawlish	1,136 16 0
D. Reynolds, Exeter	1,052 5 0
E. Andrews, Teignmouth	1,029 4 0
H. Phillips, Exeter	1,020 11 0
F. Durke, Tiverton	988 0 0
Luscombe & Sons, Exeter	982 0 0
John H. Poaden, Ashburton	949 16 0
James Hawkins, Dawlish	949 10 0
J. G. Stephens, Exeter (accepted)	943 0 0

For pulling down and rebuilding premises, John-street, Cow-cross, Mr. S. C. Aubrey, architect. No quantities.:-

Anley	£1,090 0 0
Jarvis & Sons	1,014 0 0
Thomerson & Son	944 0 0

For sewer outfall extension, Oldershill Estate, Finchley. Messrs. Hickson & Son, surveyors.:-

John Bell, Wood-green (accepted).	
-----------------------------------	--

For making up Sparsholt-road, for the Islington Vestry. Mr. C. Higgins, surveyor.:-

John Bell, Wood-green (accepted).	
-----------------------------------	--

For laying 12-inch pipe-sewer, for the Tring Local Board.:-

Thomas & Cardus	£417 0 0
John Bell, Wood-green	342 0 0
G. Capper (accepted)	335 10 0

For stream diversion and concrete culverts, at Winchmore-hill, for Mr. Sugden. Messrs. Hickson & Son, surveyors.:-

John Bell, Wood-green (accepted).	
-----------------------------------	--

For the erection of house, 7, Middlesex-street, White-chapel, for Mr. A. A. Romain. Mr. C. A. Legg, architect, Mile-end.:-

Alfred Elves, Mile-end (accepted)	£550 0 0
-----------------------------------	----------

For additions to stabling, &c., to premises, Alderney-road, Mile-end, for Mr. R. Aytan. Mr. C. A. Legg, architect.:-

J. R. Hunt	£269 0 0
F. Wood	261 0 0
E. & E. Parrott (accepted)	248 0 0

Erratum.—In the list of tenders for fixtures in a tailor's shop at Kingsland (p. 639, last week), Messrs. Scharien & Williams, one of the firms tendering, were, by a printer's error, described as "architects."

To Contributors and Correspondents.

ALL LETTERS AND COMMUNICATIONS referring to LITERARY AND ARTISTIC MATTERS must be addressed—

"To the Editor of THE BUILDER,
46, Catherine-street,
Covent Garden, W.C."

And not to any individual by name.

A. J. C. (the freestone burner there, and you find it out when the shop at Kingsland (p. 639, last week), Messrs. Scharien & Williams, one of the firms tendering, were, by a printer's error, described as "architects.")

W. & Co. (should send lists and amounts)—J. G. A. G.—E. R.

Correspondents should address the Editor, and not the Publisher, except in cases of notices.

All statements of facts, lists of tenders, &c. must be accompanied by the name and address of the sender, not necessarily for publication.

We are compelled to decline pointing out books and giving addresses.

NOTE.—The responsibility of signed articles, and papers read at public meetings, rests, of course, with the authors.

CHARGES FOR ADVERTISEMENTS.

SITUATIONS VACANT, PARTNERSHIPS, APPRENTICESHIPS, TRADES, AND GENERAL ADVERTISEMENTS.

Six lines (about fifty words) or under..... 4s. 6d.
Each additional line (about ten words)..... 0s. 6d.

Terms for Series of Trade Advertisements also for Special Advertisements on front page, Competitions, Contracts, Sales by Auction, &c. may be obtained on application to the Publisher.

PREPAYMENT IS ABSOLUTELY NECESSARY.

FOUR Lines (about THIRTY words) or under..... 3s. 6d.
Each additional line (about ten words)..... 0s. 6d.

* * * * * Stamps must not be sent, but all small sums should be remitted by Cash in Registered Letter or by Money Order, payable at the Post-office, Covent-garden, W.C. to DOUGLAS FOUNDRINER, Publisher.

Addressed to No. 46, Catherine-street, W.C.

Advertisements for the current week's issue must reach the Office before THREE o'clock on the THURSDAY.

The Publisher cannot be responsible for DRAWINGS, TESTIMONIALS, &c. left at the Office in reply to Advertisements, and strongly recommends that of the latter COPIES ONLY should be sent.

TERMS OF SUBSCRIPTION.

"THE BUILDER" is supplied direct from the Office to residents in any part of the United Kingdom at the rate of 18s. per annum, PREPAID. Remittance payable to DOUGLAS FOUNDRINER, Publisher, 46, Catherine-street, W.C.

NOTICE TO ADVERTISERS.

Persons advertising in the *Builder* may have REPLIES ADDRESSED TO THE OFFICE, 46, Catherine-street, Covent-garden, W.C., FREE OF CHARGE. Letters will be forwarded if addressed envelopes are sent, together with sufficient stamps to cover the postage.

Best Bath Stone.

WESTWOOD GROUND,
Box Ground, Combe Down,
Corsham Down,
And Farleigh Down.
RANDELL, SAUNDERS, & CO., Limited,
Corsham, Wilts. [Advt.]

SUMMER-DRIED

Corsham Down Stone

For Winter Use.

PICTOR & SONS, BOX, WILTS. [Advt.]

Doubling Freestone and Ham Hill Stone

of best quality, in blocks, or prepared ready for fixing. An inspection of the Doubling Quarries is respectfully solicited; and Architects and others are CAUTIONED against inferior stone. Prices, delivered to any part of the United Kingdom, given on application to CHARLES TRASK, Norton-sub-Hamdon, Ilminster, Somerset.—Agent, Mr. E. WILLIAMS, 73, Charlotte-street, Portland-place, W. [Advt.]

Doubling Freestone,

Of best quality, supplied from their own Quarries and Kilns by STAPLES & HAYS, Stoke Newington, Agent, Mr. H. MITCHELL, 5, Augustus-road, Hammer-smith, London, W. [Advt.]

HAM HILL STONE,

BLUE LIAS LIME

(Ground or Lump),

Asphalte.

Seyssel, Patent Metallic Lava, and

White Asphaltes.

M. STODART & CO.

Office:

No. 90, Cannon-street, E.C. [Advt.]

Asphalte.—The Seyssel and Metallic Lava

Asphalte Company (Mr. H. Glenn), Office, 38, Poultry, E.C.—The best and cheapest materials for damp courses, railway arches, warehouses, floors, flat roofs, stables, cow-sheds and milk-rooms, granaries, tun-rooms, and terraces. [Advt.]

Immense quantities of

DRY WAINSCOT,

DRY MAHOGANY,

DRY WALNUT,

in all thicknesses.

B. J. HUDSON & SONS,

Whitfield-st., W., and Great Peter-st., S.W.

London. [Advt.]

MICHELMORE & REAP,

Manufacturers of

CHARLES COLLINGE'S PATENT.

COLLINGE'S PATENT HINGES,

LEVER, SCREW, & BARREL BOLTS,

Self-acting "FALL DOWN" GATE STOPS,

and IMPROVED GATE FITTINGS of every Description.

36A, BOROUGH ROAD,

DISCOUNT TO BUILDERS. LONDON, S.E.

ZINC ROOFING.
F. BRABY & CO.,
LONDON, LIVERPOOL, GLASGOW.
VIEILLE MONTAGNE BRAND.
NO SOLDER.
NO EXTERNAL FASTENINGS.
PARTICULARS ON APPLICATION. CHIEF OFFICE: 360, EUSTON ROAD, LONDON.

The Builder.

Vol. XLV. No. 2125.

SATURDAY, NOVEMBER 24, 1883.

ILLUSTRATIONS.

New Tower, St. Mary's Church, Caterham.—Mr. W. Bassett Smith, Architect.....	698
Salford Sewage Works.—Engine House.—Mr. Arthur Jacob, Engineer.....	698
New Building, Schola Regia Grammar, High Wycombe (Double-page Photo-Lithograph).—Mr. Arthur Vernon, Architect.....	699
The Prince's Hotel, Coventry-street, (Double-page Photo-Lithograph).—Mr. C. J. Phipps, F.S.A., Architect.....	699
Salford Sewage Works: Mixing House.—Mr. Arthur Jacob, Engineer.....	697
Door Decoration.—By George Charles Halcott.....	699

CONTENTS.

Art and Society.....	678	Door Decoration.....	701	Avonmouth Docks.....	704
Syrian Discovery.....	678	Leyton Sewage Works: Eases.....	701	Deposits for Bills of Quantities.....	704
An Amateur Architect of the Time of Queen Elizabeth.....	677	The City Church and Churchyard Protection Society.....	701	Liability of Water Companies for Damage by Poisoned Water.....	705
A Receipt for Old London.....	678	Llanbedr Church, Merionethshire.....	701	Statutes.....	705
Railway Companies and the Law of Light.....	679	The Priory Church, Chesham, Bucks.....	702	From Scotland.....	705
Phases of London Life: Surplus and Bolly-Paid Labour.....	680	The Housing of the Poor.....	702	Provincial News.....	705
Royal Institute of British Architects.....	680	The Progress of the Working Classes in the Last Half-Century.....	702	Church Building News.....	705
A Disappointed Town.....	681	Whittington Avenue, Ladbroke-street.....	702	Roman Catholic Church Building News.....	706
Modern Carlsruhe.....	682	Dock Extensions at Midlandburgh.....	703	Stained Glass.....	706
The First Avenue Hotel, High Holborn.....	682	Sanitary Jettings.....	703	Books: Year Day's Review of the Year's Architecture (Duchet et Cie); Slag's Sanitary Work in the Smaller Towns and in Villages (Crosby Lockwood); Canals: A Thousand Years of the Church of Chester-le-Street (Walls).....	706
The Posing of Lightning Conductors.....	683	Sewage Meters.....	703	Varunum.....	707
Dynes Hall, Halesstead, Essex.....	683	Building Patent Record.....	703	The Croydon General Hospital.....	707
Experiments in Fire Retention.....	683	St. Matthew's, Friday Street.....	704	Miscellaneous.....	707
St. Mary's Church, Osterham, Surrey.....	684	Iron and Cast-iron.....	704		
Salford Sewage Works.....	684	"Links" and "Lanchas".....	704		
New Grammar School Buildings, High Wycombe, Bucks.....	684	Wood Block Floors.....	704		
The Prince's Hotel.....	684	Kirkby Lonsdale Bridge.....	704		

Art and Society.

URING last week we heard once more the sound of the *cor clamantis in deserto*, which, at fitful periods and in tones

of feverish excitement, either through the mouth of Mr. Ruskin or of one of his followers, proclaims that all is barren, from Dan to Beer-sheba; that art is dead; that the whole world, artistically speaking, lieth in wickedness, and that yet the end is not. Bad as things are, they may yet,—indeed, almost infallibly will,—become worse, until all pretence of the care for a love of art will have vanished from the earth, and "civilisation will have become extinct." This time it is

one of the "minor prophets" (if we may be allowed the invidious distinction which the traditional undergraduate shrank from making) who has disturbed the calm with his ominous ejaculations. A very fine decorative designer, a rather middling poet, and an impossibly Utopian social reformer, Mr. Morris takes his stand, by virtue of these various gifts, on a pedestal overlooking the swarm of misguided humanity beneath him, and tries vigorously to awaken it to a sense of its terrible condition. As in the case of some other preachers who seem less earnest, the text may vary, but the sermon is always the same. Nominally it has been on one occasion "art and socialism," elsewhere "art and commerce," and in a kind of marginal note we are told that "art and plutocracy" was the title which would have embodied the real and true intent of the discourse. Mr. Morris's audiences have, not quite unreasonably, objected to these phantasmagoric shiftings of the point of view. Both at Oxford and at Wimbledon, it would appear, they came for bread, and got a stone, very hard of digestion to many of them. They were invited to an innocent discourse upon art, and found themselves implicated in assisting at the promulgation of social theories of an abnormal and alarming nature. Several of the newspapers of last week bore witness to the feeling on the part of some of these entrapped persons, that whatever the soundness or unsoundness of Mr. Morris's social theories, people who were invited to hear about art were entitled to expect that the discourse would bear some more direct relation to its title, and that they should at least have a more correct idea given them beforehand as to the kind of gospel that was to be preached to them. Other criticisms have appeared, protesting not merely against the relation of the

prophet's lectures to their title, but against the whole scope of the views propounded, as being not merely relatively but absolutely illusory; as involving both a false and unfair estimate of the state of art at the present day, and an utterly mistaken idea as to the means by which, or the circumstances under which, art may possibly be revived from its present assumed state of torpidity, and led forth upon a new course of triumph. To complain, as Mr. Morris does, that machinery has taken the place of hand labour, is, according to such critics, to ignore the whole necessities and conditions of modern life, and to contradict the whole experience of the past, which shows that in every great artistic period the artist has worked in accordance with the conditions of life of his own day, accepting them and turning them to account; not sighing after an imagined state of things which might have given him happier and more inspiring conditions to work under, but thinking, feeling, and producing as an artist of his own day addressing himself to the men of his own day,—to their tastes, needs, and aspirations.

It does not appear to us that the truth of the matter is so decisively on the side either of Mr. Morris or his critics as they respectively suppose. As to the immediate complaints of Mr. Morris's audiences, to begin with, it may be said that persons who go to hear lectures on "art" simply, and find that the lecturer has something to say to them about the relation between art and the social conditions of life amid which that art is produced, are really getting something more and something deeper than they bargained for or were promised. The onus of the complaint seems to have been, in fact, not that Mr. Morris should have mingled social topics with art, and implied a close relation between the two, but that his conclusions on the subject went against the grain of many of his hearers. Some of them were social Conservatives, and heard that the revival of art could only be accomplished by a democratic revolution. Some of them were probably vitally interested in commerce, and were told that commerce had ruined art. Against this they rebelled. Why should such uncomfortable things be said to them, in the name of so apparently light and innocent a subject as art-criticism? It is the old cry which was raised against a prophet long ago, "Prophecy smooth things to us; prophecy deceits."

Mr. Morris, we feel sure, will not at least obey the latter part of the demand. We are quite sure that he thoroughly believes what he says, and will not say what he does not believe. But whether his position is in the abstract actually true, is quite another question. Broadly speaking, his criticism involves two main propositions: that the love of beauty or of art is almost entirely dead at present; that the division of labour in the workshop, owing

to competition for commercial profit, has destroyed all individual interest and pleasure of the workman in his work, and consequently all artistic feeling; and that the middle classes live in a state of vulgar desire for mere luxury and material comfort, without any care for art for its own sake. The other main proposition is, that the remedy for this state of things is the abolition of the capitalist and the establishment of a socialist democracy, in which each man shall work "for his own hand," feel individual interest in his work, and get individual credit for it.

The first question is, whether artistic feeling and artistic power at the present day are really so torpid or non-existent as Mr. Morris says. One of his critics, a well-known writer on art, in a letter to the columns of a daily paper, denied the fact in *toto* both as to "the higher" and the minor arts, and asserted that there had seldom been a time when the former, "especially architecture and painting, were distinguished by more refinement and originality of treatment than at present," or in which a greater advance had been made in the improvement of taste and culture in regard to minor decorative arts. Mr. Eastlake's proposition appeared (for the wording of his letter was a little vague) to refer to progress within the period of the last twenty-five years. We very much doubt whether the proposition can quite be maintained, even in regard to the progress of the last quarter of a century. Painting makes the best show, and we have a certain amount of painting produced which is of real interest, some which is the work of manifest genius. The drawback, to our thinking, is a sense of unreality about it, of the assumption of a mood and a style not really springing out of the spontaneous thought and association of our own day.

"Our men scarce seem in earnest now;
Distinguish'd names; but 'tis somehow
As if they play'd at being names
Still more distinguish'd."

Nor can we discern that architecture has made any real stride since a quarter of a century back, except in an increased perception of the importance of practical considerations of plan and structure; and those, though the basis of the art, are hardly in themselves art so much as science. In regard to decorative art there is a little more to be said against Mr. Morris's pessimism. There certainly has been a very marked advance in general taste and feeling in regard to decoration, furniture, &c., during the last quarter of a century,—an advance to which Mr. Morris himself has contributed no unimportant part of the impulse; and there is something almost odd in finding him now standing up and denying the existence or the value of a movement in which he has himself been a good deal concerned. His statement, that there is any considerable section of London society, of whatever grade, which

"delights in dirt and squalor" is simply absurd; there are people who, having perhaps many sources of happiness in domestic life or in books and other studies, put up with the ugliness of parts of London more contentedly than Mr. Morris would wish them to do. There is such a thing as a spirit of "wholesome discontent," no doubt, but it does not answer to give too unchecked range to this frame of mind. Mr. Morris's charge against the middle classes, again, that they "live in swinish comfort," indifferent to beauty, is certainly greatly overdrawn. It is not absolutely untrue, but it is only true in this way, that many people, especially those who have recently become rich, have no really intelligent interest in the decoration of their homes. They do want to have things in good taste about them; they will pay a good deal of money to procure what they believe to be beautiful things; but they follow it as a fashion, and accept as good taste what others accept, not from genuine feeling or independent judgment. This is not a satisfactory state of things, certainly; it has led to taste becoming a fashion, and to the repetition in house after house of the same style of "aesthetic" furniture, not so much because individual owners actually want that particular thing for their own satisfaction, but because they do want to have things in good taste, and they accept what appears to be recognised as the right thing. It is a very unintelligent form of artistic taste; but still it is not quite the same thing as living in "swinish comfort" (a rather uncourteous expression to throw at the heads of respectable people), and it does represent a certain desire for what is beautiful rather than for what is ugly.

But when Mr. Morris speaks of machinery having superseded hand-labour, and the deplorable effect of this upon art, he is on much stronger ground, artistically at all events. To say that we cannot help this is one thing; to say that it makes no real difference is another. All decorative art, all art of any kind indeed, is expression, the endeavour of the artist to put the expression of his own feeling and his own enjoyment of his work into the form of his productions. Among the many truths which stand as gems amidst Mr. Ruskin's often wild and questionable theories, none is more true than that there can be no art except where the workman takes pleasure in his art. The artistic form is the expression of his pleasure. Just as music is expression in sound, and therefore nothing can ever be music which is ground out of a machine such as those which infest our London streets, so artistic design of every kind is expression in form, and nothing can be called art-work which is produced by machinery at so much per gross or per square yard. The workman can take no delight in it for its own sake; the making of it is mere drudgery, the result is a mere pretence. But in the present crowded state of society it is of no use to cry out against machinery; a remark which, indeed, seems almost a truism to all but such fervid imaginations as those of Mr. Ruskin and his followers. As far as art is concerned, the real conclusion from the premises is, do not use machinery for the wrong things. A great many things which are wanted in large quantities for practical use must be turned out by machinery; they are best done by machinery, and to fall back on doing them by hand would mean a return from wealth to poverty, to sheer unproductive waste of time and labour. But ornament, decoration, art of any kind, is a thing which cannot be done by machinery, to be of any value at all. It is not by any means a necessity, it is not even a possibility, that all people should be employed in work which they enjoy for its own sake. Happy are those who are so employed; but there are many workers, not only among the so-called "working-classes," who must of necessity be employed in work which is wanted, and which is honest labour useful to the community, but which is not enjoyable for its own sake. In such case the happiness must be looked for in the honest and conscientious performance of the work, in the spirit which, according to George Herbert's quaint old verse, puts a beauty into the humblest labour:—

"Who sweeps a room, as to Thy laws,
Makes that, and the action, fine."

In the broad sense, that is perhaps the artistic spirit; to do that which we are doing as well as possible. But in the more direct and usual sense of the word "art," it must be recog-

nised that it is a thing which cannot be produced by machinery, which must represent individual taste and individual intellect; and society should learn the lesson in regard to this,—do not order any ornament that is machine-made and machine-repeated, for that is only a ghastly pretence of being something which it is not. If you cannot pay for ornament which is really individual design, do without ornament, rather than foster a sham.

And this leads to the one comment we can make upon Mr. Morris's panacea for reviving art,—Socialism. In one sense his conclusion is against nearly all the experience or example of the past. The greatest artistic works have been produced at the bidding of rich dignitaries who paid high for the genius of the artist. It may seem a prosaic conclusion, but history shows it to be a true one; just as history shows that art and morality have had, and may have practically, no close relation to one another. Look at the morals of the great Italian Renaissance period,—in every sense of the word "morality," political and social; and then look at its art. That one comparison should put an end to all high-flown theories about art and morality, and their supposed intimate relation. But there is this one way in which socialism in a certain sense is favourable to art, viz., in establishing the principle that the workman should have personal credit for his work. It may be that we cannot conveniently do without the existence of large employers of labour even in the matter of producing decorative work. It is a matter of centralisation and concentration for public convenience and saving of time; more than that, it is often a matter of finding opportunities for an individual workman who could not find or make them for himself, but who can do beautiful work if the opportunity is brought to him. But all such artists grouped under one establishment should have personal credit for their own individual work, where it is really artistic work. A "Company" cannot really make design; the design is made by A or B, and A or B should have the credit of it. So far we may go with Mr. Morris in the direction of socialism, with a clear conscience.

SYRIAN DISCOVERY.

In a short preface to this work,* contributed by Mr. Glaisher, F.R.S., the Chairman of the Executive Committee of the Palestine Exploration Fund (for which body the volume is published), we are told that "while he was waiting for the arrival of his instruments and his surveyors, Captain Conder utilised his time by taking a journey in search of the long-lost Kadesh, the sacred city of the Hittites. What he found, and how he found it, is here told." How, subsequently, on commencing the survey of Moab, "he was ordered back by the Turkish officials, and how he succeeded, while being forced out of the country, in securing the survey of 500 square miles, may also be learned from these pages." The points most cognate to our ordinary subjects of discussion that occur in the twelve chapters which form the volume are those that concern the light thrown on ancient sites and ancient architecture by the exploration, and the large amount of information which has been garnered up as to rude stone monuments, and the menhirs and dolmens of Eastern Syria.

Originating in springs issuing from a bare sloping hill to the east of the little village of Lebweh, the Orontes runs in a northerly direction, approximately parallel to the line of the Syrian coast, through a mountain valley to Antioch, where it turns at right angles to the west; falling into the Mediterranean at a point which was selected by the Greek kings of Syria as the site of their great war port of Seleucia. In some hitherto unknown locality, on the upper part of the course of the Orontes, formerly stood Kadesh, the holy city; the capital of the Kheta, or Hittites, a warlike race of Northern Syria, which, in the year 1361 B.C., was attacked by the famous Egyptian monarch, Rameses Miamun. "On the walls of the Ramesseum at Thebes is a picture of Kadesh, and again at Abu Simbel, not far north, is a battle picture containing 1,100 figures, and measuring 57 ft. by 25 ft. From these contemporary records it is possible to draw very definite conclusions concerning the situation of the town."

* Heth and Moab: Explorations in Syria in 1881 and 1882. By Claude Reignier Conder, B.E. London: Bentley, 1883.

"In the picture of the Ramesseum, Kadesh is seen surrounded on all sides by a double ditch, with bridges on the east and west, but the bas-relief is unfortunately injured close to the city walls on the spectator's right. In this picture the Hittites and their allies are represented as distinct races, with different kinds of weapons. The one race is bearded, the other beardless; and in the Abu Simbel picture the Chinese-like appearance of the Hittites, who have long pig-tails, is very remarkable. They are of a light red colour, with high caps. Kheta Sar, the Hittite king, is elsewhere represented with curled hair and beard; and in certain bas-reliefs with Hamathite or Hittite inscriptions, figures appear with curled slippers like those common once among the Turks, and shown on Assyrian monuments as distinctive of Armenian tribes."

The local features represented in the Egyptian mural record are recognised by Captain Conder as characteristic of a great mound, from 50 ft. to 100 ft. high, and about 400 yards long, called Tell-neby-Mende, to ruins on the south slope of which the name Kadesh is still applied by the inhabitants of the district. "Looking down from the summit of the Tell we perceived that the site was surrounded with water, just as in the Egyptian representations of Kadesh. The Orontes flows east of the Tell, and is dammed with a broad, flat bulwark of masonry, part of which, at least, is modern, since a stone with a Greek inscription is built in." For further particulars and for the comparison between the Egyptian records and the details of the locality we refer the reader to the work itself. It is hoped that excavations on the site may hereafter secure important results.

Of somewhat more practical importance to the future of Eastern commerce than the recovery of the topography of the second millennium before the Christian era, are the observations made with reference to the possibility of constructing a railway from Tripoli, the best harbour on the Syrian coast, to Homs, on the upper part of the Orontes, and thence to Antioch and Aleppo. To gain light on this important problem, Captain Conder returned from Homs, which he characterises as a black town of basalt, by the valley of the Eleutherus to Tripoli, a distance of fifty miles. Homs is situated at a level of about 1,500 ft. above the sea. But the pass west of the Koteineh Lake, through which the line of road must run, is some 500 ft. higher, involving a rise of about 2,000 ft. in rather more than thirty miles, or a gradient of about 1 in 78. Over such an incline only one-fourth of the weight which could be drawn at the speed of thirty-five miles an hour on a level railway, could be tediously hauled up, at a speed of ten miles an hour, by an equal amount of locomotive power. The check thus imposed on the utility and carrying power of a railway is of an almost prohibitive description. In fact, the true difficulty of the case is thus very much under-stated, as the greater part of the ascent named has to be accomplished in a distance of less than ten miles, which gives a gradient twice as steep as the mean gradient of the Semmering, the Poretta, and the Giori passes of the Alps, being, indeed, beyond the practical limit of locomotive power. Added to this, the district west of the lake consists entirely of very hard black basalt, and "the same formation occurs in the pass north of Lebanon, the valley of the Eleutherus river. Thus considerable cuttings would be necessary, and would have to be blasted through the hard rock. This would very greatly increase the expense of the line; and it is not by any means clear that a better system for railways would not be to make parallel lines along the coast, and along the plains east of Lebanon, with a cross communication up the valley of the Orontes, by Antioch from the Bay of Seleucia inland to Aleppo, and across to the Euphrates." It is interesting to see this confirmation, drawn from actual observation of the ground, of the opinion expressed by the writer of the article on "The Road to India," in the *Edinburgh Review* for January, 1879. "From Tripoli," says the reviewer, "it would be necessary to follow the coast northwards for about twenty-two miles, as far as the mouth of the Nahr-el-Kebir river (the Eleutherus), and thence to follow the course of that river up to the plateau which divides its source from that of the Orontes, accompanying the course of that river, to Homs, which is 1,500 ft. above the sea. But this route to Aleppo is 120 miles longer than that from Suedia (at the mouth of the Orontes), a consideration which alone is decisive as to a

mail route." Considering the extreme vagueness of the propositions, for the verification of which the English public are so often and so lightly asked to find money, it is important to place on record these positive facts; conclusive as they are against the claims of Tripoli to be considered as a future *deus pout* on the road to India.

The discoveries of numerous dolmens, menhirs, and stone circles in Moab, described in chapter viii., lead to the culminating interest of the identification of the points of mountain outlook referred to in Chapters xxii. and xxiii. of the Book of Numbers, and to the previously unimagined fact that each of these spots is the centre of a system of rude stone erections. On "Mount Nebo, a well-defined dolmen was found north-west of the flat ruined cairn which marks the summit of the ridge. The cap stone was very thick, and its top is some 5 ft. from the ground. . . . On the south slope of the mountain there is a circle about 200 ft. in diameter, with a wall 12 feet thick, consisting of small stones piled up in a sort of vallum. At least one other dolmen is still standing on this side of the mountain." "To say," concludes the discoverer of these most interesting relics, "that we still find the altars of Balak standing on Nebo may be premature. To point out the great dolmen at Amman as the throne" (mis-translated bed-stead) "of Og, may be considered fanciful by some; but we may at least claim that we find structures which seem to resemble the early altars and pillars mentioned in Scripture still existing at places which, on entirely independent grounds, may be identified as representing the Mizpeh of Jacob, and the holy mountains of Nebo, Balak, and Peor, while in Judah not a single dolmen now remains standing, because in their zeal for the faith of Jehovah the good kings, Hezekiah and Josiah, swept away for ever the 'tables of Gad.'"

The archaeological world will look with interest for the publication of the particulars of the 700 rude stone monuments discovered within an area of 500 miles; for the "volume of notes, plans, and drawings," and for the "forty photographs taken by Lieutenant Mantell." One reflection arises from so much as the volume before us tells of the dolmen circles of Eastern Syria, to which we have not now sufficient space to do justice. It is to the effect that in the combination of menhir, dolmen, and circle, which is a characteristic of the whole of this newly-discovered rude stone province, we have an early adumbration of that form of temple architecture which subsequently was developed with such splendour, as well as with such invariable consistency. In the menhir, the dolmen, and the circle, we have the rudiments of the hypæthral altar, the *cella*, and the *temenos*, or sacred enclosure. Of the early significance of these three elements we have not now to speak. One point, however, may be noticed, and that is, that the removal of the menhir from a central position in the system to the place of an outlying pointer, as at Stonehenge, seems to indicate an advance in astronomical knowledge, or, at all events, in the connexion between astronomy and sacred rites. When few means existed for the measurement of time, the indication of the longest or the shortest day by the amplitude of sunrise and of sunset, measured by a fixed stone, seen from the *cella*, or from the interior of a circle, had a practical value, to which it would be easy to attach a religious sanction. And this is consistent with the view that astrology is later in its origin than the earliest forms of Nature worship. The hollows, for oil or for blood, found in many of the monuments, point to a time when there was no very distinct line drawn between an altar and an idol, the same gigantic monolith or trilithon being at once the object of veneration and the site of sacrifice or offering. The subject is a very large one, and the new light now thrown on it may hereafter tell us very much as to the prehistoric growth of architecture. Already there is enough known to render intelligible some of the most curious passages in the treatise, "Aboda Sara" of the Mishna. "Rabbi Ismael declared" ("Aboda Sara, iv. 1") "three stones, of which two are placed side by side below, and the third lies on them, if they are near a statue of Mercury, are forbidden, but two are allowed." And it is added that the three stones—in fact, the trilithon,—are in honour of Mercury, to whom never less than three were erected. Again, the sages say that the heaps of stones which are found where the statue of Mercury can be seen are prohibited." The fact that the cairns

are now found to mark the spot where a dolmen, menhir, or sacred site became visible, is explanatory of these passages. The worship of a deity symbolised by a pillar or standing stone is spoken of as "throwing a stone to Mercury," and the custom of adding a stone to these cairns of an ancient rite has not even yet altogether died out. Buxtorff speaks of the trilithon as Beth Kolim, the House of Kolim,—part of the word *marcolim*, which is usually translated Mercury. Without going into more detail, the indications thus afforded of the character of the trilithon are suggestive of the identity of the menhir with the image of the deity in whose honour the dolmen was reared.

The manner in which the stone monuments are referred to in this important treatise of the oral law, as connected with a contemporary idolatry, is rendered very striking by the discovery of such important examples of the pillars, altars, circles, and cairns at the very spots described in the Pentateuch as devoted to the worship of Baal and of Peor. The word *marcolim* is probably only an Aramaic translation of Mercury, so well known as a terminal figure, or pillar God, and thus very closely identified with the menhir. The expression Beth Kolim is still more striking, as (though it is not to be confounded with the Bath Kol, or voice heard in the temple) it is suggestive of the idea that these ancient monuments were regarded as the abodes of oracles, and that the gods of the Moabites, down to a late period in the history of Syria, were inquired of by their worshippers at those long-hallowed spots where ancient prophets and kings had reared seven altars, and sacrificed on every altar a bullock and a ram, the channels for the blood of which have not yet been obliterated by the weather, after a lapse of more than 3,500 years.

AN AMATEUR ARCHITECT OF THE TIME OF QUEEN ELIZABETH.

The little treatise in two parts on "The Elements of Architecture, by the curious pencil of the ever-memorable Sir Henry Wotton, kt., late Provost of Eton College," is interesting in relation to the author and to the time when it was written, and is indeed not undeserving of perusal on its own account. It seems to have been first published in 1651 in the collection of his miscellaneous,—very miscellaneous,—productions, with a sketch of his life, by his attached friend and fellow fisherman, Izaak Walton. He was born in 1568, a member of a Kentish family which had maintained strong footing in every Royal Court at least since Edward IV. At thirty years of age he returned to England from foreign travel an accomplished gentleman, and became the familiar friend, and then a secretary, of the Earl of Essex when at the height of favour with Queen Elizabeth. King James appreciated some earlier services as well as his familiarity with Europe and its languages, and gave him important diplomatic employment, especially as Ambassador to the Venetian Republic.

It was his prolonged sojourn in Italy that led him to the studies that we are principally concerned with. Of his poems, the Character of a Happy Life, "How happy is he born and taught, &c.," is the best known, but there are others also which confirm his title to a laurel crown. "I found it," he says, "less presumptuous for me, who have long contemplated a famous Republic, to write now of architecture, than it was anciently for Hippodamus the Milesian [Arist., pol. 2, c. 6.] to write of Republics, who was himself but an architect." He decides to treat the subject by the logical rather than the historical method, as the shortest and most elemental, and also the soundest; and he enunciates a principle which is indeed worthy of wide application; "though in practical knowledge every complete example may bear the credit of a rule, yet, peradventure, rules should precede, that we may by them judge of examples."

His essay has various points of interest in the historical illustration of the condition of architectural theory as well as practice in his time, whether in England or in Italy. His notions of Gothic architecture are those which remained in vogue long after, and his bad taste in this respect is also combined with unusually false ideas as to the constructive values of circular or pointed arches.

He recites a variety of cautions as to choice of site for a mansion, avoidance of fogs, exhalation from fens, and, taught by Italian experience,

"mineral exhalation simply from the soil," want of sun or circulation of air, scarcity of water, of fuel, inaccessibility by land or navigable river or sea. Furthermore, the consideration of some circumstances, he says, is urged by those who seem a little astrological, who warn us from places of malign influence; such as are subject to inconveniences that "are frequent without any evident cause." Astrology should scarcely have been required to enforce a warning against sites subject to earthquakes, or contagions, or even prodigious births, if we include deformities, cretinism, &c. But it was wiser to avoid such localities, at any rate; even the credulous were to be congratulated who were deterred by a supposition of astrological reasons, rather than those who might be too prone to dread any evil that they could not account for. A final caution is very characteristic, "which I know not how to sort," he says, "unless I call it political." "By no means to build too near a great neighbour, which were in truth to be as unfortunately situated on the earth as Mercury is in the heavens, for the most part either in combustion or obscurity under brighter beams than his own."

What we should call considerations of aspect, he treats of as the "placing of the parts," about which he propounds what he calls "a rule of mine own collection," from noting that art was then in truest perfection when it might be reduced to some natural principle. "For what are the most judicious artisans but the mimics of nature?" the deduction from consideration of that master fabric the human frame being that "it plainly appeareth as a maxim drawn from the divine light, that the place of every part is to be determined by use."

Good so far; what, however, of the special applications wherein guidance most is required? We seem to have a hint of the habits of early rising of our ancestors in the instruction, "Let all the principal chambers of delight, all studies and libraries, be towards the east, for the morning is the friend of the muses." And he gives up the southern aspect, or meridional, to all offices that require heat, as kitchens, stillatories, stoves, rooms for baking, brewing, washing, or the like, as if the heat of the sun was to be directly utilised to saving of fuel, and as if this heat, so valuable elsewhere, would not be an idle aggravation of an inconvenience which the artificial heat employed for the domestic offices produces of necessity. He is more within his right when he relegates pantry, buttery, and granaries to the north, as well as, following Vitruvius, galleries for pictures. Again, he is too reminiscent of the Venice of his long sojourn, when he enjoins that "chambers appointed for gentle motion" (indoor exercise, apparently), as galleries, should be to the north.

If we are to read him strictly here, he would give his building an aspect due east, one of the most imaginable on English ground, even when the occupants rose at five o'clock winter and summer. With our present habits, which probably give us as many useful hours in the day, the morning sun is delightful to get up by and to breakfast by; but far more important to us is to have all the winter sun, from rising to setting, in our best rooms, and for our afternoon and evening rooms to command the cheerfulness and delight of the autumnal and even the summer sunsets.

It seems strange that Wotton, writing in the days when the Elizabethan mansions were rising, and when the bay-window was a favourite feature, should have had nothing better to say of the various schemes by which the problems presented to the architect by our climate should be met, especially how advantages of varied prospect might be combined with those of uniform and limited aspect, by bay-windows at fronts or angles; and then as to how our enemy the east wind might be sent past, instead of through, our rooms, and how the chance of south-westerly aspect might best be protected against the drawback of facing prevalent moist and even tempestuous winds.

A criticism is involved in this caution of which we have many opportunities of noting the justness: "When several orders are superposed, the projecting or jutting parts, as they are termed, should be very moderate, especially the cornices of the lower orders. For whilst some think to give them a beautiful and royal aspect by their largeness, they sometimes hinder both the light within, and likewise detract much from the view of the front without, as well as appeareth in one of the principal fabrics at Venice, the

palace of the Duke Grimani on the Canal Grande, which by this magnificent error is something disgraced." The propriety of the subordination of inferior entablatures and mouldings may be appreciated by the effect of its disregard in structures nearer at hand than the Grand Canal at Venice. How they can darken what is apt to seem the even over-lighted Grimani palace is not so obviously intelligible. Is it that, as throughout the Regent's Park terraces, the projecting entablatures cut off all prospect from the windows above them of what was so well worth seeing below and in front?

Less successfully, Wotton states five theorems in explicit mathematical form, and concludes, unluckily, that the semicircular is the firmest figure for an arch, little weakened "by an addition of distant" of one-fourteenth part, and so made most graceful.

"As for those arches which our artisans call of the third and fourth point, and the Tuscan writers *di terzo* and *di quarto acuto*, because they always concur in an acute angle, and spring from the division of the diameter into three, four, or more parts at pleasure,—I say such as these, both for the natural imbecility of the sharp angle itself, and likewise for their very uncomeliness, ought to be exiled from judicious eyes and left to their first inventors, the Goths or Lombards, amongst other relics of that barbarous age."

He touches the margin of one problem of much interest,—the due proportion of window to wall-space, though without offering guidance in treating it beyond generalities. Vitruvius, he observes, seems to have been an extreme lover of luminous rooms. "And, indeed, I must confess that a frank light can misbecome no edifice whatever,—temples only excepted,—devotion more requiring collected than diffused spirit. Yet, on the other side, we must take heed not to make a house (though for civil use) all eyes, like Argus, which in Northern climes would be too cold, in Southern too hot; and, therefore, the matter indeed importeth more than a merry comparison." That he leans, however, to moderation in window-space, appears by his remark that windows "consisting of so different and unsociable pieces as wood, iron, lead and glass, and those small and weak, were easily shaken,"—considerations which manifestly had great influence with the designers and constructors of his day.

For his observations on smoky rooms, he refers to Philibert, or, as he calls him, Philippe de l'Orme, who certainly speaks much to the purpose. Something, he believed, might be done, in the first instance, by having regard to the distribution of fires in rooms to the direction of prevalent winds; beyond this, "either the wind is too much let in above at the mouth of the shaft, or the smoke stifled below; if none of these, then there is a repulsion of the flame by some higher hill or fabric that shall overtop the chimney, and work the former effect; if likewise not this, then the room which is infested, must be necessarily both little and close, so as the smoke cannot issue by a natural principle, wanting a succession and supply of new air."

Wotton quotes one of his suggested alleviations of "the incommmodity of smoke," which is in principle identical with the contrivance of discharging exhaust steam into the smoke funnel, by which Stephenson overcame the difficulty of obtaining sufficient draught to maintain the violent combustion required in his locomotive furnace. A brass ball of good size filled with water, and with one hole for escape of steam, is to be hung above the fire, "whereof the water within being rarified, and by rarification repelled into wind, will break out, and so force up the smoke, which otherwise might linger in the tunnel by the way, and oftentimes revert."

The natural hospitality of England is given as a reason for a more spacious and luminous kitchen than he had observed to be usual in Italy; and that it should have likewise "a more competent nearness to the dining-room," is urged rather oddly to avoid the chance, besides other inconveniences, that "perhaps some of the dishes may stray by the way."

He observes that as regards the Italians,—"There was a kind of conflict between their dwelling and their being. . . . I observe," he says, "no nation in the world,"—and he knew Germany and France well,—"by nature more private and reserved than the Italian; and, on the other side, in no habitations less privacy."

This was a necessary consequence of "so casting their partitions (that is, disposing their apartments), as when all doors are open a man may see through the whole house, which doth necessarily put an intolerable servitude upon all the chambers, save the innmost." Another sentence gives the key to the seeming incongruity by revealing that the reserved Italian nature had another side,—"The direct opposition of such overtures (that is, the setting doors between chambers in series opposite to each other), being, indeed, grounded upon the fond ambition of displaying to a stranger all the furniture at one sight." He does not, however, appear to offer any explanation of the acceptance of this singularly inconvenient arrangement in many great English mansions of his time, which seems so curiously to contradict Bacon's maxim that "homes are built to live in, not to look at."

These excerpts from the first part of the little treatise may be concluded with one more which does credit to the good sense of the Italian architects and the observation of Sir Henry:—

"Touching conducts for the *swillage* (sewage) and other necessities of the houses (which, how base soever in use, yet for health of the inhabitants are as considerable and perhaps more than the rest) I find in our authors this counsel, that art should imitate nature in those ignoble conveyances, and separate them from sight (where there wants a running water) into the most remote and lowest and thickest part of the foundation, with secret vents passing up through the walls like a tunnel to the wild air aloft, which all Italian artisans commend for the discharge of noisome vapours, though elsewhere, to my knowledge, little practised."

Even now, after three hundred years, Sir Henry's countrymen are only incidentally adopting this admirable sanitary precaution.

It were superfluous to extract or to advert to numerous sound precepts which, in substance, are familiar enough if sometimes quaintly expressed, as,—"exact care is required for the foundation, for if that happen to dance it will mar all the mirth in the house,"—"till he arrives at the question of the roof, when 'the house may now have leave to put on his hat, having hitherto been uncovered itself and consequently unfit to cover others.'" His second part comprises much pleasant reading, treating of internal and external ornament. The opening sentence (which has for a long time stood as a motto on the title-page to each of our completed volumes) is replete with the spirit that animated the founders of the mansions of the landed gentry under the Tudors and the Stuarts:—

"Every man's proper mansion-house and home being the theatre of his hospitality, the seat of self-fruition, the comfortablest part of his own life, the noblest of his son's inheritance, a kind of private principedom, nay, to the possessors thereof, an epitome of the whole world, may well deserve by these attributes, according to the degree of the master, to be decently and delightfully adorned." Home sympathies these, not the less honourable because paraded ostentatiously by a fool like Master Slender,—"I would I might never come in mine own great chamber again else."

A RESPITE FOR OLD LONDON.

"Where the fair columns of St. Clement stand,
Whose straiten'd bounds encroach upon the Strand;
Where the low pent-house bows the walker's head,
And the rough pavement wounds the yielding tread."
—BAY, FRING, III.

THE Metropolitan Board of Works have resolved to postpone for the present some of their schemes which embody certain improvements in the size and direction of existing London streets. We shall have to wait awhile for the direct thoroughfares from Piccadilly through Soho and St. Giles's to Bloomsbury, from Charing-cross to Oxford-street, and from the Gray's Inn-road (corner of Clerkenwell-road) to the Angel at Islington.* Two of the Board's projects had certainly assumed no definite shape, but these latter are noteworthy quite as much for what their abandonment leaves us longer to enjoy as for what their accomplishment would have performed. We speak of the new approaches to the Royal Courts of Justice, the one from the north along Lincoln's Inn-fields, through the purlieus of Vere-street, Clare Market, and Clement's Inn; the other from the west over the sites of the

churches of St. Mary-le-Strand and St. Clement Danes, with the intervening Wyck-street and Holywell-street. One of the most interesting prospects in all London is at this day to be seen from the western end of St. Clement Danes Church, a view unsurpassed by Staple Inn, Fetter-lane, or even Cloth Fair. Standing then by the site of that church tower from whose roof a gun was levelled at Essex House hard by, in the attack upon the unfortunate Earl of that title, and facing the west, one sees immediately to the right hand the entrances to Clement's Inn and Danes Inn. In the centre of the picture, at the middle distance, is a quaint old house, now divided into two, occupied by mine host of the Rising Sun and by a bookseller; whilst the narrow openings at its either side severally curve in growing obscurity to what was the Cock and Magpie (or Pye) in Drury-lane over against Cavenham House (Olympic Theatre), and to the former site of the Maypole, in the Strand, which the Drury-lane farrier, John Clarges, set up to celebrate his daughter Nan's good fortune in becoming a duchess.* Our capital can boast of few such houses as that of which we here speak: though in point of form, if not of age, it has a rival in its Fleet-street neighbour, reputed home of the author of "Poly-obion," and in one more remote at Norton Folgate. For this house, conspicuous like those for an upper balustrade and antique casements, has listened many and many a year to the chimes at midnight, which Sir John Falstaff recalled to the memory of Master Shallow. Though not co-eval with the worthy knight, it is certainly a contemporary of the windmill at the nether end of Milford-lane, as well as of the Chapel of the Holy Ghost in the Strand, and has witnessed the demolition of Chester Inn, Strand Inn and Bridge, and St. Ursula-le-Strand's Church, for the erection of Somerset Place. A few years later the roadway below, long known as "Without Temple Bar," is crowded with the soldiery who are investing Robert Devereux's mansion in the Outer Temple, the successive names of which are in themselves an epitome of the local history.† This house has seen the whole career, extending over 200 years, at once glorious and ignoble, of Temple Bar, and here remains in survival of the comprehensive alterations made around it seventy years ago. It had been conjectured that the flat roof and balcony afforded a convenient place whence to see the hideous relic impaled upon Temple Bar. This, though, can scarcely have been the case, for during the whole time that barbarous custom prevailed, and, indeed, for many years afterwards, there lay between the house and the Bar many structures which must have effectually obstructed the view. These were some buildings against the northern side of St. Clement's Church, the church steeple itself, and the bow of Butcher-row terminating in the parish almshouses and vestry-room.

As a collection of shambles and stalls, Butcher-row dates from the thirteenth century; since licence for a flesh-market here was granted in the 21st Edward I. This character it retained during the period, previously described by Fitz-Stephen (*temp. Henry II.*), when the scholars and City youth would walk forth in summer evenings to take the air, repairing to the sweet, wholesome, and clear Holy Well and St. Clement's Well. The latter is now represented by a conduit-head near the church. The former exists beneath the Unity Tavern which was lately erected in place of the old Spotted Dog in the Strand. The humorous print of the "Beau's [*sic*] Disaster" contains a good view of the Row: some butchers adjust their differences with an exquisite by hanging him by his skirts on to a meat-hook. Conspicuous among the wooden and plastered structures of King Edward VI.'s days stands a five-storied Jacobean house, bearing on its front roses, crowns, and *fleurs-de-lis*. This was inhabited by the Count Beaumont, French ambassador to King James I., and provided a lodging to the Duc de Sully in 1603, whilst the "palace of Arundel" was preparing for him. Latterly Butcher-row became famous for the Bear and Harrow, returning whence to Duke (now Sardinia)

* A narrow passage behind the Olympic Theatre retains the name of Maypole-alley.

† Exeter House (the Bishop's Inn), Page Place, Scroth's House, Leicester House, and Essex House. The Countess of Nottingham who retained Essex's ring died in Arundel House, hard by. The bell which he brought from Cadiz hangs at Lincoln's Inn.

* See the *Builder*, December 16, 1882; February 17, 1883; and May 26, 1883.

Street, Nat. Lee, overtaken with wine, was suffocated in Clare Market by the snow; for Betty's chop-house and for Clifton's Eating-house, a resort of Goldsmith, Boswell, and Johnson. It was in Butcher-row that Johnson, after worship at St. Clement's, met his fellow-collegian Oliver Edwards, whom he had not seen since they left Pembroke, that "nest of singing birds," fifty years before. He talked of their advancing age, to the Doctor's distaste: "Don't let us discourage one another." Then Edwards, a slow, well-meaning man withal, made the exquisitely naïve remark which so charmed Burke and Sir Joshua:—"You are a philosopher, Dr. Johnson. I have tried too in my time to be a philosopher, but I don't know how, cheerfulness was always breaking in." At Clifton's, Johnson, ever ready to talk, entered into an argument as to the cause of a negro's complexion with the excitable Irishman who possibly may have just seen the kneeling black figure supporting a dial in the pretty Garden-court of Clement's Inn, the gift to the Society of Holles, Earl of Clare. The Irishman soon reduced the discussion to a dispute, which his opponent ended with an unwonted forbearance by leaving his seat and walking quietly away. By the south-eastern corner to Butcher-row and Clement's-lane was the wretched tenement where, according to Winter's confession, he, with Catesby, Guy Fawkes, and Wright, administered the oath of secrecy to the conspirators, when all received the sacrament in an adjoining room. The Row, with Ship-yard, Crown-court, Crown-place, &c., and parts of Clement's lane and Inn, was pulled down some seventy-five years ago in carrying out Alderman Pickett's scheme, a project which originally embraced the reconstruction of the church in alignment with the oval open space cleared away about it.

A portion of Clement's-lane remains, by King's College Hospital, which occupies the site of the parochial burying-ground, being that, beyond doubt (for Haydon, the law writer, died within the parish) to which Joe conducts Lady Dedlock in "Bleak House." The new Law Courts have claimed their place, and within the past few weeks the destruction of Horsehoe-passage, with the fine old house at the Carey-street corner, in its last days a district soup-kitchen, takes away nearly all the old-world aspect of this locality. It is more than doubtful whether at Clement's Inn they will talk of mad Shallow yet, of Skogan,* whose head Falstaff broke at the court-gate when he was not a crack thus high, or of the Staffordshire worthies a quartet of such swinge-bucklers as we have not in all the Inns of Court again. But we may call to mind a ragged little urchin begging his meals in the Inn, and who, befriended by a lawyer's clerk who taught him to earn a few pennies by copying, ultimately raised himself to the Bench as Lord Chief Justice Saunders. In Clement's Inn, too, lived Hollar, known there as "the Frenchman limner," and Sir John Trevor, Master of the Rolls and Speaker, one of the few men who dared to caution his cousin Jeffreys and King James II. against their untoward conduct. The Angel Inn, whence Bishop Hooper was taken to the stake at Gloucester, was pulled down in 1854. The Hall was built in 1715, the device in its front having reference to the mode of the saint's martyrdom in being tied to an anchor and cast into the sea.

Along the northern side of Wych-street, leading to the Via de Aldwich, or Drury-lane, are some rare examples of early seventeenth-century domestic architecture. The site premises of the Rising Sun, the wooden fronts of Nos. 39 and 40, with the elevations both in front and at the rear of Nos. 43, 45-48, form one of the best groups of their kind in the town. The open space on the northern side marks the site of the White Lion, a favourite "flash ken" of Jack Sheppard, and which, with his master Owen Wood's reputed workshop by the entrance was removed just three years ago. The sign of the crescent moon still distinguishes the print-shop (No. 36) in Holywell-street, which house and Nos. 1-3, 14, 31-34, and 38, are worthy of examination. Nevertheless, this once highly characteristic thoroughfare has

suffered considerable changes of late; whilst the quaint rampant lion boldly carved in wood,—sole vestige of Lyon's Inn,—by the corner of the footway from the Strand, as well as the Indian Queen, painted by Catton, R.A., have alike disappeared in recent rebuildings.

RAILWAY COMPANIES AND THE LAW OF LIGHT.

THE extent of the legal rights of railway companies in regard to the easement of light has recently been seemingly considerably enlarged. In fact, it may be said without exaggeration that the law has been lately changed, and that whilst the rights of railway companies have been enlarged, those of adjoining owners of property have been decreased. One general proposition of law is that the owner of the servient tenement may prevent the accruing of the right to light by obstructing the windows through which the dominant light is gained. To this general rule, however, an exception has hitherto existed, which is thus briefly summarised in Mr. Roscoe's "Digest of the Law of Light," p. 16:—"The possession of land by a railway company does not give it a right to block up adjoining lights so as to prevent the creation of a statutory right." To this is appended a note to the following effect:—"This was distinctly declared to be the law by Malins, V.-C., in Norton v. The London and North-Western Railway Company, but the case in the Court of Appeal was decided upon other grounds." The writer then proceeds to discuss shortly the principle upon which the Vice-Chancellor acted. In the current number, however, of the "Law Reports," there will be found a case, namely, that of Bonner v. The Great Western Railway (L. R. 24, Chancery Division, 1), which, on the whole, may be considered as directly opposed to the North-Western case. We say on the whole opposed to the previous decision, because it was approved by Vice-Chancellor Bacon, but directly disapproved by Lord Justice Baggallay in the Court of Appeal. But the two other Lords Justices considered that the motion could be refused without going into the more difficult question. It may here, however, be stated that the railway company had obstructed the plaintiff's light, and it was admitted that he had only enjoyed it for sixteen years. This was the very concise judgment of Lord Justice Lindley: "The plaintiff comes here asking an injunction to restrain the defendants from interfering with certain lights which he admits he has no title to. That appears to me to be the simple answer to the case quite apart from anything else"; and Lord Justice Fry considered that as the taking down of the obstruction might seriously interfere with the company's rights, it should be left up, and the more elaborate questions argued at a future period. But it seems to be obvious that if these two Lords Justices had considered that a railway company had no right to block up a light before it had become a prescriptive one, then that they would not have allowed it to do so, even for a time. But, guarding themselves as they did, it cannot be said that they directly overruled Vice-Chancellor Malins, though it is obvious that the inclination of their minds was to consider that he had, in Norton's case, given a wrong judgment. When, however, we turn to the judgment of Lord Justice Baggallay, who was the senior and so presiding judge, we find him much more outspoken. For after considering the cases which bear upon the main point, he says that they "go very strongly to the effect of showing that the provisions of such Acts [i.e., Private Railway Acts] are not to interfere with the ordinary rights which proprietors otherwise would have." Of course, if railway proprietors are to have exactly the same rights as any other proprietors of land, it follows that they can block up adjoining lights so as to prevent them from becoming indefeasible rights. Then further on, after saying that Norton v. The London and North-Western Railway Company was decided on a collateral point, which no doubt is true so far as the judgment of the Court of Appeal goes, but which does not dispose of Vice-Chancellor Malins's elaborate judgment, he proceeds, "Prima facie, a railway company have a right to use their land as they

think fit, provided they are not using it for purposes inconsistent with their Act of Parliament." This dictum again produces the necessary consequence that the company have the right to obstruct windows on adjoining land so as to prevent the creation of an indefeasible right to the advantage of the owner of the dominant tenement. Without going into a lengthy discussion of the opposing principles on which these judicial views are based, it is sufficient to point out that Vice-Chancellor Malins stated that in his view the object of the Legislature in allowing a railway company to take possession of land was to enable them to have a right of way across the land with the necessary conveniences for the traffic of the line. In fact, railway companies are, in this view be correct, owners of land for special purposes, and with limited powers only; according to the opposite view their functions may be limited, but their powers are as unfettered as those of an ordinary landowner. Having regard to the judgment of the Court of Appeal, to the fact that railway companies may find it necessary to raise buildings on various parts of their line for stations or other purposes, it may probably be considered that the more recent judicial view is sounder in law than that of the late Vice-Chancellor Malins. It cannot, however, but be unsatisfactory that this important question should be left in the slightest doubt, affecting as it does valuable rights, especially in large towns.

PHASES OF LONDON LIFE:

SURPLUS AND BADLY-PAID LABOUR.

WHATEVER tends to illness, indigence, and pauperism must be an evil as well as a misfortune, and as surplus labour in our large cities, particularly in London, spells want of employment, many thousands must feel the pinch of poverty. There is no gainsaying the fact that the badly-housed, poorly-fed, and thinly-clothed, are prone to attacks of illness or disease, and no family, the breadwinners of which are long unemployed (and who when working are solely dependent on what they earn), can maintain the normal conditions of healthy life and living. The causes of surplus and badly-paid labour are sundry, though they may be reduced to a few main causes. Some years ago surplus labour was only common to a few trades and occupations, but of late years it has become general in regard to a large number of industries. There have been always in London and other cities some sources of employment which merely lasted for a season, and then came dullness in trade, and the discharge of a number of "hands." In a variety of other trades there was more or less briskness all the year round. With the advent of the railway system and the gradual but steady increase of machinery, a great change began to set in all over the country, a change which in its result has affected the London labour market more than any other place in the three kingdoms, or, indeed, in Europe. It is only within the last quarter of a century that men of intelligence have begun to fully realise the changes that are rapidly taking place, having for their effect the entire revolution of the labour market in this country. Capital, or rather capitalists, have in every direction utilised machinery, and, as a consequence of its application, labour in numerous fields of industry has been not only organised into chief branches, but minutely subdivided into several. This system, as we have remarked on more than one occasion, has created of late years a very large army of part or sectional workmen, and, of course, has led to the decline and great reduction of the general workman. When trade is brisk a large number of hands are employed, but as machine labour, from its great ramifications, has a tendency to glut the market with goods, periods of dullness and want of employment are inevitable. Cheap railway communication with London for several years past has had the obvious effect of continually throwing into the City thousands of workers of nearly all occupations, some skilled and others unskilled, with large contingents of young clerks, who, in common with many other youths, foolishly imagine that it is only necessary to come to London to find what they seek.—suitable and remunerative employment. Forty years ago and less the parents of many young men in the provincial towns were content to see their sons settling down to employment in their native place or going to other towns in their respective counties. The young men

* Henry, usually called moral, Skogan, whom Ben Jonson compares to a fine gentleman and master of arts.

Of Henry the Fourth's time, that made disguise For the King's sons, and writ in ballad royal Daintily well.

There was also John Skogan, a professional jester, temp. Edward IV., who in repulse was the Joe Miller of Shakespeare's day. Joe Miller was buried in the graveyard mentioned above.

* Now site of the Opera Comique Theatre. Some of the Inn vaults and an archway exist beneath the stage of the adjacent Globe Theatre.

† For plans, section, and description of the Technica College of Japan, see *Builder*, vol. xxxviii, pp. 449, 476-7.

to them in the future in this respect, enabling them to arrive with some certainty as to what was expected, without the assistance of professors. One important matter was not alluded to, viz., the question of light, it being very necessary that proper arrangements should be made so that students did not stand in their own light. He thought, in regard to working benches for the students, that at the Manchester Grammar School a small recess was provided for the toes of the students as they stood at their work.

Professor Carey Foster urged that arrangements should be made in the fittings of buildings for applied science instruction so as to secure perfect steadiness and freedom from vibration.

Dr. Thorpe, of the Yorkshire College, Leeds, bore testimony to the complete manner in which Mr. Robins had treated his subject, and he only regretted that it had not been read before the members eighteen months ago, as it would have guided many of them in the fitting-up of various schools. He quite agreed with the last speaker as to the necessity of securing perfect steadiness and freedom from vibration in laboratories. In Queen's College, Belfast, great attention had been paid to this matter, so that the experimenter, walking over the floor, only gave the smallest possible tremor to the apparatus. With respect to the character of the wood of which the table-tops should be made, this was an interesting matter to chemists. There was nothing more annoying or unsightly to see than wood charred or split. Dr. Roscoe some years ago, when he was thinking of the plans for Owens College, Manchester, made a number of experiments, and, in the result, he found that the greenheart wood stood the best test. With regard to the question of sinks, they found at the Yorkshire College that a very much less sink accommodation than was usually provided sufficed. In most large towns the water pressure was, of course, very high, and in some laboratories care was taken to reduce the water pressure. High-pressure had its advantages, but it had this disadvantage, that it was almost impossible, in using the taps, to prevent a great amount of water being spilled, which looked more or less unsightly. This difficulty was got over in a very ingenious manner at Munich, where the sides of sinks, instead of being made perfectly rectangular, were made oblique, so as to prevent splashing. A great deal had been said about the use of sulphuretted hydrogen closets, and it was certainly desirable to keep the atmosphere as sweet as possible in order that students might work longer.

Mr. Slater expressed his great gratification that this subject had been brought before the Institute, for the study of physical science was more and more becoming a necessary part of our every-day life. In a large number of manufacturing industries it had been deemed absolutely essential to obtain proper technical assistance in experiments which have been found desirable to make. As to the question of vibration in connexion with the electric light this would assume considerable importance in respect of the number of lighting stations at which electricity was generated. He had much pleasure in seconding the vote of thanks to the author of the paper.

Professor Armstrong said that the paper was one of great importance because, at the present time, there was a great deal of physical and chemical research going on. The examples of laboratories referred to were of the highest class, but at small schools all these elaborate details were not required. He urged the necessity of proper ventilation of the rooms, the difference between a well and an ill-ventilated place having a very important influence on the work which was done. Then as to lighting the rooms, it was necessary to have as few burners as possible, while the gas supply should be properly regulated. He looked upon the ordinary sunlight as one of the most wasteful forms of burner possible.

Professor T. Roger Smith moved that the appendix to the paper should be read at the next meeting, as the subject was one of the most important of the present day.

Mr. Brooks seconded the motion, which was carried by acclamation.

The appendix to the paper, with the adjourned discussion, will be the business, therefore, of the next meeting, which will be held on the 3rd of December.

A DILAPIDATED TOWN.

If we merely judged from outward appearances, the last place in the verdant and fertile Midlands where the invalid sufferer should look alike for health and beauty, would be the low-lying, tumble-down, steamy borough of Droitwich. Its appearance is familiar to those journeying from the old western emporium of Bristol to the Midland metropolis, as well as to travellers from Classic Oxford to the smoky, fiery district around Wolverhampton, which has been too appropriately named the "Black Country." In the midst of furnaces, factories, chimneys, and forges we expect to find dingy towns and an atmosphere the reverse of clear; but not in the midst of the orchards, gardens, and fertile fields of the pear-lands of Worcestershire, the county of the horticulturist, the botanist, and the geologist, where the inviting slopes of the Malverns fade from the eye only to be replaced by the wood-crowned steeps of Woodbury, Abberley, and the breezy uplands of Bromsgrove Lickey. But between these, and a few minutes after leaving the towers of Worcester, the traveller finds himself at the historic and once famous borough of Droitwich. Instead of pleasant and picturesque homesteads, or the clean streets of an average country town, there is a dingy collection of stunted chimneys, a steamy, smoky atmosphere, bespeaking a woe-begone locality, a decaying community which repels rather than invites the visitor. Yet it is the centre of a great industry. Out of "the bowels of the harmless earth" flows a continuous stream of the strongest brine in Europe. The very atmosphere has a saline taste; for it is misty where the brine is arising from the pans where the brine is being turned into salt for the trades,—salt to preserve our food, salt for the antipodean cattle-dealers to preserve their hides; bay-salt, fine salt, coarse salt, of all varieties and shapes. From time immemorial the salt springs at Wyche have been famed. The Romans did not overlook them. The Saxons used them. The former gave the place the distinctive name of Salina, and the latter called it the Wyche, and the roadways which led from it, east, west, north, and south, "the salt ways." When the Normans came, the Conqueror claimed certain rights and dues here, and from these "droits" it received its present and distinctive name. A score of years have not gone by since the occasional visitor left it with a shudder. No one went to it willingly save on business, but now it is visited by hundreds. It has become the Bethesda of the pain-stricken, the gout and rheumatic afflicted, who find in the use of the brine-baths relief from their sufferings.

Droitwich has other attractions for the architect, the archaeologist, and the historian. Behind the decrepit-looking houses in the principal street are the remains of the mansions of the old salters and of the neighbouring squires, who acted as Lords of the Droits, and sat in the old Exchequer Chamber when the Tudors were the reigning sovereigns of the realm. No visitor now passes at once into the picturesque Friar-street. He is taken by the new Church of St. Nicholas to the old manor-house, which the "Salt King," as Mr. John Corbett, the Parliamentary representative of the borough is sometimes called, has transformed into a cosy and comfortable hotel. All the old timber framing has been preserved, and the additions have been carried out in the same spirit and style as the original. The Salters' Hall opposite, designed by Mr. John Cotton, is also timber framed, for Droitwich was situated in the forest of Feckenham, and timber-framed houses were common in the part. If this was not the case there would have been but little of old Droitwich left, for the perpetual pumping of the brine since it was found beneath the bed of gypsum, as well as in the springs that bubbled up through it, has caused the earth to sink and the brick-built houses to lean and crumble by the side of their oak-framed neighbours, until the safety of the inhabitants has demanded their removal. It is this that gives the place such a dilapidated appearance, and has caused so much of its former architectural beauty to be hidden by brick screens and coverings of plaster. It is this that causes the Church of Dodderhill, which overlooks the town, to hang over like the leaning tower of Pisa. There are many quaint specimens of domestic architecture in Friar-street. In more than one instance, fine moulded solid oak beams, of fifteenth-century date, are used to frame the gateways to salt-yards. The

panelling of some of the other houses is picturesque, and the brickwork varied, the gables and bay windows diversified in a manner that would be a lesson to many a student in the Queen Anne style of domestic architecture. The chimney-stacks, like so many in Worcestershire, are remarkable for their excellent but simple ornamentation and variation of outline. It would seem as if the old priory had afforded materials for some of these details, and suggested the millions and tracery observable in one of the houses close to the junction with High-street. Elsewhere remains of ancient decorative work are found imbedded in houses now turned to far other uses than their original builders contemplated. In the High-street, for instance, a swinging sign-board announces the Crown Inn. It is but a brick front washed with colour. It has a low front with two gables to receive the dormer windows; a more uninviting edifice to the antiquary could scarcely be conceived. A glance at the passage which leads to bar and parlour is hardly more attractive. The thick whitewash, if it has not entirely hidden the massive beams and heavy stone foundations, has almost obliterated the handiwork of the Medieval carver and architect. The front beam is enriched with flowers and mouldings of an ornate character, and is carried behind the mean brick front the whole length of the building. The jambs, too, are moulded, and the old front can, as the details are made out, be reproduced. The front apartment was a long, low room with the ceiling divided by moulded beams into compartments. The windows were large and wide, and the room occupied one side of a small quadrangular court. The hall, or dining-room, was on the first floor. It yet exists in all its stately proportions, though it is divided by partitions and its open-timbered roof is hidden by a low ceiling. Its noble embattled fire-place has many sculptures in its defaced tracery, but the armorial bearings are gone. The other portions of this old mansion are defaced and turned to ignoble uses. There is sufficient left to make out the general plan of a fifteenth-century house of the best class, and one which was occupied by one of the chief inhabitants, but which of the families whose names are entered in the Corporation books or enrolled in the Herald's College, it is difficult to determine. The fine mouldings of many of the other houses remaining in the High-street attest the wealth of the owners. We know that the re-edification of the town was in progress when Leland visited it in the early part of the sixteenth century. He speaks of seeing "a fayre new lymbre house, longinge to Mr. Newport, on the right hand." This house is now incorporated with the Brine bathe, and was for many years the only hotel (the George) in Droitwich. The bridge over the Salwarp river, on which there formerly stood a chapel, has yet the ancient piers, but its form was altered when the waters of the Salwarp were utilised to feed the canal (one of Brindley's famous works) which connects Droitwich with the Severn. There is an old timber house close by with a ponderous stone chimney-back, which dates from the Tudor period. The Exchequer-house stood close by, and the remains of its fine stained-glass windows, bearing the arms of the bailiffs in the Elizabethan age, is preserved at the Raven Hotel. The exigencies of commerce, and the canal, wharfs, and railway cuttings have destroyed the riverside antiquities and exposed the fine Roman tessellated pavement of the old salt-workers, which has been removed to Worcester Museum for safety.

The ecclesiologist and the architectural student naturally would inquire after the churches. Of these there were many, and three yet remain, each worthy of attention, and two of them unrestored. The "mean church in the chiefe street," which is situated at the angle of High-street, opposite the present market-house, yet remains. It has the same dilapidated, forlorn look as the rest of the town. The tower at the north-eastern corner is out of repair, and the two great western windows are the plainest and most uninteresting specimens of the Churchwarden style, almost forbidding in their ugliness. The entrance fronting High-street, though dilapidated, also has much beauty of detail and graceful proportion. It was evidently built at the time the choir of Worcester Cathedral was proceeding, for it has much of the chaste character of the Early English details of that building.

The most conspicuous church, that with the

leaning tower, is St. Augustine's, Dodderhill. It is supposed to have been connected with the Austin Friars, but now it consists only of the choir and transepts of the original church, the nave having been destroyed during the Civil Wars, though the western gable long remained to mark the extremity of the old edifice. The exterior of this fine edifice has little to command attention, but the interior shows a stateliness which makes the church lover regret the stunted proportions caused by the devastation and neglect of the past. The Early English character of the piers and arcading is later than the more elegant work at St. Andrews, and as it belonged to the prior and convent at Worcester, the same architects who designed the arcades of the eastern transept at the cathedral were probably employed, during the incumbency of Thomas de Causton, afterwards Bishop of Hereford (circa 1275).

The church of Dodderhill is not within the precincts of Droitwich in reality. It has had but a little of the care and attention bestowed on the older church of St. Peter, which, with the now destroyed church of St. Mary, Witton, is supposed to represent the mother church of Droitwich. There are considerable remains of Norman work in this church. The nave was rebuilt in the reign of John, and provision made in the south wall for an aisle by piers and arches being built into it. Nearly a century afterwards a south transept was added. The church was entirely remodelled during the Decorated period, and the tower partly rebuilt and a west window added in the reign of Henry VII. It was "restored" in 1853 by Hardwick. It lies somewhat out of Droitwich, and is chiefly remarkable as having had attached to it the chapel on the bridge, where the pulpit and reading-desk were on one side of the road and the accommodation for the congregation on the other. This chapel was taken down in 1763, and the new one erected near the bridge was in ruins a few years afterwards. It has now gone.

Around Droitwich there are some finely-timbered houses. Westwood, the seat of the Packingtons, adjoins the borough. The church of Hampton Lovett contains the monument of the Packington who was the favourite of Queen Elizabeth, and the prototype of Sir Roger de Coverley. Intrinsically interesting as Droitwich is, notwithstanding its repulsive appearance, it is surpassed by its setting, and amongst the objects of interest to the architect, Impney Court, the seat of Mr. John Corbett, M.P., must not be forgotten. It is one of the few English country houses that was designed by a French architect. It is new, though built where the Corbetts of old ruled four centuries ago.

MODERN CARLSRUHE.

CARLSRUHE, the capital of the grand-duchy of Baden, has developed a degree of building activity which has not been attained by any of the principal cities of South Germany. Those who have not seen the town for the last fifteen years will scarcely know it again. The small houses of the main streets have not only been replaced by splendid new buildings, but new streets have been formed, and entirely new quarters now cover what were formerly gardens and fields. A fashionable West-end of elegant houses has been constructed in the so-called villa quarter, west of the Mühlburger Thor, opposite the Bismarckstrasse. It consists partly of mansions in a good German and Italian Renaissance style. Although the architecture is not everywhere perfect, the impression of the whole quarter is very grand. But it is to be regretted that the buildings are too much crowded; there ought to have been more room left for gardens, and more space between the buildings.

Carlsruhe has hitherto enjoyed the reputation of being the healthiest large city in Germany; its rate of mortality, as statistics prove, is the lowest for the German Empire, very rarely over 18 per thousand. It is now one of the best built and most beautiful towns. The fact that Carlsruhe has "no history," that it has been in existence a little over 150 years, is rather in its favour from a practical point of view. Situated in a wide plain, on the border of extensive forests, equidistant from the mountains (the Black Forest) and the Rhine, it is scarcely exceeded by any other city of the plain for good and pure air. To all these advantages it should be added that there was no need to confine it in its exten-

sion. It was easy, therefore, to provide large squares and wide streets, planted with trees. At the present time, many houses in the centre of the city have extensive gardens and spacious courtyards. In the new buildings all the modern conveniences and sanitary arrangements have been attended to, and it is nowhere easier to live in new houses than in Carlsruhe. At the same time, rents for medium-sized residences are not higher than in small towns, and for large houses even lower, in proportion. The consequence of all those advantages has been that an increasing number of families in a position to choose their place of abode have come to permanently reside there.

With regard to material and intellectual wants and enjoyments, Carlsruhe answers all requirements which may reasonably be made even upon cities of larger dimensions. The city offers every requisite for domestic use and the refinements of life in an unusual degree. There is no scarcity of shops and stores, where the most simple wants and the most fastidious tastes may be satisfied. Some articles of food are even cheaper than in small towns, the country surrounding Carlsruhe, far into the mountains, supplying everything in the shape of fruit, vegetables, and other agricultural produce. All the trades are most amply represented,—art and art industry especially so. Carlsruhe has been long known as a home of art. An academy of painting, in which Lessing was active for some time, and whence have proceeded many eminent painters, is largely patronised. An art-trades school is rising rapidly. In the picture-gallery, located in the Kunsthalle, a building in the modern Romanesque style, may be seen many masterpieces of native and foreign artists. The building also contains casts and Roman antiquities, as well as an ethnographical collection. A large natural history cabinet is housed in the castle. A carefully nurtured art-union helps to disseminate the latest works of painters. The grand-ducal court theatre is one of the most generously supported playhouses of Germany, and possesses, notwithstanding recent heavy losses, well-known actors and actresses of the first rank, as well as an excellent orchestra. Music is much cultivated in the city. Concerts for the general public are held in a large hall built for the purpose, or in the "Stadtgarten" adjoining it, which is a large park and zoological gardens combined. Speaking of gardens and grounds, the Berckholtz Gardens should be mentioned; but the best of the kind is the Schlossgarten, from which the Hardtwald, an adjoining forest, may be reached.

The founder of Carlsruhe, Margrave Charles William of Baden, has been found fault with for not locating his residence either close to the Rhine or in the mountains near Durlach, but about halfway between the two. It will be remembered that the town is indebted for its origin to some differences between the Margrave and the people of Durlach. In 1715 that prince began to erect the town, which spreads out in all directions like a fan round his hunting castle, the latter soon giving place to the present grand-ducal palace. However, thousands of people will have been very thankful to the founder this year, for instance, during the heavy inundations in the spring, for not building his town on the banks of the Rhine. As regards the distance from the mountains, railways and steam tramways have annihilated it, and the Black Forest may be reached as quickly as the Rhine. A ten minutes' ride brings us to Maxau, on that river, where there are an excellent bathing establishment and beautiful promenades. Durlach, on the other hand, is reached in the same time, and in twenty minutes more the town of Ettlingen, two points of the Black Forest whence delightful excursions may be made. It is the intention to connect Carlsruhe by a canal with the Rhine, which will be of the greatest importance for industrial purposes.

Pulpit, St. Mary's Church, Waterloo, Liverpool.—A richly-carved pulpit has been erected in the above church. It is of Caen stone, with crocketed and moulded gables to body, supported by red Devonshire marble columns, with carved caps. The base of pulpit is octagonal on plan, with a string-course of carving in bold relief introduced into the moulding supporting body. The work was supplied by Messrs. Jones & Willis, of Birmingham and London, under the direction of Messrs. Habershon & Pawcner, architects.

THE FIRST AVENUE HOTEL, HIGH HOLBORN.

This extensive block of buildings, of which a private view was given on Thursday evening last (the 22nd), and which will be opened for business on Monday next, occupies considerably more than the whole of the site of the late "Duke's Theatre," formerly known as the "Holborn," erected for Mr. Sefton Parry, and opened on the 6th of October, 1866. The Holborn Theatre was built on the site of the old Post-office stable-yard, the buildings forming the stables and coachhouses of the old mail-carts having been pulled down about five years previously. The theatre, subsequently called the "Duke's," and which occupied an area of 15,000 ft., was destroyed by fire on Sunday morning, July 4th, 1880, and this area, for the purposes of the new hotel, being found inadequate, additional sites were obtained in Brownlow-street, consisting of the old Kent Tavern and the pit-entrance to the Duke's, and four shops and houses adjoining, together with the sites of the Crown Hotel and seven houses and shops fronting High Holborn, extending (with the exception of one row of buildings on the west side of Warwick-court) from Brownlow-street to that thoroughfare, and consisting of a total area of nearly one acre.*

This area having been cleared, the new building was commenced in the early part of the year 1882, so that it has been erected and completed in the short space of barely two years.

The front elevation is in the modern Renaissance style of architecture. The whole of the front is faced with Portland stone, the entrance archway corresponding in effect with the elevation, and decorated with red polished Aberdeen granite pilasters and pilinths. Through this archway the ground-floor is approached by an entrance-hall, decorated with marble dado and mosaic pavement. On the left are the general manager's (Mr. W. T. Holland), secretary's, and cashier's offices. Beyond the entrance-hall is a vestibule similarly treated, with marble dado and mahogany fittings, &c. This forms the centre of the various postal, telegraphic, and banking offices. The vestibule leads to a commodious reception room and drawing-room, and to the grand *salon d' manger*, capable of accommodating between 300 and 400 persons at the separate tables, being about 90 ft. long by 40 ft. wide, divided by a double row of columns, the centre ceiling being again divided into three bays, the easternmost being filled in or lighted with stained glass, the west side of the room being lighted by stained-glass windows to Brownlow-street. There is a secondary *salon* or dining-hall, decorated similarly to the grand *salon*, the marble dado being by Messrs. Burke & Co. (who have done all the excellent marble and mosaic work throughout). The painted decorations of these rooms, entrance-hall, and vestibule are by Messrs. Campbell & Smith, of 75, Newman-street, and are effective on account of their large proportions. The marble and mural decorations are again relieved by Venetian mirrors and gold decoration. In the daytime they are lighted by the stained-glass windows, and at night by twelve electric lights, by Messrs. Verity. We may here say that the whole of the building throughout will be lighted by the electric light, and in case of the electric light temporarily failing, gas has been laid on throughout by Messrs. Hulett & Co., who have also supplied the gas brackets, electric brackets, and lamps in front of the hotel. Beyond the grand *salon* are various offices, china-closets, &c., and a separate staircase at the north-east angle of the building. To the right of the vestibule are the library and reading-room, the walls of which are decorated with painted tapestry, supplied by Messrs. Maple & Co.; the panels thus filled, together with the stained glass and mirrors, present an effective appearance. There are also additional dining-rooms and a large buffet, but the very spacious grill-room is the chief attraction on the eastern side of the hotel. The grill is by Messrs. Benham & Co., who have also executed the whole of the hot-water, cooking, and heating apparatus throughout. The grill is encased in falence ware by Messrs. Wilcocks & Co., of Burmanstofts, near Leeds, and presents a most attractive appearance. The walls of the grill room and buffet are also covered with Burmanstofts falence by the same firm, and have walnut skirtings and dados.

* It is believed to have rented at No. 46, High Holborn, one of the houses now demolished.

The basement and upper floors are reached by the grand staircase and two large passenger-lifts. There are also nine service-lifts, and one for cellars. There is also a third staircase to lavatories and large smoking-room (in basement) for grill-room and buffet, as well as the one at the north-east angle as before stated; thus the building can be used both as an hotel and as a restaurant, ample accommodation being provided for both purposes. Facilities are provided also for entrance to the hotel from Bedford-row. Near the grand staircase are cloak-rooms, lavatories, &c., for gentlemen. Ascending the staircase we alight on a mezzanine floor, where there is a ladies' room.

The grand staircase is lighted by stained-glass windows by Campbell & Smith, the ornamental iron balustrading being by Messrs. Richardson & Ellison. Communication to and from all the rooms throughout is effected by electric bells by Messrs. Paterson & Co. The upper five floors reached by this staircase, or by hydraulic lifts, contain between 300 and 400 bedrooms, comfortably furnished and decorated, many having sitting-rooms, bath-rooms, dressing-rooms, &c., *en suite*. All the stoves, mantel-pieces, tile-hearths, marble fenders, mirrors, upholstery, and furnishings are by Messrs. Maple & Co.; all tile dados, walls, and flooring by Messrs. Simpson & Co.; and all the sanitary fittings, baths, lavatories, &c., by Messrs. George Jennings & Co. The floors are constructed fireproof up to the first floor by Messrs. Darnett & Ingle. The whole of the graining has been done by Mr. R. Osmond.

The steam-power located in the basement consists of two large steam boilers by Galloway, of Manchester, for providing steam and hot water for baths, and for cooking and heating purposes, as well as for working the pump of the hydraulic lifts. Here is also located plant in duplicate for providing 1,000 incandescent lights of 20-candle-power each. This consists of two steel boilers made by Messrs. Adamson & Co., of Manchester, each capable of supplying steam of 150 indicated horse-power, and two compound vertical high-speed engines by John & Henry Gwynne, of Hammersmith, each of 125 indicated horse-power, with double-acting feed-pumps by Messrs. F. Pearn & Co., of Manchester; feed water-heater (Berryman's patent) by Messrs. J. Wright, of Tipton, Staffordshire; and dynamos by Messrs. Ferranti, Thompson, & Ince, of Apollod-street, Finsbury. The lifts throughout are by the Hydraulic Engineering Co., and the fire hydrants by Messrs. Shand & Mason. The kitchen walls and light courts, as well as the basement offices generally, are lined with Cliff's white glazed bricks. The girders and structural ironwork are by Messrs. Handyside, of Derby; the balconettes, &c., in front, are by Messrs. Macfarlane, of Glasgow; the whole of the locks, &c., are by Messrs. Hobbs, Hart, & Co.; the zinc work, ornamental and otherwise, is by Messrs. Braby & Co., of Euston-road. The staircase is constructed on fire-proof principles, similar to that devised at the Grand Hotel, Charing-cross, by Mr. G. H. Holloway, who has also introduced the same system of ventilation as there adopted in the grand *salon*, &c. The whole of the works have been executed under the direction and personal supervision of Mr. Holloway. Mr. Spencer has been managing foreman throughout.

The architects are Messrs. F. & H. Francis, of Palmerston-buildings, City, and Messrs. Archer & Green, of 19, Buckingham-street, Adelphi, who have acted jointly.

THE PLACING OF LIGHTNING CONDUCTORS.

THE above subject has recently been discussed in the *Baugewerkzeitung* with special reference to the method recommended by Kirchhoff. It had been noticed that buildings which were provided with lightning-conductors, and had previously been free from injury, had, since the introduction of gas and water pipes, been injured by lightning. The investigations of Kirchhoff and other technical authorities have demonstrated that in fixing gas and water pipes it is not only requisite to modify the lightning-conductors on account of the large quantity of metal contained in the pipes, but that it is advisable to connect lightning-conductors directly with pipes in question. To the absence of this precaution are attributed the facts referred to in the first instance. Kirchhoff

maintains that no injury to the pipes can ensue in consequence of this connexion existing, while he quotes several instances of pipes which were unconnected with lightning-conductors having been destroyed by lightning. On the other hand, he refers to cases of buildings with this connected arrangement having been struck by lightning without any injury resulting to lightning-conductors or to any portion of the buildings or pipes therein.

The connexion is effected at the base of the rod. Heilmann recommends the driving of an iron rod (about four-fifths of an inch thick) rather deep into the ground when foundations are being laid. By riveting, &c., the rod is gradually lengthened during the building of the house. It is solidly fixed to the masonry of the chimney, and thence continued to a suitable height above the summit of the building.

DYNES HALL, HALSTEAD, ESSEX.

THIS ancient Queen Anne mansion has now been completely remodelled and restored under the direction of Mr. John Birch, of John-street, Adelphi, London, who has rebuilt Grafton Hall, Everleigh, and other important historical houses, and is now rebuilding Ingestre Hall. The original mansion of Dynes was erected in 1575 by William Dean, who married Anne, Lady Maltravers, the only daughter and heiress of Sir John Wentworth, of Gosfield, from whom she inherited an immense fortune; she died without issue, being three times married. The said William Dean planted a fine avenue of elm trees to the mansion, but these were blown down in the terrific storm of 1703. He was succeeded by his son John in 1595, who was knighted in 1603, made High Sheriff of the County in 1610, and filled the office of Lord Lieutenant. He married a daughter of Sir Drue Drury, of Suffolk, and died in 1625. His son and successor Drue Dean, knighted in 1627, married a daughter of the Earl of Norwich, who died in 1637. His son Anthony became the imprudent possessor of this fine property, for, as is observed by Mr. Holman, "being very much addicted to the Parliament's cause, and presuming the structure thus raised would have stood for ever, he exchanged his fair estate here with Col. Sparrow for Hyde-park, which that Colonel had obtained in consideration of his zeal for the same prevailing cause; thus he lost the substance for the shadow." The purchaser was John, son of Mr. John Sparrow, of Gostingthorpe, who was succeeded by his heir, John Sparrow, who lived at Dynes Hall. He, by his will, settled the estate in trust for the payment of his debts, and it was sold to Mr. Mark Enyon, son of a wealthy manufacturer of Coggeshall. He pulled down a large portion of Dynes Hall, which he rebuilt in a more durable and lasting manner. He was High Sheriff in 1676, and was knighted. Sir Mark, by his will, gave Dynes to his son, failing him to his two daughters. The son died without issue, and the property fell to Elizabeth, who married Mr. Edward Bullock, of Taulkbourne Hall; she dying in child-bed, the estate went to the younger daughter, Rachel, from whose executors the property was purchased by Mr. Henry Sperling, and is now held by Mr. Charles B. Sperling, a descendant of this family, in whose possession this estate has remained for about 140 years.

The west wing, erected during the reign of Queen Elizabeth, which had much fallen to decay, has been almost wholly rebuilt on the old lines, with handsome gables, dormers, and chimney-heads to accord with the architecture of the main building, the south portion being treated in order to enhance the grandeur and importance of the entrance front, which is on this side of the mansion, and to add dignity to the structure as approached from the north-east, which is now rendered more picturesque as viewed from the charming pleasure-grounds and lake. The main building, erected during the reign of Queen Anne, has been entirely restored, and much improved in appearance by new plate-glass windows and chimney-heads, &c. A handsome new drawing-room has been added to the north-east side of the house, with a large projecting east window, of noble proportions, executed in stone. This room is fitted up with the old original carved oak panelling, removed from the west wing, which has been carefully restored, adapted, and re-fixed, the doors and the large chimney-piece extending to the ceiling, with their linen panels,

masks, and other carved work, being exceedingly quaint. The beautiful oak panelling and chimney-piece in the library, which had been smothered with paint, has been restored to its original state. All the water supply, drainage, sanitary arrangements, warming, ventilation, &c., have been entirely remodelled and re-arranged on the latest and most improved principles. The general works have been executed by Mr. H. Harnacles, and the other works by Messrs. Haden & Son and Messrs. John Bryden & Sons.

EXPERIMENTS IN FIRE-EXTINCTION.

ON Wednesday afternoon last some interesting public experiments in fire-extinction were made on the vacant land in Whitehall-place. The main object of the experiments was to demonstrate the efficiency of a combined chemical and manual fire-engine, brought out under the auspices of Mr. James Sinclair, of London and Manchester, whose name has been before the public for nearly twenty years in connexion with Dick's self-acting "Extinguisher." Shortly stated, these and other appliances made by Mr. Sinclair are intended to extinguish fire by means of water highly charged with carbonic acid gas. The materials used in generating the gas are bi-carbonate of soda and sulphuric acid. The soda is dissolved in the water with which the vessel is filled, and the sulphuric acid is confined in a glass bottle or other receptacle enclosed within or forming part of the apparatus until necessity arises for using the engine, when the sulphuric acid can be immediately liberated and mixed with the water, the result being a chemical solution highly charged with carbonic acid, and which is discharged from the engine under considerable pressure. The "combined chemical and manual fire-engine," and the "brigade engine" are the newest adaptations of the principle of "L'Extinguisher." In the former, hand-pumping is resorted to for projecting the water to a greater distance than it would otherwise reach.

This combined chemical and manual engine was first tested in the experiments of Wednesday last. Two temporary structures or stock-ades of wood, the largest of which was some 25 ft. long by 5 ft. or 6 ft. broad and 12 ft. or 14 ft. high, were formed of a number of planks and poles set up on and a few inches apart, so as to allow of the free access of air to aid combustion. Underneath and between these vertical pieces of wood were tar-barrels, shavings, &c., the whole being sprinkled with petroleum so as to get well alight in a short time. As soon as the largest structure was fully ablaze two jets of chemically-charged water from the manual engine were made to play upon it, and in three minutes the whole body of blazing wood was a charred and smoking ruin. The opinion was expressed by one of the visitors that if this engine had been brought to bear upon the recent great timber fire at Haggerston, a speedy end would have been made of the firemen's labours, and much valuable property and great hardships to many poor people would have been saved.

The concluding experiment afforded a signal demonstration of the power of the portable *Extinguisher*. Some eighty gallons of tar having been poured into a shallow depression made in the ground, so as to form, in fact, a pond of tar of about 80 square feet in area, a few gallons of petroleum were poured on to it at one part, so as to facilitate the ignition of the whole surface. When this had been thoroughly effected,—the terrific blaze being accompanied by a stifling heat and a cloud of black smoke which would have horrified the members of the Smoke Abatement Institution,—Mr. Sinclair, wearing an ingenious though very "uncanny" looking respirator, fitted with Professor Tyndall's smoke-filter, advanced to the edge of the fiery lake, upon the surface of which he directed the stream of carbonic acid and water from a small *Extinguisher*, when lo! the flames were completely extinguished in about thirty seconds! The effect seemed magical, but a reminder of its reality was afforded by the dense cloud of smoke which was being borne across the river in the direction of the Shot Tower after the fire was extinguished.

The experiments conclusively showed the value of chemical agency as an aid in fire-extinction. Mr. Sinclair, in the course of a few observations addressed to the visitors, said it was quite time that the practicability of this oft-demonstrated fact should be recognised by

our public authorities and fire brigades, as it was recognised by the municipalities and fire brigades of America. Certain it is that the time-honoured use of water, unassisted by some such chemical means as those here referred to, often fails lamentably, as we took occasion to note in connexion with the burning of the Alhambra Theatre, and as was shown very recently at Haggerston.

ST. MARY'S CHURCH, CATERHAM, SURREY.

ABOUT fifteen years ago it was decided that the old parish church at Caterham was past repair, and that a new one should be built on a different site to supersede the old one. It has now become necessary to enlarge the new one, and a south aisle, with a tower and spire at the west end, is in course of erection, from the design of Mr. Wm. Bassett-Smith, John-street, Adelphi.

The aisle, when completed, will have an arcade of four arches opening into the nave; at the east end it is proposed to carry on an aisle to the south side of the chancel, with two arches opening into the chancel. The total extra accommodation provided will be for 200 adults.

The lower part of the tower will be used as a porch, both for the nave and aisle; and it is hoped ere long a peal of bells will be heard from the belfry.

The works are being carried out by Messrs. Wall & Hook, of Brimscombe, and the estimated cost of the whole is about 3,400*l*.

The old church, which is still in existence, has some fragments of very early work. There is part of a Norman window on the south side, and on the north and south sides of the chancel there are arches of thirteenth-century work, with carving to the capitals.

SALFORD SEWAGE WORKS.

THE opening of the pumping station and outfall works at Wastie, a suburb of Salford, marks the completion of an extensive and costly system of main drainage for that borough.

The total outlay on the intercepting system for the borough amounts to 200,000*l*, and as the entire scheme has been carried out almost without intermission from its first conception to the completion of the outfall works, it is perhaps the most systematically arranged and consistently carried out of any works of a similar kind in England, excepting as a matter of course the drainage of the metropolis.

Ten years ago the Corporation, with a laudable determination to face this difficulty, resolved to intercept all the sewage of the borough from the River Irwell, a stream then, and even now, polluted to an exceptional degree by town refuse and filth of every kind. As in nearly all towns situated on rivers, the subsidiary sewers were found to gravitate to the stream, and the first and most essential part of the undertaking which the Corporation had to carry out was the construction of an intercepting culvert which should traverse the lowest part of the borough, and pick up all the existing drains before reaching the river. This sewer is 8 ft. 9 in. by 7 ft. 6 in. at the point where it discharges into the river below the urban part of the borough, and passing upward towards its source the sewer is gradually reduced in dimensions. The upper lengths of the sewer are egg-shaped, the smallest dimensions being 4 ft. by 3 ft. The total length of the main intercepting sewer is four miles and four furlongs, and there is a subsidiary intercepting culvert which collects the sewage from the higher parts of the Pendleton district of the borough, leading it direct to the tanks so as to avoid the cost of pumping, which would be necessary if the discharge were allowed to pass into the main intercepting sewer.

The principle which the Corporation decided upon for the treatment of the sewage is that of precipitation, and the works have been arranged for carrying out this process. There is a series of six tanks arranged end to end, the partition between each tank and that next to it being 6 in. war than the partition immediately above it, so that the sewage flows from one tank to another through the whole series. The same arrangement is provided in duplicate, which admits of one set of tanks being cleaned out while the other set is in use.

The tanks are intended to deal with twelve million gallons of sewage daily, though this quantity is considerably in excess of what at present passes into the sewerage system. The population of the borough at the present time is 177,000, and the domestic consumption of water 21 gallons a head, but there is a very large amount of water used for manufacturing purposes, chiefly in dyeing and bleaching.

The water area of the tanks is 12,360 square yards, and the average depth is 7 ft. At the present time the Corporation are employing lime as the precipitant, but owing to the large amount of colouring matter in the sewage, the effluent water is not as colourless as could be desired, and a material known as aluminio-ferri is being tried experimentally, with very good results so far. Aluminio-ferri differs but little from crude sulphate of alumina. It is a very effectual precipitant, but its action is slow, and the addition of a little lime is found desirable to hasten the settlement of the deposit.

The engine-house is erected on the lower part of the ground close to the outfall sewer, and the mixing-house is placed close to the end of the tanks. These buildings, of which illustrations are given at pages 688 and 697, are built of white and red stock bricks, with mouldings and cornice of terra cotta, combined with red sandstone from Buncorn, the colours of the several materials harmonising satisfactorily.

The engines and pumps are in duplicate. The engines are of the vertical type, compound in their arrangement, the high and low pressure cylinders being placed above the rest of the machinery, after the modern type of marine engines. The pump cylinders are immediately below the steam cylinders, so that the pressure of the steam is applied with the most direct action to the pump plungers. The pumps are double-acting, and each pump is provided with two suction and delivery air-vessels.

Each engine is capable of being worked up to an effective energy of 225-horse-power, which is sufficient to raise the ordinary flow of sewage to the tower of the mixing-house, the total vertical lift from level to level being 43 ft. The second engine will only be required during times of rainfall or whilst the first engine is under repair. The rainfall provided for, somewhat exceeds $\frac{1}{4}$ -inch in the day, as provision is made by storm overflows for relieving the intercepting sewer when the rainfall is excessive. The sewage is lifted from the sump and passes to the mixing-house through a pair of 30-inch mains. At the base of the tower of the mixing-house is placed a cast-iron tank, into which the sewage is first delivered, and here the lime or other precipitant is added to the sewage. From the bottom of this tank the sewage passes through another pair of 30-inch mains to the end of the tanks most remote from the mixing-house, and having been delivered into the first tank passes through the whole series of tanks, and flows slowly back towards the mixing-house. The greater part of the precipitate remains in the first and second tanks, the quantity diminishing in each succeeding tank until in the last tank there is little, if any, deposit, and the purified effluent flows away, passing into two small chambers where a pair of vortex wheels of 25-horse-power each are fixed. The purified sewage in its descent of 15 ft. drives the turbines, and the power thus developed is employed to actuate the mixing machinery and pumps within the building, and thus a certain economy is effected as steam-power, would otherwise have to be employed.

The mixing machinery consists of a pair of large cast-iron pans, in which the lime is incorporated with the requisite quantity of water by means of revolving arms and plates attached to them obliquely. In order to insure that exactly the requisite quantity of lime shall not be exceeded, and to avoid the waste which usually results from the employment of manual labour, a lift or hoist is provided for measuring the lime. The hoist consists of a number of buckets attached to an endless band, somewhat similar to the arrangement used in a flour-mill. The buckets raise the lime, which first passes through a screen, from below, and deliver it into a funnel-shaped receptacle into which a spray of water under pressure discharges, and thus the lime is carried forward into the mixing-pans. From the pans the limed water is pumped up to the tower, where it is delivered into the sewage-receiving tank, the lime-pump making one stroke for every stroke of the pumping-engines.

There is a second pump provided for raising

the clarified sewage from the turbine wheels to a tank placed on the top of the mixing-house tower, and this tank furnishes a supply of water for slaking and mixing with the lime. The outfall works have been designed and carried out by Mr. Arthur Jacob, M.I.C.E., for the Corporation, and the contracts for the tanks and buildings have been satisfactorily completed by Messrs. S. W. Pilling & Co., of Manchester. Messrs. James Watt & Co. have erected the engines and pumps.

NEW GRAMMAR SCHOOL BUILDINGS, HIGH WYCOMBE, BUCKS.

THE Duke of Buckingham (the Lord Lieutenant of the county) a short time since opened the new buildings of the Royal Grammar School, High Wycombe, of which we give an illustration. For about 300 years the school has been held in buildings which, about the year 1563, were converted from the old Norman hall and chapel into a master's residence and schoolrooms. Fortunately little of the interesting stone-work of this secular Norman building was injured. The best part of the work has been left standing as a ruin in front of the new buildings, and will well repay the investigation of the peripatetic archaeologist. The remains thus preserved are more numerous than those displayed upon the illustration. The new building comprises a house for the master, and accommodation for twenty boarders and one hundred day scholars. The materials are of red and white brick, with Staffordshire tiled roofs. The total cost will be about 4,500*l*. The works have been carried out by Mr. W. R. Loosley, contractor, High Wycombe, under the direction of the architect, Mr. Arthur Vernon, of 26, Great George-street, Westminster, and High Wycombe, Bucks.

THE PRINCE'S HOTEL.

THE block of buildings shown in the illustration is now being erected at the angle of Coventry and Whitcomb streets, as seen from Leicester-square, on the line of the widened street to Piccadilly.

It is intended for a first-class hotel and restaurant, having grill-room, buffet, and dining-room in the Whitcomb-street frontage, with private dining-rooms occupying the whole range of the frontage on the *entresol*. There will be also about one hundred bedrooms, the kitchens being on the upper floor.

The ground-floor of the Coventry-street façade is arranged for eight shops, with good basements. The total frontage of the hotel is 200 ft.; beyond this are the entrances to the Prince's Theatre, at the angle of Coventry and Oxendon streets, as shown at the extreme right of the view, surmounted by a cupola.

The material used for the frontage is Portland stone.

The contractors are Messrs. W. & D. Mc Gregor, of London and Edinburgh, who have introduced the mode of building common in Scotland, by steam-cranes without any external scaffolding.

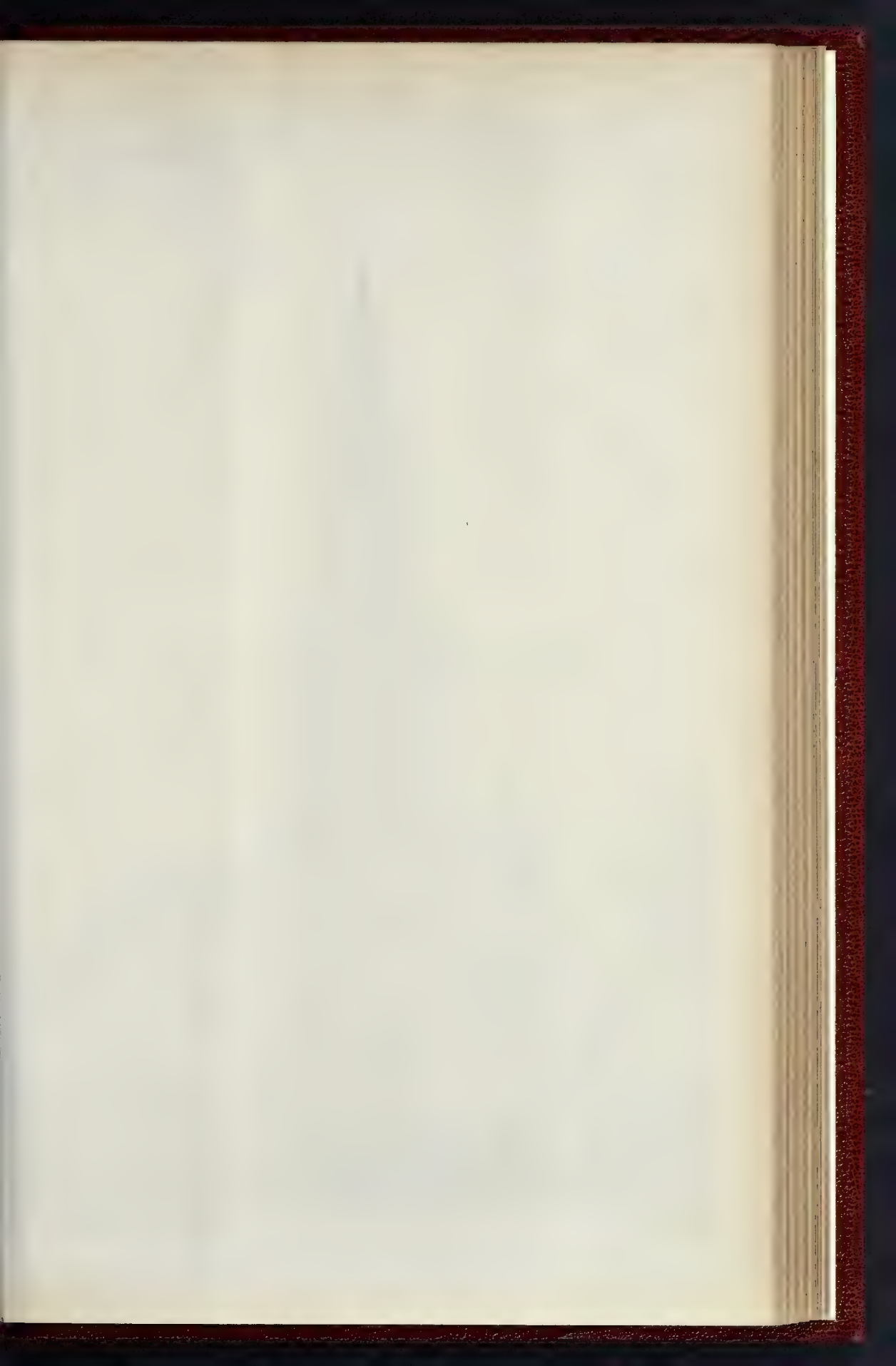
The whole of the floors throughout the building are of iron and cement concrete, covered with Burnetized wood block paving.

The works, both of the hotel and the theatre, are being carried out from the designs and under the superintendence of Mr. C. J. Phipps, F.S.A., architect, of Mecklenburgh-square, London.

The theatre, which is quite distinct from the hotel, occupies the whole of the frontage in Oxendon-street and Whitcomb-court.

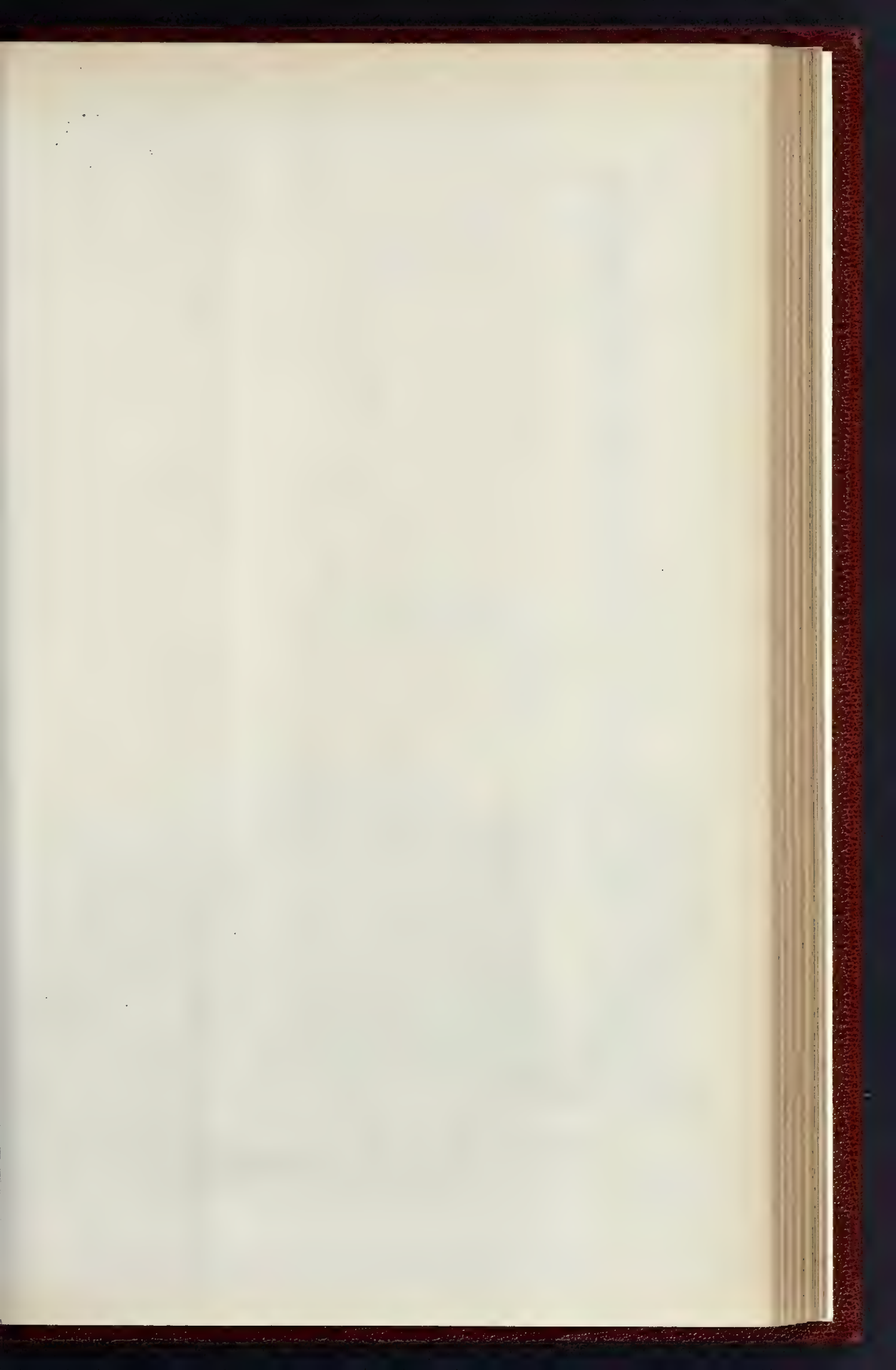
It will be opened by Mr. Edgar Bruce early in 1884.

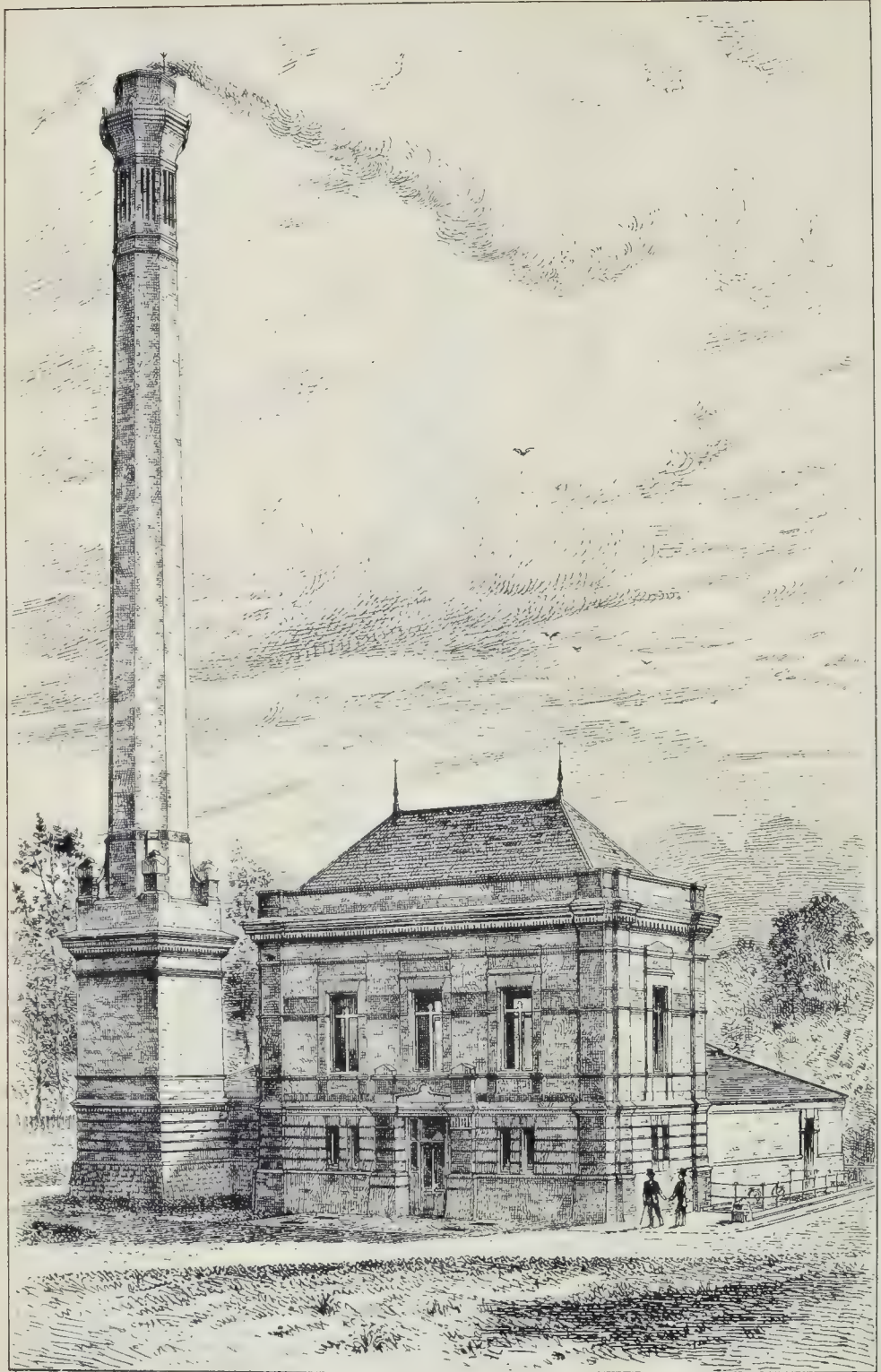
Architectural Restorations at Konigsberg.—The German technical press has of late given prominence to various interesting features in connexion with the above subject. The restoration of portions of the Rathhaus will be proceeded with again next year, the original forms of the gables in course of treatment being preserved. The interior of the Marienkirche is still the object of much attention, but it is hoped that the end of next year will witness the termination of the work now being actively proceeded with. It is suggested to restore the Bernickow and Schwedde portal towers in a style which would harmonise with their original architectural features.





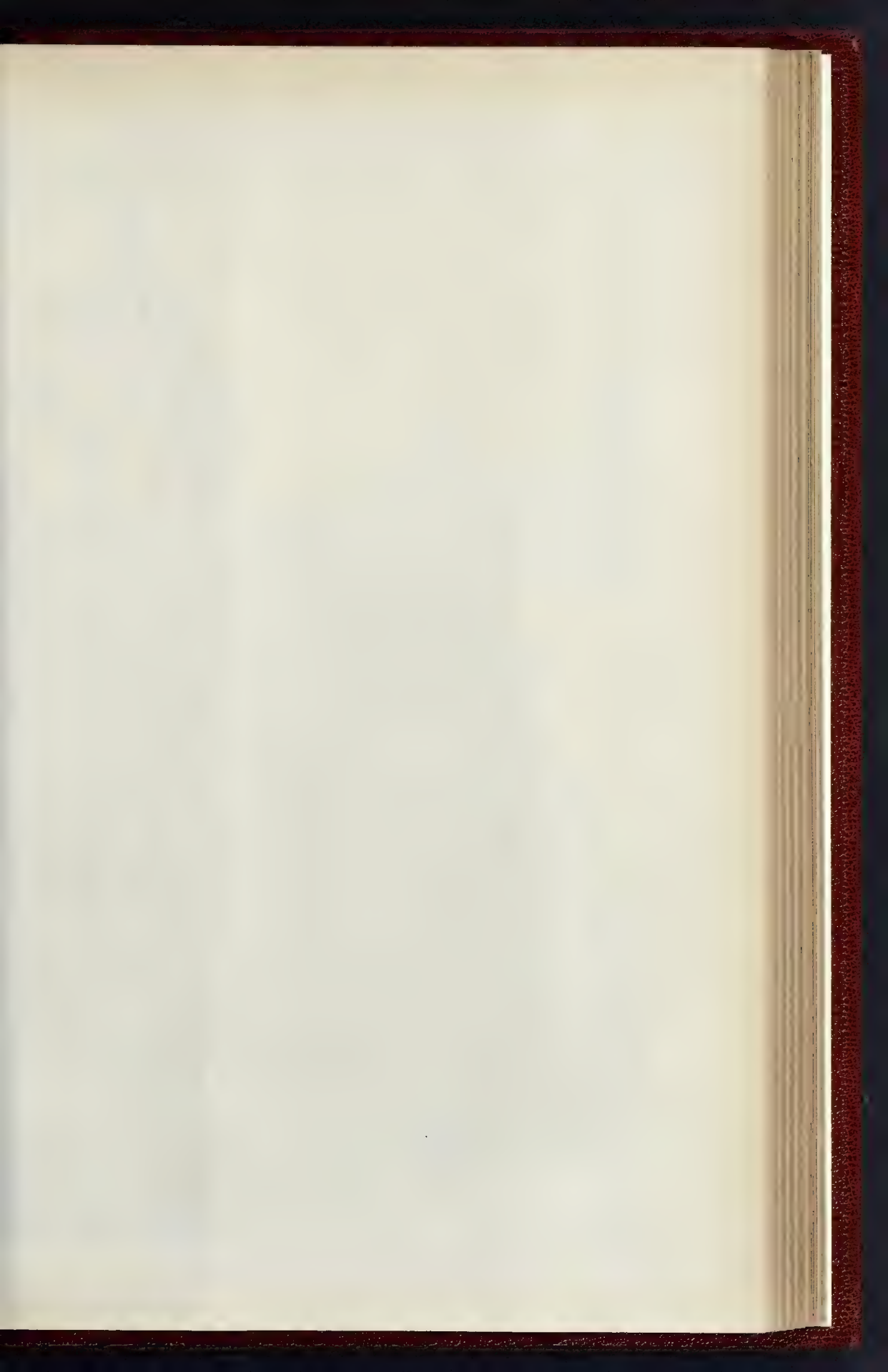
NEW TOWER, ST. MARY'S CHURCH, CATERHAM.—MR. W. BASSETT SMITH, ARCHITECT.





Vincent Brooks, Day & Son, Photo-litho

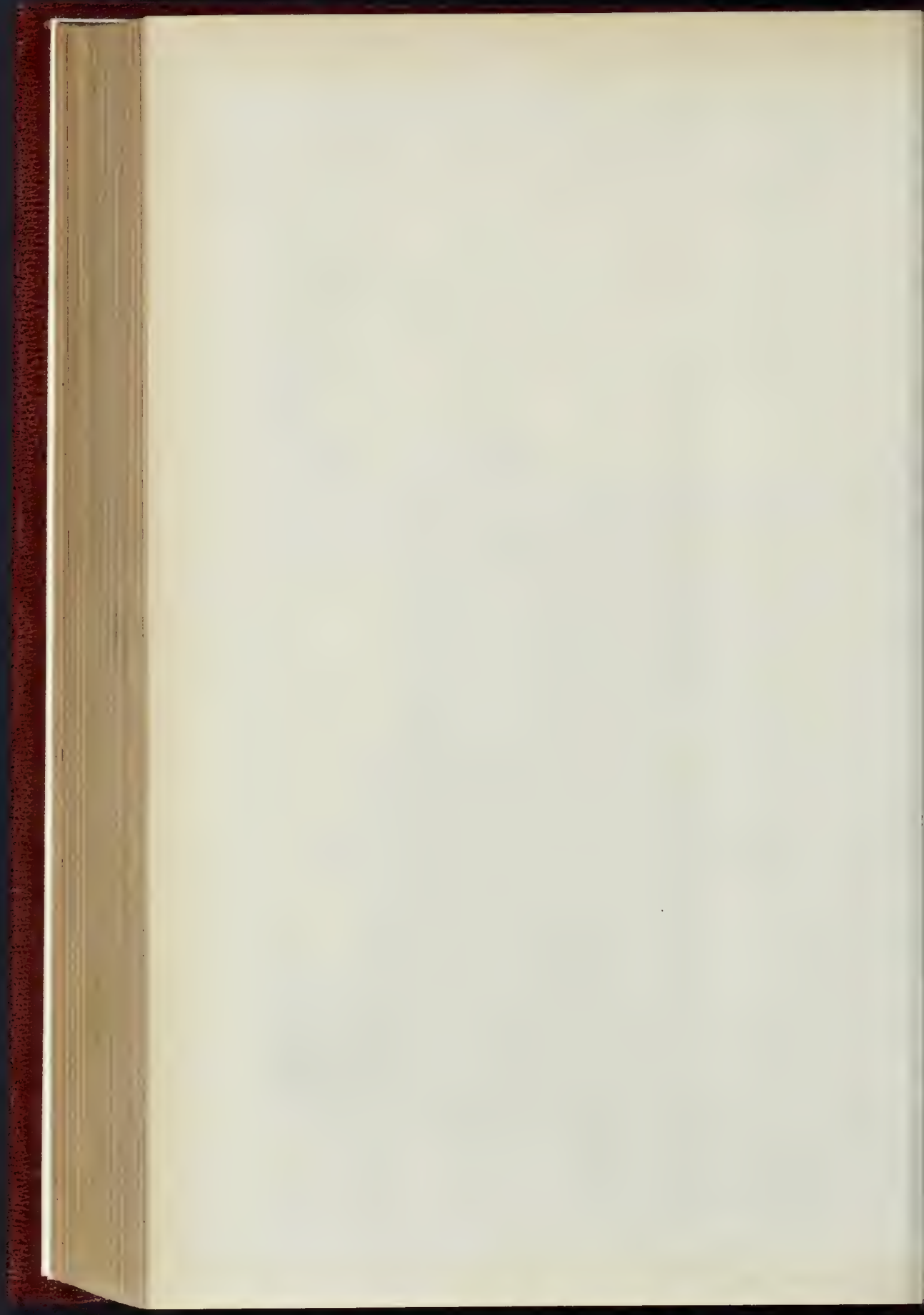
SALFORD SEWAGE WORKS. ENGINE HOUSE. MR. ARTHUR JACOB, ENGINEER.

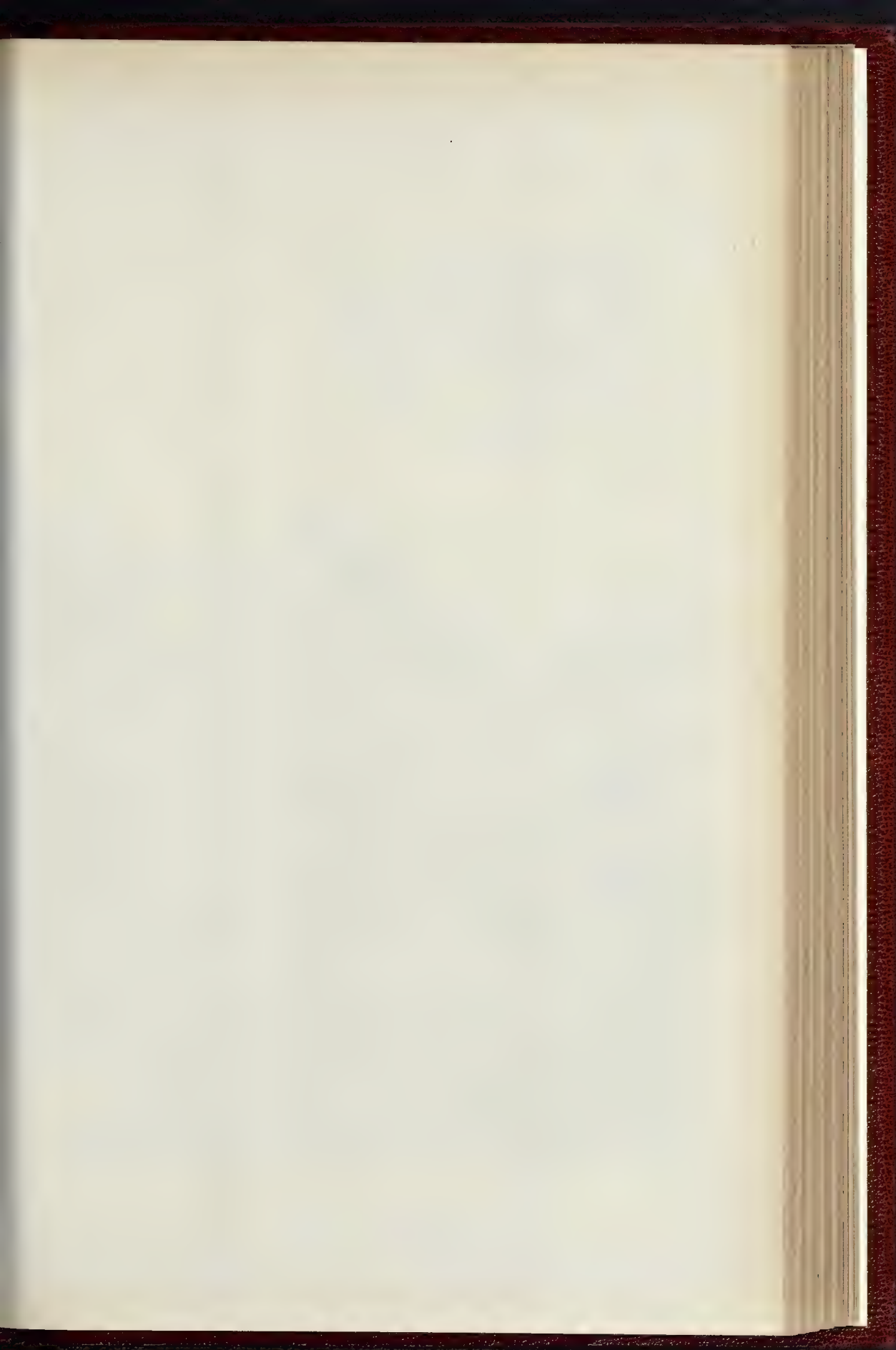




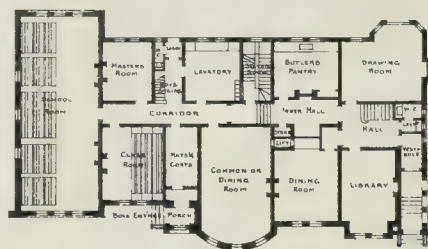
Vincent. Brooks, Day & Son, Photo-litho



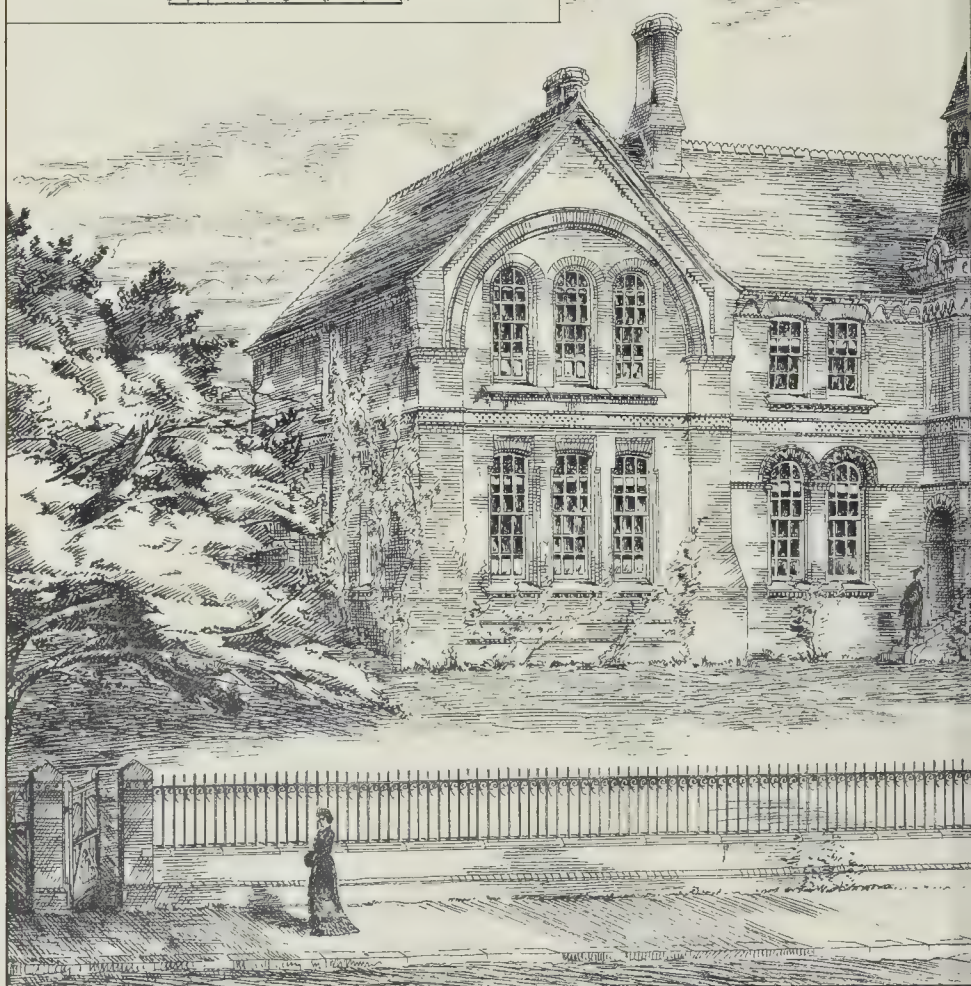




NEW SCHOLA REI HIGH Arthur Vernon, A.



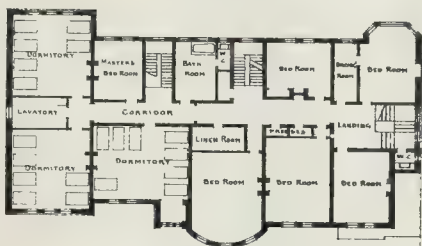
GROUND PLAN



Whitteman & Bass Photo Latho 236 H. G. Helborn

DINGS GRAMMATICA, OMBE.

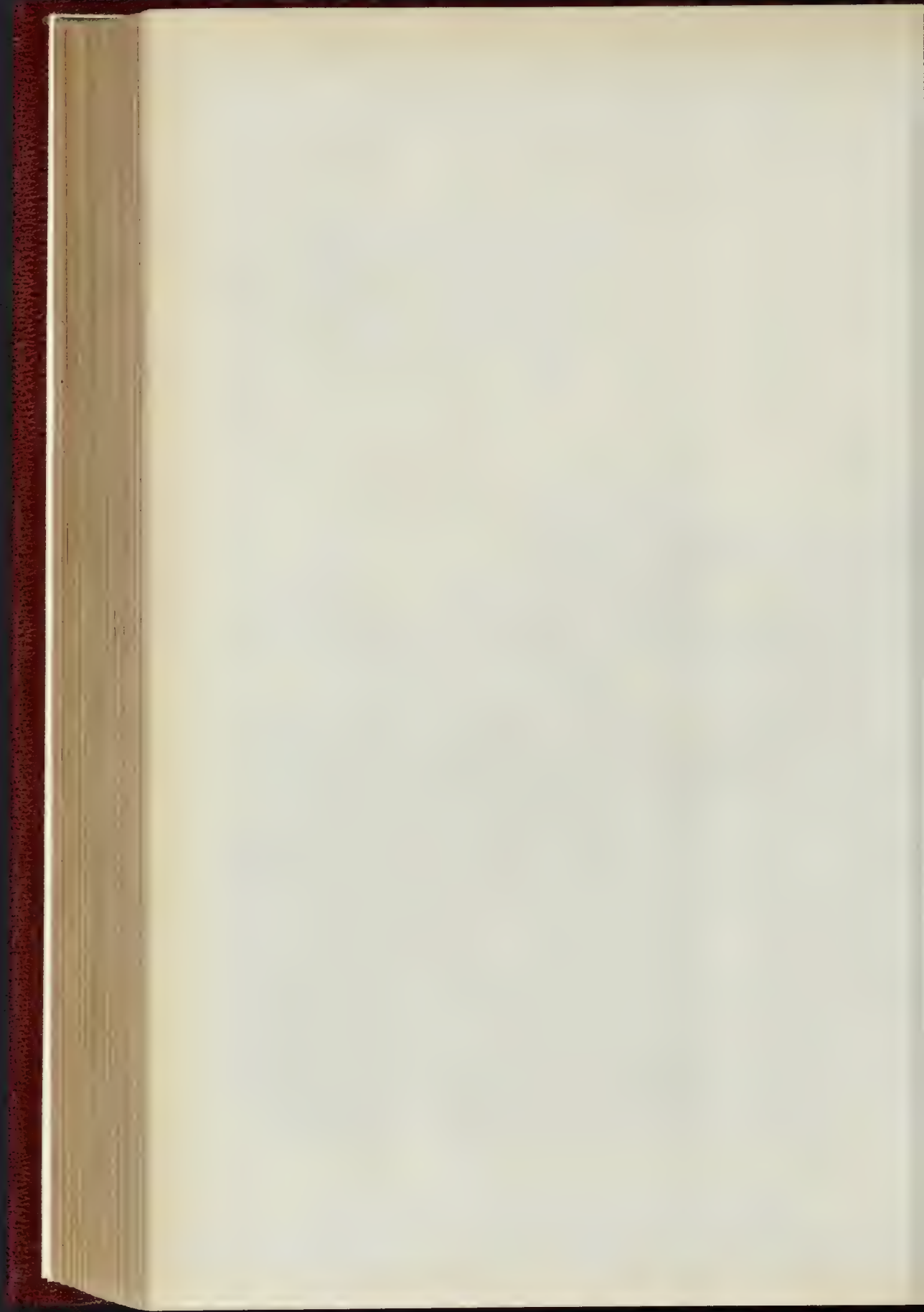
George St. Westminster.

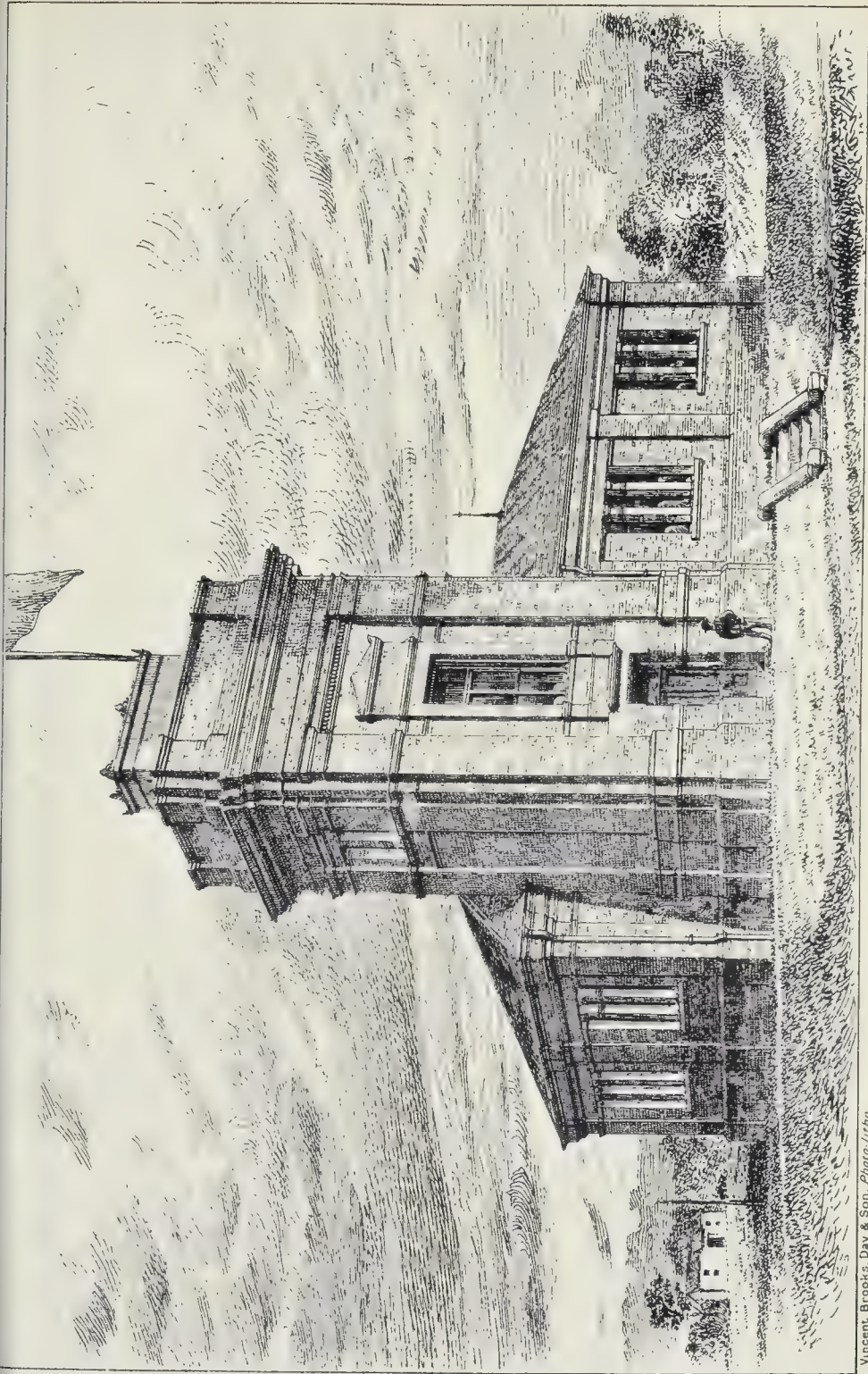


FIRST FLOOR PLAN



Wyman & Sons Printers O'Queen St





Vincent, Brooks, Day & Son, Photo-litho

SALFORD SEWAGE WORKS. MIXING HOUSE. MR. ARTHUR JACOB, ENGINEER.



Whitman & Sons Photographers



Wyman & Sons Printers

DOOR DECORATION.—By GEORGE CHAS. HAITÉ.

DOOR DECORATION.

THE door, which is so frequently a source of anxiety to the ornamentist and decorator, might be made the means of greatly enhancing the artistic completeness of a room. Much of the difficulty experienced in its treatment arises from the desire to disguise its functions. For this reason doors having their panels covered, — I cannot say decorated, — with wall-papers, &c., no matter how beautiful or costly, fail to please, and the palpable effort at disguise is not only bad but reprehensible, and whenever the position or purpose of a door is thus sought to be hidden, the result is a failure.

In modern-built houses the architects are devoting more care and thought to the design and proportion, and the cabinet-maker to the construction, than hitherto, and it is now, fortunately, not uncommon to find doors so original, thoughtfully proportioned, and broken up into panels that they are in themselves perfect, and, as a piece of decorative work, charming. An attempt to still further decorate such doors as these would be unpardonable; and a piece of vanity on the part of the artist; but, on the other hand, there are thousands of houses, — many of a superior kind, if we take the record as a criterion, — the rooms of which are positively disfigured by doors out of all proportion to their position, many being too short and wide, too high and narrow, or in an intermediate state, which is more aggravating than either, effectually preventing a successful treatment of the room as a whole. Such doors form a stumbling-block and eyesore to many otherwise comprehensive schemes of decoration. The embellishment becoming a necessity, the difficulty is, — what to do? It may be only necessary to decorate it slightly to harmonise it with the rest of the room, or it may require much more substantial and heavy treatment, both in ornament and colour; the surroundings will, of necessity, determine this point. A most satisfactory and effective treatment is to be obtained by outlining the design in warm tones, allowing the figure of the wood to show through, but the door must be a new one, and capable of such treatment; if, on the contrary, as is far more likely, it be an old and badly-painted door, then some such treatment as I have shown in my illustration would prove effective. The dimensions of the panels were taken from an existing door divided into four, those shown being the upper ones. This door being disproportionate, and the panels consequently so, it has been sought to make it appear by running the flower-spray behind the entire stile into the other panel,* had the panels been too wide, a contrary treatment could have been followed. The desire to elongate panels may be realised by each having separate design of some upward growth, and, if found necessary, marginal lines to still further help the illusion.

We might advantageously make our doors an object of interest by using them as an opportunity for displaying decorative ornaments. In such positions there is more latitude allowed, and a greater freedom to the artistic fancy; thus, representations of the figure, birds, animals, &c., are here permissible, all of which are out of place and unfit for the walls of our dwelling-rooms, owing to the necessary repetition becoming objectionable and devoid of beauty, and to the accessories hiding and utilising their parts.

The subjects for such panels should bear the impress of having been designed to fit the place they occupy, and for no other purpose. There is plenty of scope for our selection, the panels of doors offering not only a valuable and legitimate means for the display of the wood-carver's art, but for porcelain-painting, inlay, hand-painted or stencilled ornament, needlework, tinted silk or tapestry, the latter being sometimes particularly pleasing and effective.

Geo. C. HAIRÉ.

The New Alhambra Theatre. — It is announced that this new theatre, having been completed in accordance with the regulations of the Metropolitan Board of Works, will be opened to the public on Monday, December 3rd.

This may be accepted as a motive for the treatment urged in special cases; but, in general, we object to tiling the design through from one panel to another, as contradicting the actual construction of the door, and making the panels appear as one piece overlaid by the tiles. — E.S.

LEYTON SEWAGE WORKS, ESSEX.

At the invitation of the Rivers Purification Association, a considerable party of gentlemen interested professionally and otherwise in the subject of the treatment of sewage assembled at the new works of the Association at Leyton on Wednesday last, to witness the operations for the purification and disposal of sewage. The system adopted is the same which has been in operation for some years past at Coventry, as described by us in a former volume. The site, about half a mile from Leyton Station, is one which admits of the gravitation of nearly all the sewage to the works without the cost of pumping. The works were designed by Mr. J. C. Melliss, G.E., and were commenced in September, 1882. They are of sufficient capacity to deal eventually with a population of 60,000 to 70,000, needing for that purpose only some slight additions, chiefly in the tanks, which can be done at a trifling cost as the population, now about 27,000, grows towards the larger number above named.

The sewage of the district is conveyed to the works by three outfall sewers from different parts of the drained area, the Fillebrook, the North Leyton, and the South Leyton systems of sewers. This sewerage was carried out by Messrs. Bailey Denton, & Co. The object of the treatment is the separation of solid from liquid sewage, the purification of the liquid portion to such an extent that it can innocuously be run into the river (the Lea) and carried away, and the reduction of the solid matter into a convenient form for its utilisation as manure.

The visitor, on coming upon the ground, sees several large open reservoirs, mostly filled with water, backed by a low range of brick buildings. In one room in these buildings the sewage in its gross state is poured from the sewer outfall into a well, whence the solid matter is drawn out slowly by a screw elevator, and deposited in a trough, while the liquid is being pumped up and driven against and through the sieves of a strainer in the form of a large revolving wheel. From this room (the only portion of the works where any strongly disagreeable smell is perceptible) the liquid flows into the tanks before mentioned, each of which is divided at about two-thirds of its length by a brick weir. Before arrival in the tank it is chemically treated with salts of alumina and iron, and a little lime, the result of which is to precipitate the remaining particles of solid matter to the bottom of the tank (where it is found in a thin coating of sludge when the water has been allowed to run off), the water flowing in a thin layer over the top of the brick weir into the smaller division of the tank, where it is allowed further to settle and is then run off down a sluice lined with glazed tiles into the drain leading it away to the river. The water at this point is certainly fairly pure, and has no smell, and after mixing with the river water may be considered to be harmless. The solid matter, which parted company at the first stage of the proceedings, is first stored in tanks, in a very wet state, and then pumped under heavy pressure through presses of the form known as "Johnson's presses," consisting of a number of iron plates with canvas bags between them, which are screwed up together by hand levers, and on the sewage being forced through the press, by the pressure of an air-accumulator, the solid matter is left between the metal plates in the form of nearly dry cakes of sewage deposit, while the water is forced out through the canvas-strainers and drops into a surface-drain on the floor, finding its way back into the sewer. On unclamping the press the solid matter falls out in the form of cakes a little more than an inch in thickness, having lost in the press 80 per cent. out of the 90 per cent. of water which it originally held. The only practical deficiency in this part of the working seemed to be the rather rough-and-ready way of removing the sewage-cakes, which are allowed to fall where the water fell before, and are then removed by shovels. A wheel trolley to run under the press to receive them and then to be drawn out bodily, would seem a more convenient method, and would waste much less time.

The sewage in this form is sold to neighbouring farmers and utilised, but not at a remunerative price, nor is there any pretence that the operations are or could be commercially profitable on a self-supporting basis. The matter is a piece of public sanitary work, charged upon the rates, and the Local Board of Leyton have contracted

with the Rivers Purification Association to carry on the work at an annual cost of about 1,200l. The operations are under the immediate superintendence of Mr. Coddington, the general manager.

THE CITY CHURCH AND CHURCHYARD PROTECTION SOCIETY.

At a meeting of the City Church and Churchyard Protection Society, held on Wednesday last, the Earl of Devon presiding, the honorary secretary, Mr. Henry Wright, drew attention to the letter written by Lord Brabazon which appeared in the Times last week, calling attention to the neglected and scandalous state of some of the disused burial grounds in the metropolis. Capt. Thomas, Secretary of the Metropolitan Garden, Boulevard, and Playground Association, of which Lord Brabazon is the chairman, attended the meeting on behalf of Lord Brabazon. Mr. Wright, as a member of both societies, suggested that the City Church and Churchyard Protection Society should co-operate with Lord Brabazon and introduce a short Bill next Session to amend the Union of Benefices Act, 1860, making it illegal to sell, let, or appropriate the site of any church or churchyard for the purposes of building upon, but that such sites shall be kept as open spaces for ever. Lord Devon pointed out the great difficulty in getting any Bill through Parliament in the hands of a private Member, and thought a deputation to the Home Secretary urging him to introduce such a Bill would be more effective. The following resolution was carried unanimously: —

"That the Council of the City Church and Churchyard Protection Society desires to co-operate with Lord Brabazon and the Metropolitan Garden, Boulevard, and Playground Association, in their efforts to preserve the burial-grounds of the metropolis and the remains of the dead from desecration."

Another resolution, moved by Mr. J. Theodore Dodd, seconded by Mr. G. H. Birch, and agreed to, was as follows: —

"That this meeting views with deep regret the proposal to pull down, desecrate, and disendow the churches of St. Olave, Jewry; St. Katharine, Coleman; and St. Thomas, in the Liberty of the Rolls, as causing scandal, and disturbance of the remains of the dead, besides being an injustice to the resident parishioners."

A gentleman present stated that the register of St. Katharine Coleman shows that at the time of the London Plague the burials amounted to forty a day.

On the motion of Mr. H. C. Richards a letter of condolence was directed to be sent to the family of the late Mr. Bowes A. Paice, a member of the council.

LLANBEDR CHURCH, MERIONETH-SHIRE.

At the commencement of the year we described improvements to this edifice that were then in contemplation. In the months that have elapsed many of them have been effected, and the work of restoration has been now brought to a close in time for a special harvest festival. It may be remembered this ancient Welsh edifice had been carefully lined with plaster, and most of its ancient features hidden or removed. However, two memorial stained-glass windows had been recently inserted, and there was a general growing appreciation of the fabric as the picturesque work of the masons of former centuries. The inconveniences that were felt to be most pressing in the present day were a want of sufficient light, want of shelter of approach from without, and the want of a vestry in which the officiating clergyman could robe and unrobe out of sight of the congregation. These necessary additions have all been made. The west wall, which was quite blank, has been pierced with a window, and the north wall has been lighted with another of similar design to one already on the same side. A new porch has been built at the western end of the south side, and a new vestry at the western end of the north side. Woodwork has been freely introduced into both these last-mentioned features. The porch is entirely of oak, with open Decorated tracery, and the arch which divides the vestry from the church is filled with a richly tracied oak screen.

Not the least interesting part of the work of renovation and improvement is the removal of the plaster. This has revealed very beautiful colouring in the old masonry, in which the silver grey tints shadow into purple tones. The

chancel arch, which is very hoary and venerable, is composed of large flat stones closely packed on end in a slightly arched curve. Within the chancel, on the eastern wall, the removal of the plaster disclosed a long pointed-headed niche on one side of the east window, and a smaller recess on the opposite side.

It should be added all these works have been made at the cost of Mr. Pope, Q.C., who has a country seat close to the village. Another resident, Mr. Wayne, of Aber-Argro, has conducted to the finished effect of the appearance of the chancel by a gift of dorsal hangings and an altar-cloth, as well as a tiled pavement; and three stone finial crosses from the chancel of Mr. MacMillan, Alnwick, have been placed on the apices of the gables by a descendant of former residents in the parish. A lectern has also been presented.

The contractor is Mr. Hugh Evans, Llanbedr; and the architect consulted by Mr. Pope is Mr. F. R. Wilson, Alnwick.

During the progress of the works, opportunity was taken to preserve a relic of still more remote times than the foundation of the church by carefully placing, against the outer side of the west wall, a stone carved with a spiral circular indentation of a similar character to those found on the northern moors in the neighbourhood of ancient British camps.

THE PRIORY CHURCH, CHRISTCHURCH HANTS.

A new roof of English oak has lately been constructed, by direction of the Restoration Committee, over the north nave aisle. The roof it replaces had been in so bad a state that it had been necessary to prop it up during the last year or two. It was in a rotten condition, much patched and added to, scarcely any of the original timbers remaining. The new work to a general extent follows the old, so far as the design of the latter could be traced. The timbers are of very substantial scantling, with curved moulded braces, covered with oak boarding. The outer covering is of thick milled lead. Mr. B. Edmund Ferrey, F.S.A., was the architect, and Mr. William Howe, of Christchurch, the builder.

THE HOUSING OF THE POOR.

THE newly-revived question as to the best means of decently housing the poor of London and our large provincial towns continues to be widely (and sometimes wildly) discussed from various points of view. The zeal of some writers and speakers appears to be in inverse proportion to their knowledge of the subject, and not a little of the sensational element is being imported into the discussion, which is one involving grave questions of economy. Many writers and speakers are amusingly oblivious of what has been done years ago in improving the condition of the dwellings of the poor. For instance, the readers of a leading provincial paper were informed by it the other day that the Earl of Shaftesbury was "beginning" to turn his attention to the solution of the problem. The writer had evidently never heard of the long-established Metropolitan Association for Improving the Condition of the Labouring Classes, nor of the good work that society has done under the leadership of Lord Shaftesbury in providing healthy dwellings for the poor, partly by erecting new buildings and partly by converting existing buildings into healthy tenements. Lord Shaftesbury certainly knows something of the subject, and he has lately stated that bad as things now are in this particular, they are not so bad as they were. They are bad enough, no doubt, but an adequate solution of the problem is not likely to be helped forward by exaggeration.

From among the many utterances on the subject which are coming thick and fast at the present time we quote from a letter by the Rev. S. A. Barnett, Vicar of St. Jude's, White-chapel,—an clergyman whose active work in and close knowledge of a crowded neighbourhood give him some right to be heard on the question. He writes to the *Times* :—

In 1876, upon a representation made by twelve ratepayers through the Medical Officer to the Metropolitan Board of Works, the dwellings of 4,000 persons in this parish were at once condemned as uninhabitable, and the official scheme for their demolition and reconstruction was prepared. During

the next four years the "scheme" ploughed its course through arbitration and compensation with a slowness somewhat puzzling to those who note how rapidly the poor are removed when great money-getting projects are on foot. It was indeed a "killing slowness," for during all these years landlords whose claims had been settled spent nothing on further repairs; tenants, expecting their compensation, put up with any wretchedness; while the Vestry, looking to the approaching reconstruction of the houses, let streets and footways fall to pieces. In 1879 the Guardians of the Poor vainly impressed upon the Board of Works that eighty per cent. of the paupers of the district came from houses in the long-condemned area. It was not, however, until 1880 that the needful demolition was seriously begun. Since that date the houses of some thousands of the poor have been destroyed. Meanwhile, there have been persons willing to buy plots, large or small, at the price at which land has been sold for such purposes in the neighbourhood, to proceed forthwith with the reconstruction of the demolished dwellings. Nevertheless, it required two years negotiation with the Metropolitan Board before one small plot could be purchased, whereon rooms for forty families will now be at once provided by voluntary effort. An offer for a larger plot, made as soon as the houses had been emptied, was postponed, with the answer that the ground must first be cleared; yet, though the prompt erection of dwellings for the unsheltered has been that which it has been already found possible to build a public-house upon the site. . . .

Such is the seven years' history of the Artisans' Dwellings Act in a parish under the rule of the Metropolitan Board of Works. It tells its own tale, without complaint of mine. The slowness of the first four years, the wholesale evictions of people for whom no new homes had been provided during the last three years, have alike been "killing;" but I wish only to emphasise two conclusions to which this history points :—

(1.) The prime source of the evil is not in the law, but in the local administration.

(2.) It is only where some individual interest is concerned that the *inertia* of the local administration can be overcome.

The further conclusion which I would draw is not that Londoners should put trust in what some municipal government of the future may do for the people, while the rest of us look on (the articles on "Squalid Liverpool" lately published in *Liverpool papers* challenge that hope), but that individuals must make these things their interest. The best system of government, like the best laws, will be ineffective until Londoners take a more active and individual interest in the condition of the people.

THE PROGRESS OF THE WORKING CLASSES IN THE LAST HALF-CENTURY.

ON Tuesday evening, at the Royal School of Mines, Jermyn-street, Mr. Robert Giffen, LL.D., of the Board of Trade, delivered the inaugural address of the 50th session of the Statistical Society, of which he is president, selecting as his subject "The Progress of the Working Classes in the last Half-century." In the course of his remarks he estimated that during this period there had been a rise in money wages ranging from 33 to 85 per cent., while at the same time the hours of labour of the working classes had diminished very nearly 20 per cent. The workman of to-day received from 30 to 100 per cent. more money for 20 per cent. less work; in round figures, he had gained from 50 to 100 per cent. in fifty years in money return. Concerning changes of prices of commodities, there seemed to be little doubt that things were much the same as they were forty or fifty years ago. On the whole, the sovereign goes as far as it did forty or fifty years ago, while there are many new things in existence at a low price which could not then have been bought at all. Though various commodities had fallen in price, however, house-rent had increased, and much was said of late of the high price of rooms in the slums. Taking things in the mass it was found that however much some workmen might suffer house-rent in the aggregate could not have greatly augmented. His estimate was that house-rent was now one and a half times what they were fifty years ago. In other words, a workman who paid 3*l.* a year fifty years ago, would now pay 7*l.* 10*s.* Even, however, if rent were a fourth part of the workman's earnings fifty years ago, he would still be much better off at the present time than he was. His whole wages had doubled, while the prices of no part of his necessary consumption, except rent, had increased,—on the contrary, they had rather diminished. Houses were undoubtedly of better value all round than they were fifty years ago. More rent was paid because more capital was put in the houses. The question remained

whether the condition of the masses had, in fact, improved. Do the people live longer than they did? On this question he quoted from Mr. Humphrey's paper on "The recent decline in the English death-rate," showing that the effect of this decline had been to raise the mean duration of life among males from 30.9 to 41.1 years, a gain of two years in the average duration of life. He referred to other statistics to show that not only in longer life, but in increase of consumption of the chief commodities they used, in better education, in greater freedom from crime and pauperism, and in increase of savings, the masses of the people are immensely better than they were fifty years ago. This was quite consistent with the fact that there was a residuum still unimproved, although apparently a smaller residuum in proportion to the population absolutely than there was fifty years ago. Discontent with the present should not make us forget that things had been much worse. But the question was raised, Have the working classes gained in proportion with others by the development of material wealth during the last fifty years? The rich, it was said, were becoming richer and the poor poorer. This notion, however, he set himself to show was a mistake. He came to the conclusion that the number of owners of personal property liable to probate duty had increased in the last fifty years more than the increase of population, and that on the average these owners were only about 14 per cent. richer than they were, while the individual income of the working classes had increased from 30 to 100 per cent. If the return to capital had doubled, the wages of the working classes appeared to have doubled, their aggregate income return to the income-tax would now be 800 instead of 400 millions. It would not be far short of a mark to say that about the whole of the great material improvement of the last fifty years had gone to the masses. In conclusion, Mr. Giffen deduced the lesson from what he had said that this nation ought to go on improving the same lines, relaxing none of the effort which had been so successful. Steady progress in the direction maintained for the last fifty years must soon make the English people as superior to what they are now. Apart from objections of principle to schemes of confiscation of capital, land nationalisation, or collectivism, whatever they might be called, the masses could not hope to have much to divide by any such schemes. The system under which large capitals were in the hands of a few might, in fact, be its good side in this,—that the Jay Goulds, Vanderbilts, and Rothschilds could not spend their incomes. The consequent accumulation of capital was, in fact, one of the reasons why a reward for labour was so high, and the masses got nearly all the benefit of the great increase of production. If the object really aimed at those who talked of land nationalisation or the like were carried out, the people who would suffer would be those who received large wages. The war of the land nationaliser and socialist was, then, not so much with the capitalist as with the workman, and the importance of the fact should not be lost sight of.

WHITTINGTON AVENUE, LEADENHALL STREET.

SIMULTANEOUSLY with the reconstruction of Leadenhall Market, several extensive blocks of new buildings have in succession been constructed around it, and one of these, which stands upon a portion of the site formerly occupied by the old Leather Market, and on the east side of Whittington-avenue, has just been completed. In excavating for the foundation of an old wall, 6 ft. in thickness, and formed of concrete, was discovered at a depth of 2 ft. below the street level. So hard and firm were the materials of this wall that there was great difficulty in breaking it up. The new building from the peculiar conformation of the site to some extent, crescent-shaped on plan. Whittington-avenue elevation is mainly in Portland stone, the ground-floor having a series of large three-light windows, divided by columns in Portland stone. There are three entrances to the building, the principal approach being in the centre. This central entrance is flanked by columns in red and grey polished granite, externally the building contains upwards of 60 offices on the several floors. From the basement upwards all the floors are fireproof. The fittings, throughout the building are in French polished.

Messrs. Ellis & Son, of Fenchurch-street, are the architects, and the contractors are Messrs. Greenwood, of Bernersley. The estimated cost of the buildings is 24,000l.

DOCK EXTENSION AT MIDDLESBROUGH.

The directors of the North-Eastern Railway Company have adopted a large scheme for the purpose of increasing the shipping facilities of Middlesbrough. The *Leeds Mercury* understands that the contract for the new docks have been let to Mr. John Jackson, of Westminster, who has just completed the construction of some gigantic docks for the Clyde Commissioners at Glasgow. It is expected that operations will be commenced at Middlesbrough almost immediately. The present docks are reached by means of an artificial channel, branching off from the river, and running nearly parallel with it. This channel is to be considerably deepened and widened; the entrance of the dock is to be greatly improved; the docks themselves are to be enlarged considerably; ample provision will be made for the access of the largest class of vessels at all states of the tide; and upon the quays there will be hydraulic machinery of all kinds for the rapid loading and discharge of cargoes, bunker coals, &c. The docks are to be enlarged to the extent of about four acres and a half. To effect this it will be necessary to take in a considerable portion of the land which lies behind the weaker end of the existing docks. The additional length of quay accommodation secured by the extension will amount to nearly 1,300 ft. (Although the extension described is fairly large in scope, it only forms a part of the great dock scheme which the North-Eastern Railway Company have in contemplation. The estimated cost of carrying out the scheme is 200,000l.)

SANITARY JOTTINGS.

At the ordinary monthly meeting of the North-Western Association of Medical Officers of Health, held at Manchester on the 8th inst., Dr. J. Makinson Fox (Mid-Cheshire), president, read a paper on "Sanitary Work." In it he said that the publication so incessantly of vital statistics had the effect of unduly concentrating public attention upon such diseases as diphtheria and typhoid and scarlet fevers. It was true that those complaints and preventable deaths resulting therefrom were the extreme land most loudly expressed outcome of sanitary mismanagement. But how many people were more or less enfeebled and incapacitated by the influence of almost imperceptible domestic nuisances which in the symptoms to which they might give rise did not develop the form of the specific disorders he had mentioned?

With regard to sanitary inspection in Edinburgh we note that the annual return of work of the borough engineer's department as regards inspection of houses, drains, soil-pipes, &c., in 1882-83, states that the number of tenements dealt with as being unfit for human habitation was 21, which number comprises in all, of separate dwelling-houses, 94; of these there have been, of houses shut up, 24; these habitable, 32; where improvements are in progress, 48; delayed for various reasons, 30. The number of cases of insanitary houses considered was 29; where improvements effected as required, 17; where work in progress, 5; where houses have been disused as dwelling-houses, 3; delayed for various reasons, 4. The number of tenements where water-closet accommodation had been ordered was 102; number of families included, 317. The number of tenements where water accommodation had been ordered was 20; number of families included, 28. The inspection of drains and sanitary appliances of dwelling-houses, &c., which is carried out by a staff consisting of an inspector and four workmen was commenced in 1872, and has gradually been made more searching and stringent by the adoption of tests, such as the introduction of paraffin into the pipes, and the use of the smoke machine, by means of which any defect in the fittings is at once detected. During the last year 128 cases have been inspected; of these, 62 were in the new town, 33 in the old town, and 28 in the southern suburbs. In 11 of these cases no defects could be discovered; in 117 an entire overhaul was required, 31 built tanks or cesspools have been abolished, and 476 yards of new pipe-drains have been laid

involving the owners of the properties concerned in an outlay of 1,226l. or thereby.

At the quarterly meeting of the Yorkshire Association of Medical Officers of Health, on the 7th inst., Mr. A. Roberts read a paper on "How to prevent the pollution of houses from sewer gas, and of the subsoil from sewage percolation and asphalt refuse." He pointed out that seven years ago he found the death-rate of Keighley to be 25.6 per thousand, but last year that had been reduced to 21.2 per thousand. The average length of life had been increased by eight years. The sanitary authority of the town was fully alive to the importance of these questions. If there was one thing to which they paid more attention than another in Keighley it was the freeing of their houses from sewer gas and gases from subsoil. They had taken up the Rochdale system of collecting the refuse from closets, and he knew of no system which so perfectly met the evil as the present one. Mr. Roberts demonstrated by experiments how air passed through bricks and mortar, and he proceeded to show that, unless the soil was kept from the air which passed through it from without to the cellar, and from the cellar to the living-rooms, it was liable to be tainted with disease germs. To remedy this he suggested that a chamber should be made under the cellar, asphalted, so as to render it airtight, the chimney to descend to this chamber, so that, being heated, the air might ascend and escape.

SEWERAGE MATTERS.

The Pollution of the Thames.—At the Staines Petty Sessions on Monday last, further proceedings were taken by the Thames Conservancy against the Staines Local Board, in respect of the pollution of the Thames by drains flowing through the district. Mr. G. Payne, solicitor to the Thames Conservancy, who appeared in support of the summons, reminded the Bench that since notice was served upon the Board, in September, 1879, to put a stop to the pollution of the river in this way, they had been five times convicted of allowing it to continue, and though heavy penalties had been imposed nothing had yet been done to remedy the evil. Mr. G. W. Wigner, President of the Society of Public Analysts, then proved that the sample of water now in question, taken on the 12th of October from a ditch at Staines, about a mile and a quarter from the spot where it emptied into the river, just below Penton Hook Lock, contained an excessive amount of offensive and injurious matter. He added that the Staines sewage was the worst he had yet seen sent into the Thames, and such a sample as this was quite unfit to empty into any English river. Mr. Engall, clerk to the Local Board, in addressing the court for the defence, said that the Board had been much perplexed in deciding upon the best mode of disposing of the sewage of the district. They had finally referred the subject to Mr. Hawley, whose report had only just come to hand, and in it he characterised it as "one of the most expensive and most difficult districts for a disposal of the sewage." As it was estimated that the outlay upon a general sewage system, such as Mr. Hawley recommended, would amount to 32,000l., Mr. Engall urged that this was a very serious question for a population numbering only 5,000. The Local Board were, however, most anxious not to give any cause for complaint on the part of the Conservancy that they could avoid, and they had consequently taken temporary measures to prevent the sewage getting into the river, pending the adoption of a general sewerage scheme. The Bench decided, under the circumstances, to impose a mitigated penalty of 1l. 1s., and 5l. 5s. costs in this case.

Wrexham Sewerage Works.—Some time ago we mentioned that new tanks for the treatment of the Wrexham sewage were in progress. These have now been completed, under the direction and supervision of Col. Jones, V.C., acting as consulting engineer to the Sanitary Authority of the borough. Almost from the commencement of his term as lessee of the Hafod-y-Wern Sewage Farm, Col. Jones protested against the excessive dilution of the town sewage by rainfall, and had advocated the adoption, or partial adoption, of the separate system, wherever practicable, in order to palliate the mischief arising from sudden storms. It was only in the course of last year that Col. Jones was able to give effect to his views. Wrexham may now be said (in the words of Mr. C. N. Crosswell, a barrister who has given much

attention to sanitary matters) to afford an excellent example of a combined system of deposition, broad irrigation, and intermittent filtration, each one the complement of the other, with a further potential advantage that, in the event of the irrigation farm passing away from the hands of the Corporation, they can adopt a system of chemical precipitation by means of these tanks, at a comparatively small cost, and upon their freehold, and thus obviate the dangers of pollution in the future.

BUILDING PATENT RECORD.*

APPLICATIONS FOR LETTERS PATENT.

- 5,320. J. U. Moerath, London. Domestic fireplaces, stoves, &c. Nov. 10, 1883.
5,333. W. P. Kelly, Mount Brandon. Apparatus for retaining and releasing window-blind cords, &c. Nov. 12, 1883.
5,385. W. Walker, Birkenhead. Exhaust-ventilators or chimney-tops. Nov. 15, 1883.
5,388. H. A. Goodall, London. Blinds for windows, &c. Nov. 15, 1883.
5,391. J. Warhurst, London. Application to hinged doors, &c., of apparatus to exclude draughts, rain, &c. Nov. 15, 1883.

NOTICES TO PROCEED

have been given by the following applicants on the dates named:—

Nov. 16, 1883.

- 3,614. J. Heinemann, Hanover. Manufacture of artificial marble. (Com. by H. Rothe, Hanover.) July 23, 1883.

ABRIDGMENTS OF SPECIFICATIONS,

Published during the week ending November 17, 1883.

- 1,457. E. H. Harris, London. Portable or removable conservatories, greenhouses, &c. March 20, 1883. Price 2d.

The sides, ends, and tops of these, are made separately and joined together by thumb screws. The sides are connected to the wall by hooks and staples, and the joints are made weather-tight by indiarubber. The top slides on the ends. (Pro. Pro.)

- 1,502. W. P. Buchan, Glasgow. Ventilating appliances. March 22, 1883. Price 10d.

This is an improvement on Patents No. 2,102, of 1877, and No. 2,745, of 1879, in the shapes and details of construction of the ventilators, which are described in fifteen pages of specification, stated in thirteen claims, and illustrated by fifty-four figures in the drawings, but which are not capable of being condensed.

- 1,506. E. Verity and J. M. Verity, Leeds. Staying or holding in position spring or pivoted windows, dampers, ventilators, looking-glasses, &c. March 22, 1883. Price 6d.

Indented, corrugated, or notched checks are formed round the centre pins of these articles.

- 1,513. R. M. Ordish, London. Pavements. March 22, 1883. Price 2d.

These are made with pieces of granite or other stone combined by pouring in among them molten iron or steel.

- 1,514. W. Whittle, Whitehaven. Apparatus for warming "explosive stores" and other buildings. March 22, 1883. Price 2d.

A small vessel with one or more small holes in it is filled with unslaked lime and placed in another vessel filled with water, through which are air passages. As the water slowly mixes with the lime heat is evolved. (Pro. Pro.)

- 1,532. A. C. Boothby, Kirkcaldy. Automatic flushing apparatus. March 24, 1883. Price 4d.

The outlet of the tank is governed by a vertically sliding sluice-valve connected to a float, which is held down by two catches. These are governed by a ball-float, which, when the water rises to a certain height, releases the catches, and the valve rises. The valve is connected by a rod to a piston in a cylinder charged with oil. Through the piston is a large passage with a check valve on its underside, so that the piston can rise quickly, allowing the oil to pass through this passage, but as the water falls in the tank the outlet valve is only allowed to follow down slowly by reason of the oil in the cylinder which can only pass through a small passage through the piston until this arrives near the bottom of the cylinder, when a large outside passage is uncovered, and the piston descends rapidly, thus ensuring the valve being tightly closed against its inclined seat.

- 1,535. J. Booth, Bolton. Window-frames, skylights, &c. March 24, 1883. Price 2d.

The L or T-shaped iron frames are joined by nothing but the web or flange of the one bar so as to slide or fit on the flat web or flange of the other bar, thereby dispensing with covering plates. (Pro. Pro.)

- 1,597. W. Lord, Middlesbrough. Apparatus for preventing down-draught in chimneys, &c. March 28, 1883. Price 6d.

A series of concentric bands or rings, each partly overlapping the other, are fitted to the top of the chimney, the largest ring being uppermost. There is thus a series of smaller apertures between the rings, in each of which are a number of inclined blades by which the air which is drawn in is made to take a spiral direction.

* Compiled by Hort & Co., Patent Agents, 159, Fleet-street.

1,574. A. F. Morrison, Manchester. Lavatories, baths, water-closets, sinks, &c. March 28, 1883. Price 6d.

The basins are of a D-shape, with the straight side in front. The water is admitted to the basin through a tube formed therewith which opens through the bottom, where it can form a spray. The waste-pipe rises to the top behind the basin, and a pipe from the waste grid leads into it. This is governed by a valve actuated by a lever on the top. A mixing-box is made for the hot and cold water for baths, &c., from which the various pipes are led as required.

1,585. W. P. Thompson, Liverpool. Heating apparatus for domestic, hotel, and other use. (Com. by C. Lawney, Paris.) March 29, 1883. Price 6d.

The air to be heated passes into a chamber in which are a series of gas jets placed on annular rings or baffles secured to the walls of the chamber, the central passages in which gradually decrease as the air passes upwards. The gas jets project horizontally across these passages, and the heated air passes out through pipes from the top of the chamber.

1,592. L. C. Besant, Greenock. Stoves. March 29, 1883. Price 8d.

This consists of different methods of forming the stoves and grates with the object of consuming the smoke, which are shown in twenty-eight figures in the drawings.

1,610. D. B. Gibson, Manchester. Preventing the entrance of wind, rain, or dust, under doors, windows, &c. March 30, 1883. Price 2d.

A weather-board is pivoted horizontally in a recess in the floor. When the door is open the board is level with the floor, but when the door is closed a stud on the bottom of the door comes in contact with a projection on the board, which is thereby revolved and made to close the space under the door by standing up vertically. (See *Proc.*)

ST. MATTHEW'S, FRIDAY-STREET.

Sir,—In the description of this church in your last issue (p. 649), especial reference is made to the design of its eastern end,—a series of "lofty round-headed windows placed upon a high stylobate, and surmounted by a bold cornice and fine massive balustrade." I wish to point out the great similarity of this design and treatment generally with that of the eastern end of another of Wren's City churches, namely, St. Peter-upon-Cornhill. In both cases, too, the stylobates are in a plain unbroken line, and in direct continuation with the houses, respectively, in Friday-street and of Gracechurch-street. J. DRAYTON WYATT.

IRON AND CONCRETE.

Sir,—Mr. E. J. Tarver, in his note on the above subject, in your number of November 17th (p. 649), raises a question of considerable interest to those interested in the practice of architecture.

I also have long thought that concrete is "the building material" of the future, or at any rate, a very important one. I have used it largely both in England and India, and the following suggestions may be of some use:—

Concrete lacks only fibre to give it an enormous increase of strength, and I believe it would be found most advantageous to introduce iron wires in concrete beams, and that by so doing, in a judicious manner, lintels of great length and weight-sustaining power can be constructed. What strength they might be must of necessity be a matter for experiment.

The introduction of iron girders, litches, or flanges, in concrete is, I feel sure, a mistake, as it weakens the concrete by dividing it, and weakens the girder by adding to its own weight. I have constructed Gothic concrete vaults of about 20 ft. span and 12 ft. rise, 3 in. thick at the apex and 6 in. at the springing, with a layer of galvanised iron wire net-work imbedded in the whole surface of the vault. Of course, the haunches are weighted. W. EMBESON.

Sir,—Mr. Tarver deserves to be commended for his intention [see p. 649, ante] to depart from traditional usage, in the employment of such essentially modern materials as concrete and iron, which in my opinion, along with terra-cotta, are destined to be the constructional materials of the future. There are so many methods of utilising concrete in conjunction with iron that a mere summary would occupy too much of your valuable space. Mr. Tarver will find in my "Factories and Workshops," published by Spon, a description of most of the usual combinations adopted. For the purpose he requires, however, I should think, lattice-girders, or those on Moreland's system, filled in with concrete, would do very

well; by this arrangement the compressive value of the concrete could be utilised, and the concrete could be made sufficiently deep to be self-supporting.

For the columns Mr. Tarver could utilise the ordinary iron cylinders, with a concrete lining attached by means of vertical strips of corrugated iron, tied to columns by means of iron wire, as adopted, I believe, by Messrs. Dennett with success. Another plan would be to have radiating vertical ribs or flanges cast on the column sides to retain concrete. This latter plan would be preferable to the other, as it would be materially stronger.

B. H. THWAITE.

"LINKS" AND "LUNCHES."

Sir,—The illustration furnished by Belize at p. 670 of the *Builder*, from the analogy of the well-known Scottish "links" is apposite.

As Jamieson is the great authority on the Scottish dialect, I extract the following:—"Links, *s. pl.*, the windings of a river; the rich ground lying among the windings; sandy flat ground on the seashore; sandy and barren ground, though at a distance from any body of water. German, *linken*, to turn or bend." From this verb is formed *gelenk, n.*, a link or ring = Anglo-Saxon, *henc*. I would here suggest an analogy with *ling* = heath or heather; as our Bagshot and other sandy wastes. This is borne out by the Danish and Swedish forms, which differ materially from the German. It seems that our word "heath," followed to its source, comes back to the idea of pasture land, like Jamieson's second definition. The word "ling," properly *lyng*, is connected with light in the sense of shining; just as the Saxons christened our Southern fields of golden broom, *Shenley*, or shining field.

I think, therefore, that the most separate Jamieson's four definitions; partly from pasture land, what is sometimes called water meadows; partly from heath or waste land.

Can any of your readers say exactly what is understood by Malvern Link in Worcestershire? Nov. 16, 1883. A. H.

P.S.—At p. 673, under heading "Penselwood," I read "Caen Penselwood." This should be "Caer" (for castle) "Penselwoic," or the head wood of a local divinity named "Saul," possibly for the sun.

WOOD-BLOCK FLOORS.

Sir,—Will any of your readers be so kind as to state their experience with reference to the use of elm for block floors? The wood is enduring, hard, keeps a clean surface under wear, and is in some districts readily obtained at a cheap rate, especially after very severe storms. It is, however, credited with a tendency to twist and warp, and to keep on shrinking, and it is consequently supposed to be unsuitable for these floors, in which a little shrinkage will loosen a good deal of a floor. An instance has been mentioned in which a floor of elm blocks, 9 in. by 4½ in. by 1½ in., was laid, and in a couple of months the blocks were so loose that they had to be relaid. After relaying they were found, at the end of a couple of months, quite as loose again; there was not much twisting, but a good deal of shrinkage. Experiments are said to have proved that English elm, or wych elm of good quality, will shrink 1-30th to 1-44th of its width in seasoning; but the English oak shrinks more than the larger of those quantities; and, with any wood, the process of seasoning should come to an end in reasonable time. If the prejudice against the use of good elm for purposes such as wood-block floors now so largely in use, where it would be cut into small pieces, and used in a thoroughly dry state, could be dispelled by means of successful practical experience, a good turn could be done to,—among others,—many owners of timber trees in our own country. P.

KIRKBY LONSDALE BRIDGE.

Sir,—It is not at all probable that your correspondent, Mr. Andrew Robinson, will receive the information for which he asks concerning this bridge [p. 699, ante]. The popular tradition is that, like many other famous structures of like kind, it was built by the Devil, and that he brought the stones for its construction down from the neighbouring Fell above Casterton. He carried them, so runs the story, in his apron, but in his descent the string broke, and he precipitated a part of the material, whereby the third arch was reduced in size, leaving the two larger ones to span the stream. But taking a more prosaic view of the case, I think it cannot be doubted that the bridge was built some time in the thirteenth century. The late Mr. Carus Wilson, of Casterton Hall, who took a lively interest in all matters architectural or archaeological, and from whom I learned the tradition, told me also the fact that an order was given for the repair of the bridge in the reign of Edward II., and I believe there still remains, in a part of the parapet on the south side,

next the Settle road, the base of a cross with genu mouldings of the thirteenth century. The bridge, far as I know, is the most beautiful ancient structure of its kind in England. The arches are extraordinarily light, constructed with rings of smooth stones, with ribs to strengthen them underneath. I have seen a stream of such rare beauty that Mr. Wilson once observed to me, he had been constantly crossing it for more than fifty years of his life, and had never been able to make up his mind which was the more beautiful, the view up the river that of a mountain torrent dashing over a rocky bed; the other, of a calm placid stream flowing quietly down to the sea,—both scenes of exquisite beauty, with which the noble old bridge is in thorough harmony. Mr. Paley, of Lancaster, & Mr. Douglas, of Chester, have each, I believe, accurate measured drawings of the bridge, which would be a great satisfaction to see engraved on your pages. I made a careful sketch of it myself more than forty years ago, but, like many other things, it has, I fear, finally disappeared. Hantsford, Nov. 20. E. W. CHRISTIAN.

AVONMOUTH DOCKS.

Sir,—In your article of last Saturday [p. 641] I refer to the slip at the Avonmouth Docks, the circumstances of which I remember perfectly well. Residing about a mile from the spot, and, being an architect, I thought I might obtain some practical knowledge of foundations by frequently visiting the works. I was one day happily observing the foundations were of concrete without piling, the River Avon being about 100 yards or less from the wall; but beneath the bottom of the foundations was below the bed of the river, I cannot say. The ground was excavated in the interior of the dock to the level of the footings and placed in the usual trains of frames and drawn out at the back of the wall where the foundations were in course of construction, and very green, so that the trains continually passing over the dock drove it down behind the new wall, acting very much like wedges; and there being no footing, resist, drove the wall out into the dock upon a damp clay. Afterwards piling was used for the foundations. The other slip occurred upon the other side, where there was formerly a stream, the course of which was shown upon an old plan in the possession of the owner of the adjoining property. Mr. P. W. S. Miles.

The truth is, the accidents happened, as the generally do, from attempting to do the work cheaply. The clay upon which the wall was built was a damp slippery clay, and, of course, the wall slipped. I asked the resident engineer why he did not put counterforts, which would have tied the long lengths in. Really science, in my opinion, has nothing to do with it. The masons did their work admirably; but all parties were too anxious to save money,—in fact, they had it not to spend: hence the result.

I principally write this letter to show how often we are left quite in ignorance of the real causes of misfortunes of this kind. The second slip was obtained by placing a toe of cement concrete to resist the projection of the wall, and you can see the cripple in the dock wall. The result of my observations was to convince me that a stone-groin roof was a more difficult job than making a dock. T. S. POPE.

DEPOSITS FOR BILLS OF QUANTITIES.

Sir,—In your issue of November 3rd appeared an advertisement asking for tenders for certain works in connexion with the Newmarket Waterworks, stating that forms of tender, specifications, bills of quantities, &c., could be obtained on payment of one guinea. We wrote for the quantities and enclosed one guinea. By the next post the specification was sent to us, with a letter stating that in the event of our tender not being accepted the sum of 1l. 1s. would not be returned, "as goes towards paying the expense of printing the specification." We objected to this, and wrote the engineers about it, who replied,—"It is now our custom to return the fee asked for for the specification, and we do not propose to do so in the future." We wrote again, saying that we had often been asked to make a specification, but in all cases these had been returned to us upon receipt of a bond or tender, and we did not understand why their custom should be different to that of other people; that we considered it quite outlay enough for builders and contractors to give their time in estimating without being mulcted for the payment of a specification, the cost of which ought, in our opinion, to be included in the quantities. This the engineers replied that they declined to make any exception in our favour with regard to the deposit. We therefore returned our papers, and did not tender, as we did not feel justified in agreeing to what we considered an unfair tax upon competitors.

We shall be glad to hear from you or some of your readers whether we were right or wrong in the course we adopted. J. L. GLASSCOCK & SON, DRYDEN STREET, LIVERPOOL.

ABILITY OF WATER COMPANIES FOR DAMAGE BY POISONED WATER.

MILNES V. MAYOR AND CORPORATION OF
HUDDERSFIELD.

This important case, upon which we commented in our last volume (p. 271), came up in the Court of Appeal last week, before the Lord Chief Justice, the Master of the Rolls, and Lord Justice Bowen. The appeal was from a judgment of Mr. Justice Mathew.

The question was whether a water company supplying water of such a nature as to take up an abnormal quantity of lead in its transit from iron mains of the company through the lead service-pipes of the consumer, and so poison the consumer, is liable to compensate him; or whether the company has performed its statutory duty in providing and keeping in its mains that which, when there taken and before sent through the lead service-pipes, is innocuous. Mr. Justice Mathew decided that the statutory obligation was to supply water which in their mains was "pure and wholesome," and he therefore held that the facts disclosed no cause of action.

The Lord Chief Justice, in dismissing the plaintiff's appeal, said that, on the consideration of the section applicable to the case, the damage was from causes for which the corporation was responsible. To say that there was a contract to deliver pure and wholesome water into service-pipes would be to alter the terms of statute.

The appeal was therefore dismissed.

STATUES.

Lord Beaconsfield.—The Beaconsfield statue, Liverpool, which will occupy a pedestal in front of St. George's Hall, will be unveiled towards the middle of next month. The statue, which has cost about 3,000*l.*, is the work of C. B. Birch, A.R.A. It is of bronze, and represents Lord Beaconsfield in his peer's robes. The pedestal on which it will be placed is of grey and red polished Aberdeen granite.

Mr. Alexander Macdonald.—The statue of the Mr. Alexander Macdonald, M.P. for Stafford, unveiled on Saturday last in front of the Engineers' Institute, Durham, by Mr. Thos. Burt, and for Morpeth. The sculptors were Messrs. Whitehead & Sons, of Westminster.

FROM SCOTLAND.

Bridge of Allan.—Several important additions have lately been made to the baths in connexion with the hydropathic establishment at Ochilree. A new hall has been erected, having a ceiling of marble mosaic, and lined with white marble, whilst steel has been employed in connexion with all the woodwork. Besides a sleeping-room, there is in the new hall a complete system of rain baths (hot and cold), shower, douche, wave, and shower, a rising and spraying, a vapour-box, and a needle bath. The greatest novelty, however, is the Russian bath, in which eight people can be accommodated at once. One peculiarity of this bath is that a jet of steam can be introduced into the atmosphere, giving a moist heat. All these are comfortable, attractive apartments, whilst a warm bath is given to them by a cupola light, 8 ft. in diameter, filled with coloured glass with a fish design, supplied by Messrs. W. & J. J. of Glasgow. The additions and alterations have been carried out from the designs of Louis Shanks, architect, Glasgow, while the building work has been under the supervision of Messrs. W. W. Christie & Co., heating engineers, Glasgow.

Edinburgh Town-hall.—The new Town-hall at Edinburgh has been opened. Hitherto the only hall in the town suitable for public meetings has been the Corn Merchants' Hall, but had long been considered inadequate for requirements, and ground belonging to the municipality being available in rear of the old hall for the erection of a more commodious building, Mr. Alex. Ross, architect, of Glasgow, was commissioned to prepare plans for a hall capable of accommodating 1,000 persons. It measures 70 ft. by 40 ft., the height is 27 ft. Round three sides of the hall a gallery has been carried, terminating at the end in a gallery seated for about 200 persons. The cost of the hall has been about

Peebles Water Supply.—Messrs. Leslie & Reid, C.E., Edinburgh, have reported on the Manor has a source of an additional supply of water for Peebles, and they state that an ample supply can be obtained from this source, and that the quality of the water is excellent. They propose making the point of intake about 900 yards above the farm of Glenrath, and they estimate the cost for a 6-in. pipe at 5,530*l.* This is exclusive of three-quarters of an acre of ground for a reservoir near the town. The estimated cost of bringing in an additional supply from the Meldons,—the source of the present supply,—was 7,360*l.*, but this does not include the price of 84 acres of land which would have to be acquired for reservoirs.

PROVINCIAL NEWS.

Bury (Lancashire).—A mortuary chapel has just been built in Brunswick Cemetery, Bury, from the plans and under the superintendence of Messrs. Maxwell, Tuke, & Hurst, architects, Southport. The same architects are also entrusted with the new infants' school and class-rooms (to accommodate over 400 scholars) at Elton, Bury, in connexion with the day and Sunday schools of the Methodist Free Church; and with some contemplated alterations and additions in connexion with the Wesleyan School Chapel, Southbank-road, Southport.

Kilpeck (Hereford).—A new rectory-house has just been completed for this benefice. The style of the building is a plain adaptation of that called after the name of Queen Anne. The walls are of brick construction, and the roofs are covered with Broseley tiles. The principal staircase is of pitch pine, and the chimney-pieces of oak, with tile linings and hearths. The architect was Mr. T. Nicholson, Diocesan Architect, Hereford, and the builder Mr. James Morgan, of Kingston, the total amount of whose contract was 1,365*l.* Kilpeck is widely known for its unique Norman church, a building of very great interest to the architect, antiquary, and ecclesiologist, the more especially as it has escaped much alteration, and has been but little mutilated at the hands of the restorer.

Birmingham.—The new theatre in Corporation-street, which has been erected by Mr. A. Melville, was opened on the 14th inst. The building, of which Mr. Ward is the architect, is described as having spacious entrances, crush-rooms, and staircases leading to the various parts of the house; "all fireproof, and so adapted that in case of panic the theatre could be emptied in a very short space of time." The stage is a very large one, being of a good depth and of unusual width. The width of the proscenium is a few inches wider than that of the Royal-Lane Theatre. The orchestra, together with the floats, has been sunk so as not to obstruct the view of the stage, and in order to allow the members of the band to pass in and out without observation. In addition to the ordinary gas-fittings, Messrs. Vaughan & Brown are applying their system of flash and pilot lighting, by means of which the whole house will be lighted at one instant. The principal light will be furnished by a large "sunlight" in the roof, but there are also many bracket lights which have been supplied by Messrs. Smith & Chamberlain. The fronts of all the tiers are decorated by Messrs. Pashley, Newton, & Young, of Red Lion-square; and the decorative plastering has been done by Mr. Jeff, of Bellbarn-road. The stage and mechanical appliances have all been designed by Mr. C. Wilson, and constructed by Mr. W. Robinson.

Warrington.—On the 8th inst. the new School of Art building at Warrington was formally opened. The structure, which is situated in Museum-street, has cost about 4,000*l.*, towards which the Mayor (Mr. John Crossfield) has subscribed 1,000*l.* The entrance-hall is 32 ft. by 15 ft.; the modelling-room, 24 ft. by 16 ft.; and the class-room, 32 ft. by 24 ft. On the first-floor is a painting-room, 32 ft. by 24 ft.; and a gallery, 32 ft. by 24 ft., for drawing from the antique. The building is heated throughout by hot water. The architect is Mr. William Owen, of Cairo-street, Warrington; and the contractors were Messrs. Southern & Son, of Salford.

Birmingham.—The new Fender, Fire-Iron, and Art Brass Works for Messrs. Walls, Bros., are now nearly completed. They are situated in

Rea-street South, opposite the Board schools. The front block is faced with red brick, and has a terra-cotta docking with inscription. The dressings are pressed, moulded, and curved brickwork. The area of the works is nearly 1,600 yards, and the style is a free adaptation of the Queen Anne. Mr. J. Bowen has been the builder and Mr. T. W. F. Newton, of 7, Waterloo-street, the architect.

CHURCH-BUILDING NEWS.

Woking.—St. John's Church, Woking, was re-opened on the 6th inst., after an enlargement which provides sittings for 230 more persons than formerly, thus making a total accommodation for 530. The work has been carried out from the designs of Mr. Thomas J. Street, architect, Guildford, and includes the addition of a tower, an organ-chamber, and other appurtenances, at an estimated total cost of about 2,000*l.* In laying the foundation for extending the nave westward, it was found necessary to arch over or remove a number of bodies. The work of enlargement has been carried out by Messrs. Putney & Son, contractors, Dorking.

Bristol.—The tender of Mr. R. J. Crocker has been accepted for additional works at St. Michael's Church, to be carried out from the plans and under the direction of Mr. Vincent W. Voisey.

Leamington.—A further enrichment to the chancel of Holy Trinity Church, Leamington, has just been made by the addition of four handsomely-carved oak canopied clergy-stalls, of Early English style of architecture, and similar in design to those already in the chancel. They were executed by Messrs. Jones & Willis, of Birmingham and London, who also supplied the whole of the other chancel fittings, and the richly-carved stone pulpit.

Catherington.—The ancient Parish Church of Catherington, Hants, has just been re-opened, after extensive reparation and partial rebuilding, as well as the addition of a new organ-chamber and vestry on the south side of the chancel. It is an interesting example of a building, principally of the Transition Norman period, accommodating by the new arrangements the same number of persons it did with the old side and west galleries. The open timber roofs, all of English oak, are practically new, only the old trusses to the nave and chancel remaining. The chancel roof is boarded to the under-side of the rafters, the original design being here, as in the other roofs, followed as far as possible. To the Hyde Chapel, however, an entirely new trussed-rafter roof has been put, replacing the old roof put up within the last seventy years. All are covered externally with local plain tiles. The west, aisle, and Hyde Chapel windows are new, replacing modern ones, those to the organ-chamber and vestry being old ones re-set. New doors, open benches, chancel seats and prayer-desks, all of substantial description, and of oak, have been provided, with new wooden floors, stone steps, and encaustic tile pavements by Godwin. There are also a new font, pulpit, altar-rail, handsome chancel screen, and ornamental south lobby, all of oak. The windows have been re-glazed with cathedral rolled and plain white glass, in ornamental lead quarries, except to the Hyde Chapel and ground-story of the tower, where painted glass by Lavers, Westlake, & Co. has been inserted. The walls have been re-rough-stuccoed internally, the flint walls re-painted externally, the ground lowered, and proper channel courses put all round. An underground stove and chamber have been carried out by Messrs. Rosser & Russell, of London, and lighting arrangements of brass, with lamps, by Mr. Gawthorpe, of Long-acre. Two interesting *tempera* paintings, of early thirteenth-century character, have been discovered, also the head of the old churchyard cross and some sepulchral slabs with floriated crosses. The architect was Mr. B. Edmund Ferrey, F.S.A., the clerk of works, Mr. F. W. Mansel. Mr. John Edney, of Horndean, was the builder.

Dallington.—The parish church of St. Mary's, at Dallington, in Northamptonshire, having had its chancel restored from the designs of Mr. Edmund Law, architect, of Northampton, was re-opened on the 7th inst. In front of the new reredos is a handsome cross in polished Devon and foreign marbles. This is by Mr. Harry Hems, of Exeter. The general contractors were Messrs. E. Roberts & Son, builders, Weedon.

Cheriton Fitzpaine, Devon.—The fine fifteenth-century parish church here has recently undergone some external restoration. It is planned with a nave and chancel, north and south aisles, western tower, and south porch, with parvise over. The nave and north aisle roofs have been stripped and re-covered with slate, and the south aisle and parvise roofs have been re-covered with sheet lead. The original oak timbers have been carefully renewed, most of them being found quite rotten when opened out. The parapet and embattlements towards the south had become very shaky, and these have been rebuilt upon the original lines, the embattlements being worked in Beer stone. The whole of the work has been done at the cost of the Rector, the Rev. W. H. Arundel, M.A., by Messrs. Smale & Hooper, from the drawings and under the supervision of Mr. James Crocker, of Exeter. It is intended to shortly continue the restoration in the way of reseating the whole of the church, laying tile floors, and making other improvements.

Debenham.—A meeting has just been held at Debenham, Suffolk, Lord Heniker in the chair, to consider the desirability of restoring the fine Perpendicular Parish Church of St. Mary. Mr. Herbert J. Green, of Norwich, read a report, in which he estimated the cost of restoration at 2,000l. The report was adopted, and a building committee appointed, with instructions to carry out the work in sections as funds permitted.

Coddanham.—A new font has just been put into Coddanham Parish Church, Suffolk, in place of a wretched construction of brick and plaster used for a century past. The new one is octagonal in form, and is of Ancaster stone. The panels contain emblems of the Passion and Trinity. The base is of Mansfield stone. Mr. Herbert J. Green, of Norwich, was the architect, and the work has been executed by Mr. E. Parmenter, of Baintree.

ROMAN CATHOLIC CHURCH-BUILDING NEWS.

Feilding (New Zealand).—A New Zealand paper just to hand gives a description of a new Roman Catholic Church which is about to be built at Feilding, County Manawatu. The building is to be Gothic in style and cruciform on plan, with a nave 40 ft. by 26 ft. The sanctuary or chancel is 16 ft. by 14 ft. 8 in., raised by one step from the floor, and at the end is the high altar, on an elevated platform approached by three steps, and under a handsome three-light lancet window. The two transepts are to be used as sacristy and library respectively, both being approached from the church, and also from without. The building is 42 ft. in width. The main front presents a gable 32 ft. in height. Over the principal door is a rose-window 5 ft. 6 in. in diameter. The body of the church will seat 150 persons, and a gallery approached by stairs from the nave will seat forty more. Mr. E. H. Wright is the architect.

STAINED GLASS.

Swillington Church (Yorks).—Two stained-glass chancel windows, one on each side of the east window, have just been erected in this ancient church. They are the result of a parishioners' subscription in memory of their late rector, the Ven. Thomas Dealtry, M.A., formerly Archdeacon of Madras. By desire, subjects were excluded from the illustrations, instead of which they are elaborately and richly ornamented in the late fourteenth-century Decorated style. The windows are from the studio of Messrs. Powell Bros., of Leeds.

Andover.—The three-light east window of St. Mary's Church, Andover, has just been filled with Munich stained glass, by Messrs. Mayer & Co. The subject represented is the Faith of the Centurion (Matthew viii. 10). It is a memorial to Lieut.-Col. John Poore, Royal Marine Artillery, the inscription being engraved on a handsome brass fixed below.

Dundee.—The large three-light south window in St. John's Church, Dundee, has been filled with stained glass, containing a figure of St. John in the centre light, with the Burning Bush represented in a panel above, and the figures of St. Paul and St. Peter in the side lights, with medallions, borders, &c. The two small side windows have been glazed with ornamental glass, designed and executed by Messrs. F. Holt & Co., Warwick.

Leamington.—The north window of the side chapel of All Saints' Church, Leamington, has recently been filled with glass representing the following subjects:—Feeding the Hungered, and Thirsty Pilgrims. The canopies and tracery are arranged to correspond in design and colour. The work has been executed by Messrs. Holt & Co., of Warwick.

Launceston.—The new "font window" in the Church of St. Mary Magdalene, Launceston, has been dedicated. It is the work of Messrs. Lavers & Co., of London, from a design by the late Mr. Edmund Stedding.

Books.

Revue Générale de l'Architecture. Edited by M. CÉSAR DALY. (Nos. 7 to 12.) Paris: Ducher et Cie., Paris.

THIS admirable Review has reached the forty-fourth year of publication, and has been, if we are rightly informed, conducted from its commencement by the present editor. It is doubtful whether any other periodical can claim to have been founded and conducted continuously and so long by one mind. It is certain that none have been more ably edited; and in this respect there is no sign of falling off. It has often been our grateful task to comment on the work, and almost always with unqualified approval. The French are, above all things, journalists, and the pages of this *Revue* are no exception to the high quality of French journalism,—it is uniformly brilliant, and the driest subjects are brightened into interest by the skilful treatment of the writers. A series of articles, entitled "Walks through Paris," are specially readable and full of suggestion, and it is gratifying to our self-esteem to find that English architects and English architecture are frequently adverted to in appreciative and even complimentary terms. An article on French balconies *versus* English bow-windows exhibits the superior advantages of the latter, which are, in fact, covered balconies, and enlarge the area of the room. The French balcony is too often dirty, untidy, and useless. Illustrations are given of the application of bow-windows and of other expedients for securing oblique views from the dwelling-rooms, which would be lost on the French system. The numbers are, like the preceding, profusely illustrated with steel engravings of the traditional description, excellent of their kind, and the text is interspersed with woodcuts, which are poor. On the whole it must be admitted that the French periodical is not in advance of our English journals in this respect; and of the architecture with which it is concerned, we may say that, though possessing, perhaps, more refinement than our own, it is by no means so various, so vigorous, or so picturesque; nor is it, as ours is, distinctly progressive.

Sanitary Work in the Smaller Towns and in Villages. By CHAS. SLAGG, A.M.I.O.E. London: Crosby Lockwood & Co.

WHAT is a Reviewer to do who finds himself to be in entire agreement with his author? He may in one sentence endorse all that the writer says, and simply recommend the book for universal acceptance, or he may give a sort of extended schedule of its contents and approve of each subject in turn. This difficulty has been brought home to us by a perusal of Mr. Slagg's "Sanitary Work." We have, in the course of our duty, read it with critical intent, and we find nothing but good in it. It contains all that such a treatise can be expected to contain, and appears to us sound and trustworthy in every particular. We have had a not inconsiderable personal acquaintance with most of the subjects treated of, and our experience is curiously identical with that of the author. On only one point have we any hesitation in agreeing with him, and that is with his statement that amongst the poorest people there is found a willingness to be cleanly.

Mr. Slagg's experience may not have extended to the great towns,—if it has, we think his statement requires qualification. Our own belief is that the poorest people in great cities are utterly indifferent to sanitation in any form, and this view receives striking confirmation in the contributions on the subject by Mr. Geo. B. Sims, who has given much personal time and trouble to the very poor and their ways. The book under notice has the rare merit of presenting a subject which

has by this time been worn threadbare in a new and attractive light. The literary treatment is refreshingly original. Dispensing with the customary wordy preamble, and a string of cloying truisms about the value of pure air and water, the necessity of perfect sanitary conditions, and the dangers of their opposites, the author begins abruptly with a chapter on the Pig and his Sty, defunding that much-calumniated animal from the aspersions showered upon his character, and showing that he is, uncleanly, not from nature, but from enforced habit. From pig-styes to slaughter-houses, and thence to privies and cesspools, the transition is easy and natural, and upon all these subjects sound advice and wise counsel are given. Bad air, dirty houses, damp houses, the storage of rain-water, and the contamination of water, are successively discussed, clearly and comprehensively, and in terms which are open to question. The chapters on house drains and sewers embody the latest views of the most eminent sanitarians, and it is noteworthy that in the essentials of this comparatively new science the professors are all agreed. The conflicts of theory which perplex the professors of other sciences, and discount their teaching, are practically non-existent in this science of primary importance. One subject,—the relation of soil and altitude to pulmonary diseases, which is discussed on the basis of Dr. Whitaker and Dr. Buchanan's reports,—is of paramount interest, and is given by our author in a condensed and telling form.

Every house-owner, and, we might add, these days when tenants often have to undertake works which should properly devolve upon their landlords, every house-occupier, should acquaint himself with the proper method of laying drain-pipes as described in this book. Professional advice is not always taken, and should be in these small but important matters, and in its absence the observance of the instructions which this little work contains may save not only money but lives. In addition a copious alphabetical index which is appended to the work there is an excellent glossary, happy idea, well carried out,—giving the composition of concrete, the various proportions of sand and cement used, with their relative strengths and times of setting, and much useful information. The terseness of the author's style is beyond all praise, and could call from his piquant pages a hundred aphorisms, such as, *ad hoc*, of cesspools, "the whole subject may be reduced to this principle, viz., keep out water and let in air"; or this, "Bad air is aerial sewage, and can safely breathe by oxidation before we can safely breathe it"; which we should like to see printed and hung up in every dwelling in the kingdom. Messrs. Crosby Lockwood & Co. never printed a more trustworthy or useful treatise than Mr. Slagg's "Sanitary Work in the Smaller Towns and Villages."

A Thousand Years of the Church of Chester Street. By the Rev. CANON BLUNT, D.D. London: Wells, Gardner, & Co.

WE confess to a liking for books which do demand a too close and continuous attention, and into which one can "dip" in a way, with the certainty of bringing up something interesting, entertaining, and, possibly, instructive. This taste of ours is, we know, universally reprobated by purists, and not meets with such a unanimity of condemnation as what is called desultory reading. Surely the most virtuously hard reader should be allowed some intervals of recreation, and recreation is, to us, so delightful as the skinning of good things from the pages of a pleasant gossiping book. In the little work now before us Canon Blunt has brought together in an inconsequent, scrappy way,—which is an agreeable surprise to us after the somewhat startling title he has adopted,—a crowd of odds and ends concerning the Parish of Chester-Street in its Church. He does not tell us that Chester-Street is a few miles from Durham. This learn incidentally from page 191, nor does he indicate its area, population, and manufacturing industries. He gives us neither map nor index. Why should he? The book is dedicated to parishioners, who want no map to tell them where Chester-Street is. To them it is the centre of the universe, nor is any short cut to the contents in the form of an index wanted by people of their abundant leisure. What a lot of innocent recreation might be provided for every rural clergyman would employ

earned leisure in searching old registers, inquiring into old customs, superstitions, nomenclature, and jot them down for the satisfaction of a pertinent curiosity such as ours! After him would come at some time or other the poring antiquary, who would compare, collate, and collate, and bring the mass into practical shape, equally learned, valuable, and dull.

This book begins with A.D. 217, and starts in the orthodox style, but a single page lands us, thankfully in 883,—very fair historical travelling,—and a single short chapter brings the history proper down to our own day. Even this is relieved by a digression concerning an old drain, which local researches have brought to light. "Its sides were of brick, the floor and roof of stone slabs, the height about 2 ft. and the width the same. It was discovered just under the surface of the Deanery field; 100 ft. of it was examined, but its purpose and age remain still a mystery." We can imagine the speculation to which this old drain has given rise, and we congratulate the author folk on the insoluble nature of the mystery in which it is shrouded, and which will afford wholesome gentle mental exercise to generations yet unborn.

The good things of the book, however, begin with the extracts from the parish records, which are real history, self-written, so to speak, and much more to our mind than the oft-told tales about Alfred and Athelstane and company. We can realise from the old entries the obstinate resistance of the outlying chapels to calls for contributions in money towards the maintenance and repair of the mother church,—obduracy for which the inhabitants were cited and rated,—in a double sense, no doubt,—and this so early as 1312. Even in the ages of faith men required a little gentle pressure to make them part with their money, and the present century we are relieved to find not singular in that respect.

We learn that in 1607 the ministers and churchwardens themselves collected the fines from Roman Catholic recusants, and that the law confined such to their houses and within a limit of a five-mile radius therefrom. Stout Mr. John Claxton would not conform, nor follow his religion, and he paid his fines and remained at home, and thus satisfied both his conscience and the law.

Attached to the Parish Church is (or was?) "an anchorage," i.e., a cell in which an anchorite dwelt. It consisted of four rooms (luxurious cell), two on the ground floor and two above, and it was built against the north wall of the tower, with a squint from one of the upper rooms which commanded a view of the south side altar,—a comfortable "cell," all things considered. At the Reformation it was converted into almshouses for poor widows. These houses paid rent up till 1819, when the curate, failing to obtain payment, turned out the widows. They regained possession, however, and "with three men to protect them" (jolly fellows they), and a "barr to the inner doore," they held out successfully against the curate's rage. For peace and quietness sake, the vestry agreed to pay the curate his rent; and the point about which all this fuss was made was per annum!

The orthography of the old records whence Mr. Blunt has gathered his facts is charming. We can sufficiently admire the boldness and originality of the scribe who writes Sexton as "Seggerstone," or his yoke-fellow who in an exocentric such a rendering of a bishop as:

a. d.

and when the Boshopp came through the town whom? For what? Not the "Boshopp" himself for deigning to come through the town? History is silent.

Here is an entry which shows a fine disinclination.

To the Clarke, his whole year's wages for washing the surplices, and for finding grease for the bells and payment to the clock

2. 8

Another entry runs:—An archbishop, being a stranger

0. 9

What a wide field of conjecture this simple record provides us. Ninespence to a stranger bishop!

Here, again, is a suggestive item:—the churchwardens for meeting together and setting of things right among themselves

2. 0

We hear something of this sort of meeting nowadays. Some modern customs are not new. The assumed hardihood of our ancestors is not borne out by the following:—

For a seate in a convenient place for brydgrumes, bryds, and sike wywes to sitin

2. 6

Why should "brydgrumes" have a seat at the cost of the parish? The "bryds" might faint, and a seat for "sike wywes" no one would grudge; but surely "brydgrumes" might be expected to keep their legs.

"To a poore woman that had two twynes" 6d. is allotted to help her along, while the astounding sum of 116s. 8d. is paid to a bookseller for binding a Bible, with an extra 2s. 6d. for a button and string, &c.

We have arrived at the days of Parson Adams and pottles of sack for the preacher figure frequently in the records. In 1781, an entry of 11s. appears for "a umbrella" for the parson, which the extravagant man had worn out by 1793, and the "p—ish," as the jolly scribe writes it, bought another at a cost of 16s. A distressed seaman is given 1s., while a distressed captain, whose relative rank would have warranted a larger dole, is sent away with 6d. "The joyner of Bransworth" is paid 4s. 2d. for "yewing" the font cover; and so on. The dark side of life is not unrecorded, and we meet with such items as "burring a poor woman, a stranger, and her sheets, 4s. 6d." or "To a poor man who lost his wife, three children, and nine servants by fire, 1s. 6d." The bell-ringers are in request all the year round for weddings and funerals, for Nelson's victory and the Queen's burial; and their impartial services are rewarded at the uniform rate of 10s. for each performance.

The last item on the list is the architect's commission in 1862 for the restoration of the church. We are sorry to say the Canon drops into narrative again at the close of the book. He might have spared us the reports, *literatim et verbatim*, of the wills of pious parishioners who had left bequests to the poor, and the not very remarkably excellent speeches spoken at the millenary festival.

The illustrations show a somewhat ordinary church, with a tower having an octagonal belfry stage and a lofty tapering spire. No plan is given, nor even of the one distinctive feature, the "anchorage." There is an interior view "of the church before the alterations" from which it would appear that scarcely any alterations could have been needed, and there are some representations of ancient crosses and other curiosities discovered in the neighbourhood. We miss a drawing of the old drain.

The work concludes with a list of "Boshoppes" before the see was transferred to Durham,—of deans, rectors, curates, &c.,—and a sermon by the present Bishop of Durham.

It is on the whole a curious literary achievement; but we are grateful for it, and could perhaps better spare a better book.

VARIORUM.

Mr. W. DE GRAY BIERCH will contribute a set of articles on "Ancient English Seals" to the next volume of the *Antiquary*.—"E. V. B.," the author of "Child's Play," is about to publish, through Mr. Elliot Stock, a new work, entitled "Days and Hours in a Garden." It will be on the lines of Alphonso Karr's "A Tour Round my Garden," and will be illustrated by the author.—The December number of the *Antiquarian Magazine* will contain an engraving of the ring of epousal presented by Catherine von Bora to the great Reformer, Martin Luther.

Miscellaneous.

British Museum Lectures.—We are compelled to defer till next week a report of the substance of Mr. Hodggett's lectures already delivered in the Anglo-Saxon-room (see page 650 ante); next week we hope to find space for a résumé of the first three lectures, dealing with ancient Anglo-Saxon weapons.

"New Model Lodging Buildings, Lambeth."—In a paragraph under this heading in our last (p. 668, ante) it should have been stated that these were erected from the designs and under the superintendence of Mr. E. R. Hewitt.

The Croydon General Hospital.—The memorial-stone of the new north wing of the Croydon General Hospital was laid on the 13th inst. by H.R.H. the Duke of Edinburgh. In 1873 the hospital committee purchased a private mansion, the large and lofty rooms of which were easily converted into excellent wards, but the kitchen and offices, the operating ward, house surgeon's rooms, out-patients' department and dispensary, and other important administrative arrangements of a hospital were crowded into a range of out-houses and stables. The medical staff having pressed for the complete alteration of this portion, the governors in June last invited plans from three architects, and selected those by Mr. Charles Henman, of Croydon, and 64, Cannon-street, London, the estimated cost being about 5,000l. The committee then determined to purchase the adjoining land, and this necessitated some slight modification in the designs. Tenders were obtained, and the lowest, by Messrs. J. Smith & Sons, of South Norwood, amounting to 5,210l. was accepted, and a contract entered into. The whole of the foundations are now in, and the brickwork is up to an average height of about 8 ft. above the ground level. The new building is on the north side of the main buildings (supplanting the old out-houses above referred to), connected therewith by well-lighted and ventilated corridors 7 ft. wide. The ground-story is devoted to the out-patients' department, receiving-ward, house porter's sitting and bed-room, nurses' day-room, strong room, matron's store, kitchen, scullery, pantry, larder, servants' hall, wash-house, laundry, &c. On the first-floor level over the out-patients' department are three wards for ten beds, in all having cubical contents equal to 1,500 ft. per bed, an operating-ward, with top and side lights facing north, and splint stores, instrument-room, &c. Over the receiving-ward, &c., are patients' day-room, bath-room, house surgeon's rooms, patients' clothes-room, and rooms for bedding and linen. Above these last are ten rooms for nurses and servants. Water-closets, lavatories, &c., are provided to each ward in T-shaped buildings placed angle-wise. A stone staircase (with treads and well-holes each 4 ft. 6 in. wide) gives access to all floors. There is also a service staircase of stone. The exterior is plain in design, in harmony with the old building; the materials used are picked stock brick facings with malm brick out and rubbed arches and Portland stone dressings. The corridors are fire-proof, and the wards are to be laid with oak flooring.

Well Water and Enteric Fever.—Dr. Paley, in his annual report to the Peterborough Urban Sanitary Authority for 1882, gives some account of an outbreak of enteric fever, from which we learn that well-water has not been finally abandoned in the borough, and the consequence has been that the use of one well, apparently as popular a one as were the London wells in the cholera days, has been associated with the outbreak. A number of well-water samples have been found on analysis to be contaminated; others are recorded as good or pure, which doubtless means that the actual samples did not happen to have received anything from the surrounding soil which made them chemically unfit for use. The fatality of relying upon negative evidence afforded by such analyses has been so strikingly shown in the last report of the medical officer of the Local Government Board that we trust the Sanitary Authority will, as regards the action they will take, have regard not so much to the chemical results obtained, as to the source from which the water is derived, namely, a soil on which a large population lives, and which is traversed here and there by sewers and drains.—*The Lancet*.

The London Building Trades' Protection Association.—This is an association of merchants and manufacturers supplying goods to those connected with the building trade, and of builders, engineers, and contractors, managed by a committee of the trade. Its objects are to ascertain the trade status of builders, so that merchants may not open accounts with persons whom it would be unsafe to trust, and to investigate insolvent estates, and see that no fictitious claims are made. In short, it seeks to perform the usual work of a trade protection society, but is limited to the building trades. A general meeting of the members was held on the 15th inst. at the offices, 40, Watling-street, when Mr. James Livingston, of Gracechurch-street, was elected president.

Death of Sir William Siemens.—Sir William Siemens died on Monday night at his residence, Palace Houses, Baywater. On the 5th inst., when walking home from the Royal Institution, he fell in Hamilton-place, and when he reached home he experienced considerable pain. It was found that his heart had been injured, and complete rest was prescribed by his physician. On Monday his condition became worse, and he rapidly sank. Charles William Siemens was born in Lenthe, in Hanover, on April 4, 1823. In 1842 he entered the engine-works of Count Stolberg, and in the following year visited England for the purpose of introducing a method of gilding and silvering by galvanic deposit. In 1844 Mr. Siemens again came to England to patent an invention of a differential governor for steam engines, the work of his brother and himself, and then permanently took up his residence in this country. A number of other inventions were patented by him, including his water-meter, which he introduced in 1851. Between 1856 and 1861, Mr. Siemens, in conjunction with his brother Frederick, constructed the regenerative gas-furnace, and in 1867 he manufactured steel on the open hearth of this furnace, making a great advance in the method of production. In the following year he originated the Landore Siemens Steel Works, from which immense quantities of cast steel have been turned out. From an early period Dr. Siemens interested himself in telegraph engineering, and from the works which he established in conjunction with his brother, telegraph lines have been shipped to various parts of the world, the most important being the Direct United States cable. More recently Dr. Siemens took a great interest in electric lighting. He was elected a Fellow of the Royal Society in 1862, and in later years became a member of many of the learned and scientific societies. The degree of D.C.L. was conferred upon him by the University of Oxford in 1869, and recently he received the honour of Knighthood. The opening meeting of the Society of Arts, which was to have been held on Wednesday evening was postponed, Sir William Siemens being the chairman of the Council.

The Transmission of Power.—In a prize essay by Herr Beringer on the transmission of power for long distances, it is stated that electric and wire-rope transmissions (the latter up to a length of about two-thirds of a mile) are the best. Above that distance, electricity is to be preferred. The power of an hydraulic motor may be transmitted to distances above twelve miles without becoming more expensive than steam-power generated on the spot. For electrical transmission another six miles may be added to the distance, so that in a locality where cheap water-power exists machines may be actuated by electricity with advantage within a circumference of eighteen miles. Beyond that distance, however, steam motors are more economical. If there is no water-power, and the erection of a central steam engine becomes necessary, a wire-rope system works with greater advantage, and is only to be rejected in towns because in such cases wire-rope traction loses greatly by the necessary branching off. As a matter of fact, the wire-rope system is only profitable for small concerns. The erection of a separate motor becomes cheaper where energy of 10 horse-power and above is required. Water and air are far exceeded by electricity for transmission of power; and if motive power is to be transmitted from a central steam motor up to six miles, this can be done economically only by electricity.—*Iron.*

Electric Light in Dyeworks.—In winter months matching colours in cloth and paper with artificial light becomes difficult, and almost impossible. Messrs. Deakin, of Belmont, have therefore adapted the Swan incandescent light in their works, and it has proved all that could be desired. The lamps are used at their full power (20 c.p.), and it is now possible to work as long as required. The full number of lamps in use is 76, the current being supplied by two Lumsley dynamos. Safety plugs to melt with 20 per cent. extra current are used in every circuit. The power is supplied by the engine in use at the works, and, as it is compelled to go at one uniform speed, resistances are inserted, and can be switched on in place of any number of lamps that may not be wanted. The installation has been carried out by Mr. W. Banks, of Bolton.

Working Hours on Railways.—One of the members of a deputation representing the engine and train men on the Taff Vale Railway, which waited on the directors of the Company at their fortnightly meeting on the 7th inst. in reference to a request for shortened hours and the payment of overtime, stated that on the Thursday of the preceding week he commenced work at 3.30 a.m., and did not go off duty until 2.30 on the following morning. He resumed work at 11.30 a.m. on Friday, and ceased at 9.20 on Saturday morning, thus working for twenty-three and twenty-two hours on Thursday and Friday respectively; his total period of service during the week was eighty-nine hours and a half. This case is stated not to be an exception to the general rule, all the engine-men and train-men having to devote about the same amount of time to the service of the Company. The chairman said that the directors were anxious to reduce the hours of labour, but gave no distinct promise as to when the desired change would be effected. The occurrence of a serious accident on their line would probably quicken the perception of the directors as to the necessity of a speedy alteration of their policy in this matter.—*The Lancet.*

The New Jerusalem Church (Swedenborgian), the Mall, Notting-hill-gate, was recently reopened, after being re-decorated in colour inside. The church, which is of the Palladian type, with galleries supported on iron columns, presents considerable difficulties for artistic decoration, so as to get a rich effect without adopting a style unsuited to a place of worship. To attain this object tertiary colours have been mostly employed. The ceiling is covered with a geometrical pattern in light blue-grey on a cream ground. A broad border in colour has been carried round the central sunlight, and also around the border of the ceiling. The walls are a blue-green grey, with a dado of deep chocolate red; delicate ornamental borders being carried round the memorial tablets, windows, and doors. The most important decoration at this end of the church is a painting of the "Last Supper" by Mr. Yeames, R.A., with side decorative panels of wheat and grapes by Mr. D. W. Wynfield. The decorative work has been carried out under the superintendence of Mr. Alexander Payne, architect, by whom the preliminary designs were made. The work was executed by Messrs. Dobie & Son.

Suggested Railway under the Parks.—The Metropolitan Railway Company propose to construct a line of railway from their Edgware-road Station to Westminster. The projected railway is to pass beneath Hyde Park, Green Park, and St. James's Park, and the promoters offer to effect important street improvements in Parliament-street and its vicinity in return for being allowed a right of way through the parks. The Government favour the project, subject to some very stringent conditions, one of which is that no ventilating shafts whatever are to be allowed in the parks. We are glad to find that the parks are not to be disfigured, but the question of ventilation will have to be faced in some way, if the proposed line is to be worked by steam locomotives. The projected line may be accepted as an instalment of improved railway communication, but a much more useful line would be one from Westminster and Charing-cross to Euston. Such a line has been projected more than once.

The Projected International Forestry Exhibition.—It is stated that the sum promised towards the guarantee fund of this Exhibition, which is to be held in Edinburgh next year, now amounts to more than 5,000*l.* The Executive Committee have received an offer of valuable duplicate specimens of colonial woods from the Royal Gardens at Kew, which will remain at the disposal of the committee after the close of the exhibition. Thus far the support rendered to the committee gives promise of a most interesting and instructive exhibition. As soon as the question of the site is fairly settled, the committee will, it is understood, proceed with the preparation of plans for the erection of the exhibition buildings.

Electric Lighting for Hotels.—The Edison and Swan United Electric Light Company are going to light the Great Hall and Pillar Hall in Cannon-street Hotel, which belongs to the South-Eastern Railway Company. Two hundred incandescent lamps will be used. The current will be supplied by an Edison K dynamo, which will be driven by an engine supplied by Marshall & Son, of Gainsborough.—*The Electrician.*

The Ottawa Canal Scheme.—The Ottawa Canal project has been revived by a number of merchants and others interested in the grain regions of Lakes Michigan, Superior, and Huron. We hear that a syndicate formed in London for the purpose has taken the matter up, and sent a representative to sound the Canadian Government on the subject. It will be remembered that surveys of the proposed route from the Georgian Bay to the St. Lawrence were made at the instance of the Government of Canada by Mr. T. C. Clark, C.E., and Mr. Walter M. Shanley nearly forty years ago. The result of these surveys was to show that the project was a practicable one, and easily carried out. It was proposed that the French river, the outlet of Lake Nipissing, should, by a series of dams and locks, be made navigable. A canal was to be cut between the latter through a low ridge which separates it from the Montreal river, a tributary of the Ottawa river. The long, narrow, and deep reaches of the latter, separated by rapids were, it was proposed, to be connected by a series of canals, in all about twenty-four miles long. It was also proposed, to make these canals deep enough for sea-going vessels, so that vessels loading at Chicago on other lake ports might reach Liverpool without breaking bulk. Liverpool, it was stated at this time as an argument in its favour, was 900 miles nearer Chicago via the Ottawa and St. Lawrence than by Quebec. Should the intention of the revivers of this scheme be to make a similar provision for sea-going vessels from the upper lakes, it will involve the deepening of the Lachine Canal, which has now a depth of only 10 ft. on its sills. Should this system of Ottawa canals be carried out, while it would benefit the grain-growing countries bordering on the upper lakes, it would seriously affect the Grand Trunk and other Western Railways, and will no doubt be strongly opposed by them.—*Iron.*

The Proposed Lancashire Plateway.—At the thirteenth meeting of the Session of the Liverpool Engineering Society, held on the 7th inst. at the Royal Institution, Colquhoun-street, Mr. H. Bramall, President, in the chair, a paper entitled "The Proposed Lancashire Plateway" was read by Mr. A. Holt, M. Inst. C.E. The author explained that the project, which was present in embryo, sought to meet the necessities of cheaper conveyance of heavy goods by land than was afforded by the railways. An analysis of the present carriers' rates showed that nearly half the whole were for other services than the carriage, and which were not asked for by the traders, broadly known by the name "terminal," and mainly consisting of loading and discharging, and station expenses. This led him to endeavor to devise a system which would avoid these. This was evidently attained by the plateway, the underlying principle of which was that the same vehicle would be suitable for being drawn on ordinary roads or along metals. Thus all unloading and re-loading were avoided, and the stations were reduced to mere open yards for coupling lorries into trains. The steam traction, when on the metals, would be done by ordinary locomotives arranged with small wheels for slow draught, say ten miles an hour. Another leading distinctive feature of the plateway is that though the speed would be slow the delivery would be quick, owing to no delay being necessary to keep the line free for passenger trains, the conveyance of goods alone being contemplated. [Source further particulars of the project appeared in the Builder a year ago. See vol. xliii, p. 604.]

Building Societies.—A return relating to building societies in England has been issued. It shows that there are 1,697 societies in existence, with a membership of 493,271; the total receipts during the last financial year amounting to 20,919,473*l.* There were 1,528 societies making a return of liabilities, which were, to the holders of shares 23,351,611*l.*, and to depositors 16,351,611*l.* There was a balance of unappropriated profit to the extent of 1,567,942*l.* The assets came to 44,587,718*l.* In Scotland there were 3,386 members of building societies. The receipts were 413,609*l.*; the liabilities to holders of shares amounting to 674,990*l.*; to depositors and other creditors, 268,511*l.* The assets consisted of balance due on mortgage securities, 997,997*l.*; and amount invested on other securities and cash, 67,618*l.* In Ireland there were 9,714 members of building societies. The receipts were 778,899*l.*; liabilities to holders of shares, 684,396*l.*; to depositors and others, 432,056*l.* The assets included balance due on mortgage securities, 1,051,429*l.*; a amount invested in other securities, 79,802*l.*

The Institution of Civil Engineers.—At the opening meeting of the session on the 13th of November, Mr. Brunless, president, in the chair, Mr. G. B. Bruce, vice-president, gave an account of his recent visit to the United States of America as the representative of the Institution, on the occasion of the opening of the through line of the Northern Pacific Railroad. Among other things noted, Mr. Bruce said he was struck with the much greater use made of the electric light in America than in England. In many little cities in the prairies a high pole in the middle of the town with a light on it illuminated the whole place. He very much admired the steamboat accommodation in the United States, and remarked that the arrangements for landing in Liverpool, in a steam-rig without even a covering to keep off the rain, contrasted most unfavourably with it, and were a disgrace to our country and to the companies which perpetuated them. While at Chicago Mr. Bruce went to see the new works of the Pullman Car Company. There was now there a town of 7,000 inhabitants, where three years ago there was nothing but an unoccupied stretch of country. The chief feature was in the surroundings of the works; everything had been done for the welfare and comfort of the workmen, and the whole had been a great financial as well as moral success.

Fellow-workers.—An interesting ceremony took place at the new Infirmary Building, Harrow-road, on Saturday, the 10th inst., that day being the fiftieth anniversary of the birthday of Mr. Henry Charlton, the energetic manager to the contractors, Messrs. B. N. Smith & Son. The workmen, at the conclusion of the day, having sent for Mr. Charlton, presented him with a splendid gold watch and diamond ring, subscribed for by them. Mr. Brede, one of the foremen, read a suitable address, which explained the motives of the subscribers in making the presentation, assuring their manager of the regard and esteem in which he is held by all connected with him, and congratulating him upon the high position the firm held, which is largely attributed to his energy and ability as manager. Mr. Charlton replied, thanking the men for the substantial evidence of the good feeling existing between them, concluding with a few healthy words of advice on the importance of all working together, and hoping that he present state of affairs might continue so long as they were associated with each other. The amount subscribed exceeded 50l.

The Kilburn Town-hall.—On the 13th inst., the Kilburn Town-hall and Assembly Rooms were offered for sale at the Auction Mart, by Messrs. Venton, Bull, & Co. The building, which is three stories in height, was described as freehold, and erected a few years ago. It covers an area of 4,500 ft., the ground-floor containing a concert-room and theatre, provision being made, as part of the architect's original design, for the addition of two tiers of balconies. On his floor there are refreshment and committee rooms. The property was offered subject to all matters booked up to the date of the completion of the purchase. It was stated that ever since the erection of the building it had been constantly let for meetings and entertainments. The biddings commenced with an offer of 4,000l. for the property, and 6,400l. being the highest bid, the building was withdrawn at 6,900l.

The Glasgow Art Club has just opened its exhibition in Messrs. Annan's galleries, and those who have seen the collection of pictures now brought together speak of it as an improvement on its predecessors. Of course, says one critic, poor work prevails, and a good deal of canvas had better been left in the painting-room. But the same can be said of every exhibition; and exhibitors are, no doubt, aware of the saying of an astute authority, "That there is no difficulty in selling bad pictures in Glasgow." A stranger entering the room might be pardoned if he suspected that a number of second-rate French painters had suddenly been selected into the club. This impression is unfortunate, and due to a fashion that is being exploded.

Surveyorship, High Wycombe.—At a special meeting of the High Wycombe Town Council, held on the 7th inst., Mr. W. U. Organ, engineer, High Wycombe, was appointed surveyor, sanitary inspector, and rate collector for the borough. The other selected candidates, of fourteen who had made application, were Mr. N. H. Dawson, Reading, Mr. H. Malcomson, Berkeley-on-Thames, and Mr. W. A. Lloyd, St. Neve's-on-Sea.

Romford Congregational Church.—This church, which was destroyed by fire last Easter Sunday, from the too-common cause over-heating of the furnace, was reopened on the 15th inst. So complete was the destruction that nothing but the bare walls, which are built of Kentish rag, was left. These, however, were so substantially built that they withstood their fiery trial, and, beyond making good the tracery and Bath-stone dressings, but little was required to reinstate these. Advantage has, however, been taken in the re-building to make such alterations to the structure as seemed desirable. The space occupied by a class-room in the rear has been taken into the church, forming a spacious organ-chamber behind the pulpit, and stalls have been provided for the accommodation of the choir. The principal addition is the heightening of the tower and the substitution of a stone spire for the original slated one. This alteration has greatly improved the elevation of the building. The work has been carried out under the superintendence of Mr. E. C. Allan, of Romford, the architect of the original building; and the work has been done by Messrs. Staines & Son, of Great Eastern-street, who also were the original builders.

Competition.—At the meeting of the Milton-next-Gravesend School Board, on Tuesday last, nine gentlemen sent in applications in answer to advertisements for the appointment of architect for the proposed new schools at Milton. They were F. Edwards, Perry-street and London; E. J. Bennett, Gravesend; P. C. Allan, Romford; W. T. Gostling, Walbrook; G. R. Cobham, Gravesend; W. Gould, Gravesend; Charles Bell, London; Parr (Strong & Parr), Gravesend; and A. J. Baker, Overcliffe. A ballot was taken, which reduced the names to Messrs. Gould, Gostling, and Bell, and it was decided to invite these gentlemen to send in competitive designs before the next Board day, premiums of 20l. and 15l. to be awarded to the second and third in merit.

Chatham.—The foundation-stone of the somewhat extensive schools for St. Paul's Parish, at Chatham, was laid on Tuesday last by Admiral Watson. Mr. R. Willey, of 66, Ludgate-hill, is the architect.

TENDERS.

For the erection of four houses and shops at Bristol for Mr. F. C. Fisher. Mr. Thomas Nicholson, architect. Quantities by Mr. B. W. Pope:—

E. Walters	£3,300 0 0
Stephens & Bawter	3,325 0 0
W. E. Walters & Son	3,250 0 0
A. Saxe	3,215 0 0
R. Wilkins & Son	3,200 0 0
W. Church	2,988 0 0
E. J. Hatherley	2,987 0 0
C. Chorney & Son	2,985 0 0
T. R. Lewis	2,984 0 0
W. Cowlin & Son	2,963 0 0
G. H. Hinchey	2,945 0 0
J. J. Belmont	2,912 0 0
H. A. Horse	2,900 0 0
F. Williams	2,897 0 0
J. E. Davies	2,885 0 0
R. F. Ridd (accepted)	2,835 0 0

For forming new road, footpaths, and sewers, on the South Wimbledon Estate, for the directors of the Birbeck Freehold Land Society. Mr. S. B. Grosvenor, surveyor:—

Pound	£610 0 0
-------	----------

For the continuation of the Burgoyne-road (including sewer and surface-water drain), on the British Land Company's Estate at Harringay Park, Harnsey. Mr. Henry B. Michell, surveyor:—

Peil & Sons, Bromley, Kent (accepted)	
---------------------------------------	--

For the remainder of the roads on the British Land Company's Estate at Barking. Mr. Henry B. Michell, surveyor:—

Peil & Sons, Bromley, Kent (accepted)	
---------------------------------------	--

For widening a portion of Homedale-road, Bromley, Kent, for the Bromley Local Board. Mr. Hugh S. Cregeen, surveyor:—

E. Peil & Sons	£250 0 0
T. Lanebury	215 0 0
H. Podger (accepted)	190 0 0

For repairs to the Queen's Arms, Chelsea, for Messrs. Truman, Hanbury, Buxton, & Co. Mr. Edward Brown, architect, 18, Hanbury-street, Spitalfields:—

Jackson & Todd	£220 0 0
Hill & Pearson	179 0 0
Hawkins	145 0 0
Read	134 0 0
Marr (accepted)	129 10 0

For alterations to Godden Cottage, Alfred-road, Duck-hurst Hill, for Mrs. B. L. Paul. Mr. Edward Brown, architect, 18, Hanbury-street, Spitalfields:—

Marr	£190 0 0
Hawkins (accepted)	178 0 0
Cook	175 0 0

For the erection of five blocks of artisans' dwellings, Petticoat-square, for the Corporation of London. Mr. Horace Jones, architect. Quantities by Mr. D. Cubitt Nicholls:—

Watson	£22,000 0 0
Kirk & Perry	78,908 0 0
Bangs & Co.	75,360 0 0
Kilby & Gayford	73,389 0 0
Pink	73,335 0 0
Mowlem & Co.	72,919 0 0
Tink	71,883 0 0
Scriveners & Co.	70,980 0 0
H. Nightingale	70,971 0 0
Hutton	69,443 0 0
Foster & Dickens	69,332 0 0
Lawrance	69,047 0 0
Martin, Wells, & Co.	68,250 0 0
Perry & Co.	68,000 0 0
Dicks	68,000 0 0
Hobbs	67,589 0 0
Shurman	67,216 0 0
Kirk & Randall	66,328 0 0
D. D. & A. Brown	66,000 0 0
W. & F. Croaker	65,751 0 0
Gentry	65,500 0 0
Harper	64,192 0 0

For the first contract of the Liverpool Zoological Gardens, Walton-on-the-Hill, comprising boundary-wall and palisading, entrance-lodges, with registering turnstiles, subway, &c. Messrs. W. Sugden & Sons, architects. Quantities by the architects:—

For the Whole	£25,047 0 0
Cordingley & Sons	4,919 0 0
Treasure & Sons	4,898 0 0
Poster & Dicksee	4,898 0 0
J. Fish	4,890 0 0
J. & G. Chappell	4,817 0 0
Isaac Anwell	4,816 5 10
Thornton & Sons	4,806 0 0
Tomkinson & Co.	4,799 0 0
Holme & King	4,783 0 0
Thomas Bridge	4,770 0 0
A. P. Cotterill	4,762 0 0
W. Bulcock	4,750 18 8
M. Macleod	4,733 0 0
S. Warburton	4,712 2 10
Massey & Sons	4,708 0 0
T. S. Bromage	4,703 0 0
Kelly Bros.	4,713 0 0
W. Howe	4,698 0 0
R. Beckett	4,689 9 0
H. Yates	4,749 0 0
Hughes & Stirling	3,988 0 0
Everton Quarry Company	3,929 0 0
the ironwork (accepted)	2,670 0 0

Ironwork only	
A. Handyside & Co.	£1,732 10 0
Coventry Art Metal Works	1,705 18 0
G. Smith & Co.	1,640 6 6
Falkirk Iron Company	1,360 5 0
C. Smith & Sons	1,349 1 8
Elgood Bros.	1,277 0 0
Robert Hird	1,261 18 0
Worrall	1,205 14 9
Simpson & Wood	1,149 9 8
Gimlin & Co.	1,089 10 0
W. Rammage (accepted)	999 17 6

For Wesleyan Chapel, Dorrington, near Pontefract. Mr. James Wilson, architect, 12, East Parade, Leeds.

Quantities by the architect:—	
Headline (Mason)	£238 0 0
Yelder	170 0 0
Binks	39 0 0
Thompson	24 0 0
Worsnop	41 10 0
Butler	12 18 0
Total	£578 8 0

For the erection of a factory in George-street, Camberwell. Mr. J. W. Irwin, architect. Quantities not supplied:—

G. H. Webb	£850 0 0
G. Jenner	904 0 0
L. C. Shipton	843 0 0
G. Marsland	835 0 0
Burnman & Sons (accepted)	759 0 0

For alterations and repairs to No. 58, Leadenhall-street, City, for Messrs. D. Hadford & Co. Mr. A. Bradley Rooke, architect, Great James-street, Bedford-row:—

Easton	£1,180 0 0
Dainton	1,123 0 0
Axford	1,010 0 0
Brass	988 0 0
Stimpson & Co.	980 0 0
Dove Bros.	975 0 0
Greenwood Bros. (accepted)	924 0 0
Tozer	907 0 0

For horticultural buildings, exclusive of heating, at Coombe Ararat, New Malden, for Mrs. A. L. Young. Mr. T. L. Heward, architect:—

Weeks & Co., Chelsea	£725 5 0
Perry, Hanbury	631 18 8
Le Cassick & Co., Baltham	485 10 0
Lascelles & Co., London	464 0 0

For alterations to the Globe Tavern, King's-road, Chelsea, for Mr. R. Dibbons. Mr. W. Yates Jones, architect. No quantities:—

H. Smith	£733 0 0
Welscher	655 0 0
Gould & Brand	653 0 0
W. H. Smith	637 0 0

For alterations to 75 and 76, Park-street, Camden Town, for Mr. G. W. Grantham. Mr. E. R. Blatchly, architect:—

Gould & Brand, revised estimate (accepted)	£275 0 0
--	----------

For warehouse for Messrs. Shrimpton & Co. Mr. Wilkins, architect:—

Goad	£1,050 0 0
Canning & Mullins	1,047 0 0
Dowds	915 0 0
Croaker	880 0 0

For new Board School, West-square, Lambeth, for the School Board for London. Mr. E. R. Robson, architect:—

Longman Bros.	£3,868 0 0
Goodman	7,593 0 0
Larlor & Son	7,593 0 0
Gentry	7,798 0 0
Williams & Son	7,793 0 0
Prichard	7,716 0 0
Lawrence & Son	7,543 0 0
Bangs & Co.	7,621 0 0
Hart	7,520 0 0
Greenwood	7,499 0 0
Hobson	7,482 0 0
Patman & Fotheringham	7,474 0 0
Marland	7,465 0 0
Grover	7,460 0 0
Oldrey	7,451 0 0
Wood	7,397 0 0
Downs	7,387 0 0
Croaker	7,337 0 0
Tarrant	7,334 0 0
Cox	7,324 0 0
J. Smith & Son	7,304 0 0
Atherton & Latta	7,300 0 0
Sargent	7,289 0 0
Shepherd	7,281 0 0
Jerrard	7,247 0 0
C. Wall	7,246 0 0
Shurmer	7,200 0 0
Wall Bros.	7,183 0 0
Perry & Co.	7,110 0 0
Kirk & Randall	7,083 0 0
Stimpson & Co.	7,048 0 0
F. Higgs	6,980 0 0
Reading	6,969 0 0
Lathey Bros.	6,942 0 0

For rebuilding No. 80, Tottenham-court-road, for Miss Mason. Mr. Henry Hall, architect:—

Green	£2,407 0 0
Hall, Reddall, & Co.	2,140 0 0
Longmire & Burge	2,095 0 0
Dove Bros.	1,905 0 0
Lathey Bros.	1,958 0 0
Saunders	1,928 0 0

For putting in the foundations of St. Luke's Church, Nightingale-lane, Clapham, at a schedule of prices. Mr. F. W. Hunt, architect:—

W. Johnson, Wandsworth Common (accepted).

For building the superstructure of St. Luke's Church, Nightingale-lane, Clapham. Mr. F. W. Hunt, architect:—

Nightingale	£7,418 0 0
Lapthorne	6,923 0 0
Haylock	6,745 0 0
Mary	6,897 0 0
Lathey Bros.	6,880 7 0
Johnson, Wandsworth Common	6,848 0 0
Gregory, Clapham Junction	6,269 0 0

* Accepted.

For girls' and infants' schools, Upper Mitcham, for the Mitcham School Board. Mr. Edwin Chart, architect, Mitcham. Quantities by Messrs. Franklin & Andrews:—

Dove Bros.	£5,465 0 0
Jarrett, Croydon	5,390 0 0
Kirk & Randall	5,288 0 0
Higgs & Hill	5,181 0 0
Ward, Warrington	4,984 0 0
Lawrence, Mitcham	4,888 0 0
Martin, Wells, & Co.	4,690 0 0
Stewart, Wallington (accepted)	4,574 0 0

For alterations and fitting up premises as Primitive Methodist Hall, &c., in Fisher's-lane, High-road, Chiswick. Mr. Alexander M. Greig, architect:—

Holbrook	£271 3 0
Bryant	2 7 10 0
Eyden	203 0 0
Johnson	188 0 0
Massey	160 0 0
Wickham (accepted)	158 0 0

For building school-chapel, &c., for trustees of Primitive Methodist Society, New-road, Brentford, Middlesex. Mr. Alexander M. Greig, architect:—

Bryant	£478 0 0
Bloomer	421 0 0
Wickham	473 0 0
Emmett	454 0 0
Bruden	420 0 0
Dorey (accepted)	387 0 0

Accepted for the completion of four houses on the Warley Mount Estate, Brentwood, Essex, for Mr. H. Saunders:—

J. B. Gerrans	£1,923 10 0
---------------	-------------

For mission-room, Latimer-road, Notting Hill. Mr. E. Norman Shaw, R.A., architect. Quantities by Messrs. Franklin & Andrews:—

Brass	£2,967 0 0
Dove Bros.	2,925 0 0
Macey & Son	2,753 0 0
Ashby Bros.	2,745 0 0
E. Conder	2,743 0 0
Rider & Son	2,728 0 0
Perry & Co.	2,712 0 0
Martin, Wells, & Co.	2,687 0 0
Lawrence & Son	2,645 0 0

For building three shop and stables at Fortress-road, Kenilworth, for Mr. D. Berry. Mr. C. Coppen, architect. No quantities:—

Allen & Sons	£1,876 0 0
Gould & Brand	1,766 0 0
Nye	1,668 0 0

For new showroom and buildings in rear of 105 and 109, Holborn, for Messrs. Cardinal & Harford. Mr. H. C. Boye, architect. Quantities by Mr. L. C. Riddett:—

Holland & Hansen	£5,923 0 0
E. Conder	5,783 0 0
J. & J. Greenwood	5,738 0 0
P. L. Groom	5,673 0 0
Stimpson & Co.	5,580 0 0
Dove Bros.	5,495 0 0
J. G. Groves	5,488 0 0
B. E. Nightingale	5,380 0 0
Patman & Fotheringham	5,285 0 0
Gould & Brand (accepted)	5,279 0 0

To Contributors and Correspondents.

ALL LETTERS AND COMMUNICATIONS referring to LITERARY AND ARTISTIC MATTERS must be addressed—

"To the Editor of THE BUILDER,
46, Catherine-street,
Covent Garden, W.C."

And not to any individual by name.

W. M. & Co. (see "Standing Orders" below).—B. E. (your letter is an advertisement)—G. S. B. (drawing received)—E. R.—C. H.—T. G. A.—J. E. F. (not desired)—L. E.—R. B. & Son.—H. K. P. (too late for this week).—H. L. (ditto).—R. A. L. (amount of tender not given).—G. & B. (see "Standing Orders" below).—G. & B. (received).

Correspondents should address the Editor, and not the Publisher, except in cases of notices.

All statements of facts, lists of tenders, &c. must be accompanied by the name and address of the sender, not necessarily for publication.

We are compelled to decline pointing out books and giving addresses.

NOTE.—The responsibility of signed articles, and papers read at public meetings, rests, of course, with the authors.

NOTICE TO ADVERTISERS.

Persons advertising in the *Builder* may have REPLIES ADDRESSED TO THE OFFICE, 46, Catherine-street, Covent-garden, W.C., FREE OF CHARGE.

Letters will be forwarded if addressed envelopes are sent, together with sufficient stamps to cover the postage.

CHARGES FOR ADVERTISEMENTS.

SITUATIONS VACANT, PARTNERSHIPS, APPRENTICESHIPS, TRADE, AND GENERAL ADVERTISEMENTS.
Six lines (about fifty words) or under 4s. 6d.
Each additional line (about ten words) 6s. 6d.
Terms for Series of Trade Advertisements, also for Special Advertisements on front page, Competitions, Contracts, Sales by Auction, &c. may be obtained on application to the Publisher.

FOUR Lines (about THIRTY words) or under 5s. 6d.
Each additional line (about ten words) 6s. 6d.
PREPAYMENT IS ABSOLUTELY NECESSARY.
* Stamps must not be sent, but all small sums should be remitted by Cash in Registered Letter or by Money Order, payable at the Post-office, Covent-garden, W.C. to DOUGLAS FOURDRINER, Publisher.

Addressed to No. 46, Catherine-street, W.C.
Advertisements for the current week's issue must reach the Office before THREE o'clock p.m. on THURSDAY.
The Publisher cannot be responsible for DRAWINGS, TESTIMONIALS, &c. left at the Office in reply to advertisements, and strongly recommends that of the latter COPIES ONLY should be sent.

TERMS OF SUBSCRIPTION.

"THE BUILDER" is supplied *gratis* from the Office to residents in any part of the United Kingdom at the rate of 12s. per annum. Foreign Subscribers payable to DOUGLAS FOURDRINER, Publisher, 46, Catherine-street, W.C.

Best Bath Stone.

WESTWOOD GROUND,
Box Ground, Combe Down,
Corsham Down,
And Farleigh Down.

RANDELL, SAUNDERS, & CO., Limited,
Corsham, Wilts. [Adv.]

SUMMER-DRIED

Corsham Down Stone

For Winter Use.

PICTOR & SONS, BOX, WILTS. [Adv.]

Doubling Freestone and Ham Hill Stone

of best quality, in blocks, or prepared ready for fixing. An inspection of the Doubling Quarries is respectfully solicited; and Architects are others are CAUTIONED against inferior stones. Prices, delivered to any part of the United Kingdom, given on application to CHARLES TRASK, Norton-sub-Hamdon, Ilminster, Somerset.—Agent, Mr. E. WILLIAMS, 7, Charlotte-street, Portland-place, W. [Adv.]

Doubling Freestone, Of best quality, supplied from their own Quarries

HAM HILL STONE, and Kilns by STABLEY, HART, Stoke, Ilminster.

BLUE LIAS LIME, Agent, Mr. H. MITCHELL, 8, Augustus-road, Hammersmith, London, W. [Adv.]

(Ground or Lump),

Asphalte.

Seyssel, Patent Metallic Lava, and

White Asphaltes.

M. STODART & CO.

Office:

No. 90, Cannon-street, E.C. [Adv.]

Asphalte.—The Seyssel and Metallic Lava

Asphalte Company (Mr. H. Glenn), Office, 9, Poultry, E.C.—The best and cheapest materials for damp courses, railway-arches, warehouse floors, flat roofs, stables, cow-sheds and milk-room granaries, sun-rooms and terraces. [Adv.]

Immense quantities of

DRY WAINSCOT,

DRY MAHOGANY,

DRY WALNUT,

in all thicknesses.

B. J. HUDSON & SONS,

Whitfield-st., W., and Great Peter-st., S.W. [Adv.]

J. L. BACON & CO.,

MANUFACTURERS OF IMPROVED

STEAM AND HOT-WATER

APPARATUS,

FOR WARMING AND VENTILATING

Private Houses, Churches, Schools, Hospitals,

Manufactories, Greenhouses, &c.

OFFICES AND SHOW-ROOMS:—

No. 34, UPPER GLOUCESTER PLACE,

DORSET SQUARE, LONDON, N.W.

And at DUBLIN, BELFAST, GLASGOW, and

NEWCASTLE.

Illustrated Pamphlet on "Heating" post free.

CHAPPUIS' PATENTS FOR REFLECTING LIGHT

DAYLIGHT REFLECTORS OF EVERY DESCRIPTION,

ALSO

ARTIFICIAL LIGHT REFLECTORS.

WHY BURN GAS?—CHAPPUIS' REFLECTORS DIFFUSE DAYLIGHT.—They are exclusively adopted by and fitted at Buckingham Palace, all H.M. Government Offices, Houses of Parliament, H.M. First Commissioner of Works, the Metropolitan Board of Works, British Museum, South Kensington Museum, Royal Institution, Guildhall Museum, on board H.M. Ships, also Railway Companies' Offices, Hospitals, Institutions, Banks, Insurance Offices, Manufactories, Private Houses and generally from Noblemen's Mansions to Artisans' Work-shops. 30,000 in use in London alone. Patronised by leading Architects, Engineers, Contractors, &c., &c.

N.B.—For Prospectuses and Diagrams, address Stamped Envelope to

P. E. CHAPPUIS, Patentee and Manufacturer, 69, FLEET-STREET, LONDON

NOTICE.—The POLYGONAL REFLECTOR (Latest Patent) FOR ARTISTIC and PICTURE GALLERIES.
Its construction allows of the angle of light being readily altered so as to reflect in any desirable direction.

ILLUSTRATIONS.

Balham and Upper Tooting Congregational Church.—Messrs. Searle & Hayes, Architects.....	722
Ground-floor Plans of Lewisham Public Baths.....	724
Convent of Himmelspforte, near Würzburg.....	726
Hospital, Ochsenfurth.....	728
The New Council Chamber, Guildhall (Double-page Photo-Lithograph).—Mr. Horace Jones, Architect.....	728, 729
Church of St. Gil Abbot, Saragossa.....	731
Lewisham Public Baths (Front Elevations, Forest Hill and Ladbroke Sites).—Messrs. Wilson, Son, and Aldwinckle, Architects.....	733
New Zealand Insurance Company's Buildings, Auckland.—Mr. Alfred Smith, Architect.....	735

CONTENTS.

The Fitzwilliam Museum, Cambridge.....	711	The Victor Emanuel Monument in Rome.....	720	Elm-wood Blocks.....	728
The Projected Railway through the Parks: Pros and Cons.....	712	Balham and Upper Tooting Congregational Church and Schools.....	720	Architects, Builders, and Estimates.....	728
The Pre-historic Art of America.....	712	Lewisham Public Baths: Description of the Structures.....	720	Brickmaking Machines.....	728
The Law Business of Architects: Architectural Association.....	714	The Convent of Himmelspforte near Würzburg, and the Old Hospital at Ochsenfurth.....	726	Building Patent Record.....	728
Rome Picture Exhibitions.....	716	New Council Chamber, Guildhall.....	728	Clocks and Bells.....	728
Notes on Early and Later Plumbings.....	716	The Parish Church of San Gil Abbot, Saragossa.....	730	Provincial News.....	729
Notes from Birmingham.....	717	The Parish Church of San Gil Abbot, Saragossa.....	730	New Post Offices.....	729
The Completion of the Arlberg Tunnel.....	718	The Parish Church of San Gil Abbot, Saragossa.....	730	Organs.....	729
The Longford Memorial.....	718	New Zealand Insurance Company's Buildings, Auckland.....	730	Church Building News.....	729
The Oracle of Delphi.....	718	Building Trades' Exhibition in Bristol.....	730	Stained Glass.....	729
The Dwellings of the Poor in Liverpool.....	718	The London and South-Western Bank Buildings at Strandham.....	730	Dissenting Church Building News.....	729
The Housing of the Poor.....	719	The Patent "Lazy" Ventilator.....	730	School Building News.....	729
Sewer Ventilation.....	719	An Architect's Claim: Fixed Costs.....	730	Books: Thompson's "Elementary Applied Mechanics" (Macmillan).....	729
Builders' Benevolent Institution.....	719	Associations with the Avenue Hotel Site.....	730	Miscellaneous.....	729
Proposed Museum of Science and Art, Dublin.....	719	Watson's "Elements of Architecture".....	730		

The Fitzwilliam Museum, Cambridge.



WO or three weeks ago we adverted to the fact that the Directorship of this important institution was to change hands, the late Director having found, we presume, that it would hardly be possible to attend to this conjointly with his new duties as custodian of the Print-room at the British Museum. Professor Colvin's place at the Fitzwilliam Museum will be taken by Mr. Waldstein, who, it may be observed, is not a member of the English University, but whose recent lectures at the Royal Institution and in Cambridge on the Art of the Greeks attracted much attention and admiration; and we may presume that the Syndicate composed of the Vice-chancellor and eight members of the Senate of the University of Cambridge) in whose hands the appointment rests, have been considerate in their choice, and that the new director is one who will keep up the traditions of the Fitzwilliam Museum as it was in the past, as well as develop its future more extended capabilities of usefulness.

In regard to these latter, it may be observed that there is at present an important development and extension at the Museum in progress, the projection of which is mainly due to Professor Colvin, and which will afford important additional facilities for the study of antique art in Cambridge. But before describing these additions, it may be worth while, at what may be called a critical point in the history of the Fitzwilliam Museum, to recall what probably many of our readers have forgotten or have never properly realised, what is the origin and what are the contents of this Museum, so familiar to every one in Cambridge, so little known except by name to many beyond the precincts of the University town.

In 1816, there died the late Viscount Fitzwilliam, formerly of Trinity Hall, Cambridge, a typical connoisseur and dilettante of his day, who had the advantage of combining taste and knowledge in matters artistic and archaeological with the possession of wealth which enabled him to gratify his taste in a satisfactory manner. But he was minded that the works which had afforded him gratification during his life should afford gratification and, if possible, instruction to others after his death, and bequeathed the whole of his collection of books, paintings, illuminated MSS., and engravings to the University, together with the dividends of 100,000*l.* in South Sea Annuities, towards the maintenance

and proper housing of the collection. These dividends were allowed to accumulate until 1837, when they had reached the sum of 40,000*l.*, and then it was considered the time had arrived to build, and the late Mr. Basevi, one of the most learned, refined, and conscientious students of Classical architecture of his day, was commissioned to design the building, now known as the Fitzwilliam Museum.

Basevi, following the feeling and taste of his time, faced his building with a grand and costly Classic portico in the Corinthian style, Roman rather than Greek, but not without much of Greek feeling and refinement of detail. This, of course, is a mere screen to the real building behind it; it is the architecture of pomp, not of utility; but there are occasions when architecture may rise above utilitarian trammels, when the architect may lawfully launch out into splendours not absolutely demanded by the necessities of the case, but elaborated for the sake of what is the real object of all art, enjoyment. The objection which may logically be brought against Basevi's portico is only that which applies to all pseudo-Classic art; it is "pseudo," and only an imitation of the art of another age. But apart from this, the front of the Fitzwilliam Museum is unquestionably one of the very best things which modern revived Classic architecture has achieved in this country, and perhaps in that way it cannot be said to be equalled anywhere except in Elmes's famous building at Liverpool. The central portico is spacious in dimensions, elegant and refined in detail, and the massive pilastered blocks at the angles serve as a foil to the elegance of the centre portion, and give a monumental appearance of dignity and repose to the whole. We may be convinced that the mere reproduction of Classic forms was an architectural error. There is an unreality about the business which always leaves the discreet critic with a sense of what is called in some old Dissenter's hymn "an aching void"; but, at least, the *richauff* of Classic forms is here done about as well as it can be done, and obviously not without that sense of enjoyment of his work on the part of the architect, which is an important element in the truly artistic spirit. And if Basevi copied, let it, at least, be noted to his credit that he copied a style in itself noble, dignified, and consistent; and so far his ghost can, at least, afford to look down upon those more recent architects, equally copyists, who have taken to copying the tag-ends and remnants of late Renaissance, or bastard Classic, as it may be called, and tying them up into architectural medleys and curiosity-shops from which all sense of style, dignity, or consistency has vanished.

On Basevi's death, in 1845, Cockerell took the completion of the work in hand, as he also undertook the completion of Elmes's building on the death of its original designer. The next and last step in the architectural history of the main building of the Fitzwilliam Museum

was the remodelling and decoration of the entrance-hall by the late Mr. E. M. Barry. He altered the disposition of the stairs, probably for the better, arranging the commencement of the lower flight as a central stair opposite the entrance, and he went into an expenditure of 20,000*l.*, on the whole with a result which cannot be said to be adequate to the cost, except as far as mere material richness is concerned. There is an abundance of coloured marbles and gilding, but a lamentable decline from the purity and dignity of the exterior portico through which this vestibule is approached.

The contents of the Fitzwilliam Museum up to the present date include the original bequest of the founder, supplemented from time to time by other important gifts or purchases. The original bequest included a large and valuable collection of music, parts of which have been published at various times, and which is well known to musical connoisseurs. The collection of pictures was added to some years later by an important bequest of Mr. Daniel Mesman, of 243 paintings and some drawings and prints. In 1864 Colonel Leake's collection of antique coins was purchased, with the funds of the Museum, and in 1876 the Museum purchased from General Cesnola a small collection of highly interesting and valuable specimens of Phœnician, Greek, and Roman glass, a part of that admirable collection which our complacently economic Government refused to secure for the British Museum. There have been various other minor bequests and purchases, but the details are so easily accessible in the Cambridge University Calendar that it is not worth while to reproduce them here at length. The result hitherto has been a building the contents and disposition of which may be roughly summarised as follows:—On the lower floor is a library containing the original collection of books, music, MSS., and engravings. The collection of engravings is one of the finest and most representative in existence, and, under Professor Colvin's management, these have all recently been carefully mounted in sunk mounts, bound together in large volumes, so as to be available for study with as little danger of damage to the contents as possible. In the same room are Colonel Leake's coins, a portion of which are placed open for inspection in a case ingeniously arranged, so that by a mirror a little way below the glass shelf on which they rest, both obverse and reverse can be seen without leaving the coins open to be handled. In another long gallery on the lower floor has been for a long time a large and far too crowded collection of casts (including the first casts sent to this country of the statues found at Olympia), some few original antique marbles, the collection of glass before alluded to, and other heterogeneous casts. About the future of this portion of the collection we will speak just now. Upstairs are the picture galleries, where there is a collection of

paintings chiefly of the Dutch school, but including others also, and containing a good many works of high interest and excellence, intermingled with others of rather doubtful value. As in so many other buildings of the same date as this, the practical requirements of the case have been little considered, and the picture galleries are lighted from a lantern light so high and so far from the pictures as only to shed a most doubtful and insufficient light. The best remedy for this would seem to be that which is thought of, viz., piercing the large cove, under the lantern, for external light. The best way to do this would be to retain the trellis-bars of the cove, and introduce light between them, thus keeping the constructional character of the work. This expedient, which it is to be hoped may be adopted shortly, will enable the pictures to be properly seen, the finest of which are now comparatively lost, except on days of exceptionally bright sunshine.

So much for the existing Museum; and now about the addition and extension which is being made. It has for some time past been recognised that it would be desirable to make a separate sculpture gallery to contain the casts and to constitute a museum of sculpture, and at first the idea was to add to the present building. If this were to be done in any way worthy of the existing structure, and so as not to be an excrescence upon it, the project would unquestionably have been a very costly one; and perhaps the question also would have had to be asked, Where, at the present moment, could there be found any architect competent to carry on or add to the work of Basevi in the same spirit and with the same refinement of taste? We fear that echo would have answered, "Where?" and paused a long time for a reply; not because there may not be equal ability with that of Basevi to be found, but because the study of the purer and more dignified forms of Classic architecture (the educational value of which, at least, is perennial) has been of late so much neglected. The point of economy has, however, settled the question of adding to the original building, and a plot of ground has been obtained not far from the Museum and adjoining Peterhouse College, where a building is now approaching completion which will provide accommodation for all the casts which are the property of the Fitzwilliam Museum, for a collection of local antiquities brought together by the Cambridge Antiquarian Society, but at present dispersed in various houses, and for a lecture-theatre. Of the cost, 9,000*l.*, 2,000*l.* are contributed by the University, and 7,000*l.* from the Fitzwilliam funds. The building, a rather low one-story structure spreading over a good deal of ground, and lighted mainly from the roof, has been planned by Mr. Basil Champneys, with the concurrent advice of Professor Colvin. Entering the door, and passing through the entrance lobby, the visitor will see before him a long gallery ending in an apse, and partially divided halfway by a stylobate and column projected into the room from either wall. In the nearer half of the gallery will be arranged the archaic casts; in the further portion, those of the great age of Athenian sculpture. On the right hand a columned opening, or small ante-room, with a niche at either end, gives an oblique vista into another gallery, parallel with the Athenian gallery, in which sculpture of the later Greek period will be placed. On the left of the centre gallery another, also running parallel, will contain casts of Roman work. If instead of entering the sculpture galleries through the lobby, the visitor diverges through a door on the left of the lobby, he will find himself in the first room devoted to the local antiquarian section, which runs immediately behind the facade of the new building, and leads to the right to a longer gallery devoted to the same objects, running along the boundary of the site adjoining the Peterhouse property, and parallel with the sculpture galleries. A library is so placed as to be accessible from both the sculptural and antiquarian departments, and behind this a lecture-theatre, also central and communicating with both sides of the building. This is loftier than the rest of the interior, lighted by what may be called clearstory windows; it is arranged to seat an audience of something over 200, and the lecture platform allows of a considerable space on either hand, on which some of the casts can be wheeled in and displayed to the audience for immediate illustration of the lectures. Rooms for the curators of each department are provided.

The walls have been coloured in tints varying in each of the sculpture galleries, and intended to be complementary to one another, so as to harmonise when two of the rooms are seen together through the openings giving access from one to another. The prevailing tones in the large sculpture galleries are warm buff and dull reddish tints, and the intermediate recesses or ante-rooms are coloured a cool grey-blue, against which the columns flanking the entries stand out white, with very good effect. Some of the internal details we cannot admire; for example, the low-proportioned wide doorways in some of the rooms, with pulvinated friezes and exceedingly heavy pediments over them. Precedents may be found in the works of Wren or Vanbrugh, no doubt, but that does not make it any better. In the main, however, there is no question that this will prove a very well-arranged gallery of representative casts of antique sculpture, and when filled with the works which are to be placed there, will be not ineffective as an interior.

Of the casts intended for the new gallery, some are still to arrive from abroad, others are the former contents of the ground-floor of the gallery of the main building. This latter gallery will now be used to contain the few marbles which belong to the Museum, some Egyptian and other work at present nearly hidden away in the corridors, and the specimens of glass before referred to.

The new sculpture gallery, which it is expected will be complete and opened some time in the course of January, will, we presume, be under the same rules as to accessibility as the Museum itself. This is open to the public, or to all those who come under the rather vague definition of "respectably-dressed persons" (the wording of the rules, which seems to throw a rather invidious duty on the doorkeeper) between ten and four from September 1st to April 30th, and between ten and six from May 1st to August 31st, with the exception of Fridays, which are reserved for members of the University. Permission to copy or draw must be obtained in writing from the Vice-Chancellor.

We have so often urged the importance of good representative collections of casts, that the establishment of what seems likely to be an exceptionally good one in one of our great universities is an event worthy of special comment, and we may congratulate Cambridge on having so ably shown the way in this respect.

THE PROJECTED RAILWAY THROUGH THE PARKS.

PROS AND CONS.

LONDON has become so accustomed to the inconvenience of the location of the stations of the Eastern, Northern, and Western Railways that people seem to have taken it for granted that Shoreditch, St. Pancras, Euston, and Paddington are the natural starting points for five great radial lines of railway. There are, perhaps, but few among us who distinctly remember the active hostility with which, from 1825 to 1844, corporations and municipal bodies of all kinds opposed the entrance of the locomotive within their limits. Thus Mr. Robert Stephenson was forced to start for Birmingham, in the first instance, from the inconvenient suburb of Camden Town, and it was not until 1834 that, taking advantage of the existence of a deserted tract of land, in the occupation of market-gardeners, cow-keepers, and firework-makers, the London and Birmingham Railway Company obtained Parliamentary sanction for their extension to Euston-square, then lying on the fringe of inhabited London. In the same way, the stoppage of the Great Western Railway at Paddington was accidental. One of the first projects for that line joined the London and Birmingham Railway at Wormwood Scrubbs; and it was owing to that arrangement that the line from Camden Town to Euston Station was made, in the first instance, wide enough for four lines of rails. For a long time the station at Paddington was only a temporary wooden erection, and it was not until he had come to the conclusion that it would be long before assent would be given to a passage through or under the parks, that Mr. Brunel turned his attention to the erection of the most elegant of our railway stations.

One of the provisions of this great engineering is now brought before the public, not without some prospects of success. A station close to King-street, Westminster is rather too far to

the south for the convenience of the western traffic; but it is possible that it is the only one now available on terms that are commercially possible. The triangle to the east of Trafalgar square presents, we think, the true site for our northern and western departures; but the cost of purchase would probably be very high, and the space available is both small and ill-shaped for the purposes of a station. It is possible that some of the area to the south of the Strand, and to the west of the present Charing-cross station, may hereafter be converted into the site of a great west-end station; but we are not aware that this has hitherto been suggested. In fact, the subject has never been regarded from the stand-point of the convenience of London, although, as matter of private speculation or as a means of obtaining traffic from one or another railway, more than one project dealing with this part of the metropolis has been brought forward.

The proposal to carry a line from Praed-street, Paddington, to King-street, Westminster is one that demands mature consideration, as there is a good deal to be said on each side of the question. In the first place, it is not to be expected that the terminus of the Great Western Railway will be advanced to King-street, even if the line be made. The situation is too far to the south, and too much out of the main line of western traffic, to be anything but an auxiliary passenger station. As such it would have a certain convenience, and the question is whether the gain to the travelling public would be adequate to the cost. The distance we make to be a little over two miles and a quarter. But there exists already a railway, with which it would not be impracticable to form a junction by running over which very much the same object might be attained. From Praed-street to Westminster Bridge, by the Metropolitan and Metropolitan District railways, is a little over 5½ miles (5 miles 29 chains), and by using this route it is possible to attain very much of the object of the new line at a very moderate cost, and without inflicting possibly a serious injury on a railway system which is in possession of the ground, and to which the inhabitants of London owe very much. So strong is this part of the case, that its decision seems to us rather to turn on the mode of conducting the traffic than on any question of distance. As far as this is concerned, it may be gravely doubted whether it is worth while to spend 400,000*l.* or 500,000*l.* in order to save three miles of rail. But, on the other hand, it must be remembered that there are eight stations between Praed-street and Westminster Bridge, and that the running time occupied is twenty-seven minutes. Four minutes would be ample to allow for the transit of a train by the straight route, if no intermediate stations were allowed; but 2½ minutes must be added to that time for every station. Tyburn Corner, as it used to be called, would probably demand one station, and Hyde Park Corner another, so that the gain in time would be reduced to 18 minutes,—an important consideration, surely; but as to whether it is worth the cost, doubtful.

The passengers on the Great Western Railway (taking the year 1878 as the last which has been analysed by Mr. Fleming in his "Index to our Railway System") are under 400 per mile per week. Of course the number using the London terminus is far larger than the average for the line. According to "Bradshaw," thirty-two trains leave Paddington daily, and if for each of these, together with the incoming trains corresponding to it, we allow fifty passengers, we should have 6,400 passengers per diem. On the Metropolitan District Railway the number of passengers averages 10,000 per mile per day, and the gross receipts average about 660*l.* per mile per week. If half the estimated number of Great Western passengers were to use the new line (which probably is an extravagant allowance), at equal rates the return would come to a little over 200*l.* per mile per week. Taking the cost per mile at half that of the District Railway, and the working expenditure at fifty per cent, which is lower than the Great Western rate of working, we should have a net return that would allow a little under three per cent. on the capital. Is that worth the costly strife which may be stirred up by the plan?

There is one serious difficulty against which, in their desire to disarm any public opposition to boring under the parks, the promoters of the new scheme have run their leads. We refer to ventilation. The distance from Tyburn Corner

to Hyde Park Corner is about double the longest distance from station to station on the Underground line, and an equal distance again intervenes before reaching King-street. In round numbers there are two runs of a mile each without any ventilation but that of a through draught, however that may be maintained. The result of accurate calculation (see Proceedings of Institution of Civil Engineers, vol. xlv., p. 41) as to tunnel ventilation is, that for every five passenger-trains that pass through a tunnel the air should be replaced three times. The difficulty of ventilation, according to the same authorities, increases as the fourth power of the length of the tunnel, so that the experience of the fouling of the air in the Underground Railway gives but little idea of what it would be, with an equal traffic, in a tunnel with unventilated sections of a mile in length. And even with a much lighter traffic, it is obvious that the question of ventilation is one of so much importance that Parliament cannot be expected to authorise any new scheme for tunnelling under London without being furnished with adequate scientific evidence as to the mode, both as to theory and as to practice, in which this question is to be dealt with.

It is, we need hardly say, in the interest of railway proprietors, as well as in that of all cautious promoters of public works, that questions of that nature should be definitely settled on admitted principles, rather than fought out, under all the chances of war, before a non-scientific tribunal such as a Parliamentary Committee. Finally in railway-making is no more to be expected than finality in the increase of population. What is desirable is that in that continued outlay of capital which is a function of our national growth, the expenditure should be so directed as to secure the best mechanical, and, therefore, the best commercial, results. That a subterranean line from Westminster direct to Paddington may become desirable, is highly probable. The first question is,—has the time yet arrived? And the second question is,—Is it the long or the short traffic which it is intended to accommodate? Until the mileage traffic on the District line equals that on the Metropolitan line, and until the convenience to be gained by direct railway connexion between the Paddington Station and this important means of circulation be tested, we think the construction of the new line may be premature. At all events a full discussion of the points that we have raised is essential for the satisfaction of the public. If the promoters of the new line have worked them all out, it will be at once their duty and their pleasure to give full publicity to their calculations.

One word as to the levels, a not unimportant feature of the case. The fall from the level of the rails at the Praed-street Station of the Metropolitan Railway to that of the rails at the Westminster Bridge Station of the District Railway is nearly 82 ft. (81.51 ft.), giving a gradient of about 1 in 132,—a by no means unmanageable inclination. The surface of the ground at Praed-street lies on the 80-ft. contour line above Trinity high-water mark; and as the fall through the park to Hyde Park Corner is 40 ft., there seems no reason why the tunnel may not be carried at such a depth as to produce the minimum effect on the open area of the park. Thence through St. James's Park the fall of surface is more rapid. The 10-ft. contour is reached a little above Birdcage-walk, and although the level of the sheet of water in the inclosure is not marked on Milne's map, it can be little, if anything, above high-water level. Through this part of the route, therefore, tunnelling, strictly so-called, is impossible, and the accomplishment of the two conflicting aims of keeping a practical level for the railway, and avoiding any permanent interference with the surface of the ground, will not be easy. We cannot see, from a comparison of these levels, how the last half mile of the line can well be any other than an ordinary railway, without encountering a series of costly works, the full extent of which it must be extremely difficult to estimate. Again, whatever may be the precise spot selected for the crossing of the Knightsbridge-road west of Hyde Park Corner, the effect on a traffic which is already dense of the establishment of a new railway station has to be anticipated. We by no means urge these as fatal objections to the proposed line. But they are serious points as to which the residuary proprietors will do well to take good professional advice, in the event of any deposits being made for a Bill. The position of Buckingham Palace, and the possible effect of

the construction of a railway between that structure and the Horse Guards, have also to be borne in mind. The promoters of the Bill speak of a sort of tacit consent on the part of the Government. But the public have a right to know whether the important questions that we have just indicated have been studied by the Board of Trade, or any other department whose consent may be necessary.

As long as the only question is that of allowing a line to bore beneath the ground, the public convenience may warrant the expectation of a very liberal treatment on the part of the public authorities. But the levels are stubborn facts, and although they are more easily to be dealt with by the railway engineer than by the canal engineer, they are not to be played with. We do not say that it is impracticable to run the rails as low as low-water mark, and thus to keep the line under some kind of roof at the present level of the ground. But we do say that such a plan will demand a mature consideration, and a practised skill, of the perception of the necessity for which we do not see any intimations in what has yet come before the public on the subject.

THE PRE-HISTORIC ART OF AMERICA.

A vast amount of patronising praise is at the present moment bestowed upon the creations of the painters and engravers of the New World, apparently on the score of the singular success of so exotic a feature in a country which has no artistic past. Recent research reveals, however, that America, far from being in this deplorable condition, which places it in so inferior a position with regard to the Old World, can boast the existence of a native art the productions of which, to say nothing of its origins, are of an antiquity such that they can alone be designated as "pre-historic." It may be remembered how, not long since, the discoveries of the cave relics of Dordogne, and, later, in our own country and other portions of Europe, startled the world of art and archaeology, and what interesting advances have been since made in a science for the chief progress of which we owe a debt of gratitude to the Scandinavians. Something of the same interest attaches to the singular and curious remains of pre-historic art which are scattered over the great American continent, not alone in the United States, in Mexico, and Central America, but also over a vast portion of Southern America. Research has revealed the existence of an immense field of study, but has so far offered no satisfactory solution as to the origins of this native pre-historic art.

From time to time information has reached the Old World concerning the discovery of relics of the so-called "Mound Builders" and the "Cliff Dwellers," whose singular architectural creations are to be found in various portions of North America. Echoes of wonderful discoveries in Central America come from across the ocean, and those who follow the progress of archaeological study are well aware of the results of the earnest researches of the various archaeological societies of America, but to the general reader the sum total of the information acquired remains, to say the least of it, in a somewhat nebulous condition.

An authority of weight, the Marquis de Nadaillac, has lately published in the pages of the *Revue des Deux Mondes*,* an admirable and lengthy paper on the prehistoric art of America; so completely does the author sketch out the actual position of our knowledge of this strange problem that a summary of M. de Nadaillac's article cannot fail, we think, to prove of interest to English readers.

Of one fact recent research leaves us in no doubt,—that man lived in America during what is known as the quaternary epoch, in company with the gigantic mastodons and pachydermata. As with his European contemporary, the man of these prehistoric ages was a nomad, a dweller in caves, his only arms against the wild beasts on whom he preyed being a few flint weapons, but no trace of art of any nature can be discovered; in this feature it is interesting to remark that the American prehistoric man is behind the European. The next progress brings us many, but still untold, centuries forward; the colossal animals of the quaternary epoch have ceased to exist, and man, from being a

nomad, has settled down, his residence during a considerable time in certain spots being proved by the masses found of debris of food,—*kjökken-middings* or kitchen remains, as the Danes have characteristically termed these heaps. Huge banks of shells accumulated by man have been discovered in various parts of America, in Newfoundland, in Nova Scotia, in Massachusetts, in Louisiana, on the shores of the Gulf of Mexico, while the shell mounds of the Tierra del Fuego have often been described. Excavation among these shell drifts has brought to light hatchets, knives, harpoons, and instruments of horn and bone used by the people of whose food these drifts are the relics, for agriculture as yet is unknown, and it is alone on fish and the chase that they lived. The few rare remains of pottery reveal a primitive art, the clay is mixed with powdered shells, is moulded by the hand and dried in the sun, the sole ornamentation consisting, as in the similar products of European civilisation, of a few incised lines; one feature is interesting, the evidence that the same needs, the same surroundings, have produced an almost identical civilisation, with the peculiarity which we have before mentioned, that the American is, however, distinctly behind the European in artistic skill. It is alone, as yet, from the shell-drifts of Brazil that any ornaments have come, and of these, some in gold, the Peabody Museum at Cambridge, contains, it may be mentioned, several interesting specimens.

To attempt to assign a date to these relics would, in the present state of our scientific knowledge, be more than rash; geologically speaking, and this is the nearest we can hope to approach, the man of the shell drifts existed between the disappearance of the mammoth animals and the introduction of the habitual use of the metals.

To a further stage in the development we may trace the singular rock paintings and sculptures scattered so widely over the two Americas. As in the art of the Egyptians, these inscriptions are of a hieroglyphic nature; they are found in California, in Venezuela, in Nevada, in California, in Arizona, in Colorado, districts now comparatively deserted, but once clearly occupied by an active population. The cliffs which surround the Great Salt Lake near Utah,—the home of the Mormons,—are covered with mysterious inscriptions executed in a distant part and cut in the hard blue granite by a race evidently of a very different stamp to that of the modern Indians. The existence of these rock-cut sculptures has long been known; two centuries ago the Jesuit father Marquette described some of these mysterious inscriptions incised on the rocks of Illinois. Strange, weird, semi-Asiatic, semi-Egyptian, and Assyrian in their character, these sculptures,—in some cases rudely coloured,—cover the sides of many a rocky ravine throughout the whole length and breadth of North and South America. Cut in the hardest materials, the tools used for their production we know must have been of the most primitive nature, made doubtless of obsidian, the stone and granite sawn with the fibres of the agave, and perhaps emery dust; sometimes split by the aid of heat, sometimes polished, but in every case no iron tool used. In South America the region of the *pidras pintadas* (or painted stones) extends from Guiana to Patagonia, through the wild regions of Brazil and La Plata, through civilised Peru and Chili. Humboldt describes the mysterious hieroglyphs he met with in Brazil, but the great German traveller was in no wise able to explain these weird representations of men and animals, of birds and reptiles. The use of the simple colours we see was very early known to the Americans, the ochres, lamp-black, and lime-white. As the civilisation advances, we find the vegetable colours introduced, as also those from the sea-shells, the art of dyeing being prevalent to some extent.

From the rock-cut hieroglyphics,—artistic in a measure, but utterly deficient in our conventional ideas of beauty,—we come to the MS. hieroglyphics of the Mexicans, painted on cotton and on skin, sometimes on the strong paper made from the fibre of the agave or aloe. From these hieroglyphics we obtain a slight knowledge of the country, its traditions, customs, laws, general life, the rulers and their genealogy, but our power of deciphering these documents,—many of which have been reproduced, among other authors by Lord Kingsborough,—is sadly limited. We are able, it is true, to trace the migration of the Aztec race, their history, and

* November 1, 1883.

even obtain a slight insight into their methods of education, but from an artistic point of view the interest of these works is only small. The few relics we possess of this phase of the ancient Mexican civilisation have escaped by a miracle from the wholesale destruction by the Jesuits of all such idolatrous creations; but these relics suffice to show us the culminating point of the art which we have roughly traced from the primitive cave-dwellers; no foreign element can be discovered in the two phases of the early art of America, painting and sculpture. A far more puzzling and intricate problem is afforded by the architectural relics of the past in America.*

THE LAW BUSINESS OF ARCHITECTS. ARCHITECTURAL ASSOCIATION.

At the second ordinary meeting of this Association for the present session, held on the 23rd ult., at 9, Conduit-street, Regent-street, Mr. Cole A. Adams (President) being in the chair, no fewer than seventy new members were elected.

Professor Kerr delivered a discourse upon "The Law Business of Architects." In choosing that subject, he said, he was quite aware that it was impossible to do more on that occasion than to give the members something like a syllabus of the subject, but, inasmuch as every one knew that, as regarded the practice of architects, success depended largely upon a knowledge of the administration of affairs in connexion with litigation, it was highly desirable that students should become acquainted with the law business of their profession previously to entering upon active work. It must be borne in mind that this was a commercial country, and, business affairs being involved in so many disputes, they could not be too early taught the necessity of a thorough acquaintance with what he called "the law business of architects." He defined litigation to be the process which the State provides for the settlement of disputes; for disputes there must always be, and the perfection of litigation would be that system which would be perfectly simple, inexpensive, and satisfactory to the majority of litigants. He was sorry to say that that language could not be applied, in the opinion of most people, to the English system of litigation. The complaint made against it upon all hands was that it was highly artificial, and the judges themselves, the best authorities on such a subject, always advised every one to avoid actions at law. Without using strong language, they might safely say, then, that litigation as administered in England was not altogether satisfactory. With respect to architects they might say for themselves, with much greater force, that litigation in matters with which they had to deal was most unsatisfactory. The substitute for it was arbitration by experts, which system was much recommended by judges and all well-intentioned law authorities as the natural process for arriving at a settlement of the dispute. Of disputes in which building matters too often became involved it appeared to him that the lawyers always seemed to take an artificial view. In ordinary litigation, there was provision made some years ago for an assessorship in all expert business; but that principle was not carried into effect, or they might see an eminent architect or surveyor assisting a judge on the bench in trying cases affecting building. Why the system had not been carried out he did not know. At the present time it was not attempted, the law in that respect being a dead letter, and they were left to the system of arbitration as the only alternative to litigation.

Now, whenever an architect stepped forward as the administrator of anything like law business, whether as an adjudicator, adviser, or advocate, it was not law that he was dealing with. What he understood was justice and fair play. He (Professor Kerr) did not for a moment say that was not the purpose of the law, but the law arrived at these results by a highly artificial mode. The architect must not try to arrive at it by the same mode; he must apply common-sense principles. At the same time, the architect who professed to deal with any such matters must obviously be able to bring to bear a certain amount of the knowledge of the principles of law business and an experience which was only to be acquired in

connexion with building matters. He ought to have a judicial mind, a trained intellect, and an acquaintance with the working of the settlement of disputes. But the arbitrators who were most commonly employed in London and the country for all building disputes were surveyors rather than architects. The architect dealt with office work, but the surveyor being by the nature of his profession always engaged in the adjustment of what might be called disputes or doubts, became a trained adjudicator. Out of the system of arbitration, as it had been practised in England, there had arisen a very curious practice, which was known by the name of "splitting the difference." When two parties to a controversy were brought face to face before the adjudicator, human nature instigated each of them to exaggerate his case, and, according to a natural law, the probability was that each party exaggerated his case equally, and justice, therefore, lay midway between the extremes. This was the origin of the practice of "splitting the difference." But when it was found that a gentleman employed as a professional arbitrator split the difference systematically for the sake of trying to please both parties, no one could justify it. The architect, as an intelligent arbitrator, must bend his mind to the work, and ascertain the real facts of the case, giving his decision fearlessly and faithfully. An architect was generally supposed to be a sort of arbitrator between his client and the builder, but this was not the principle of the law. The profession of an architect was so honourably practised as regarded the relations between the client and the builder that the architect, in fact, was the arbitrator and fair dealer between the two. This was the result of the relation, so far as it went; but it was not a legal position, and consequently a new idea had lately been brought forward and put into practice in contracts, viz., the arbitration clause, and its introduction was an admission that the architect was not regarded as an altogether impartial adjudicator. The fair play of the arrangement was perfectly manifest, and the only difficulty was in the appointment of an arbitrator. In the appointment of any arbitrator it was to be observed that it was not enough to select a man who was honest, for honesty would not settle the business. What was wanted was a person who was acquainted with the matter in hand, and who was possessed of a skilled and judicial mind.

The architect when brought into connexion with litigation or with arbitration acted in one of three capacities, either as adviser, advocate, or arbitrator. In building matters, to be an expert was a thing which ought to be entered upon with great caution. It was well known that certain architects were exceedingly bad advisers; they really did not know the particular subject which, nevertheless, they took in hand; and they forgot the responsibility which they incurred by accepting a kind of business in which they had had no experience. The consequence was that when a person was not up to his work advantage would be taken of him, and he might fail to secure those proper results which otherwise he would have obtained. In order to entitle any of those present to assume the position of adviser on delicate matters it was necessary that he should conscientiously feel that he understood the matter, whatever the question might be which was brought before him; for it was not fair to undertake to advise a client upon any special point unless one thoroughly understood all about it. Partisanship in respect of advice was a trap into which a great many architects were likely to fall. When a barrister was retained to argue a case, it made no difference to him upon which side he was engaged; there was nothing wrong in that, it being a part of the system of the law. He would say everything in favour of his client's case, on the principle that there was always a great deal to be said on both sides. He having done his duty, the judge and the jury must do the rest. But if the architect assumed that it was his function merely to accept a retainer to defend so-and-so in such and such a business, that was a mistaken attitude to assume; it was mistaken ground for an architect to stand upon, very often leading him into unpleasantness and causing him regret. With respect to advocacy by evidence, that was a question upon which a great deal might be said. It was necessary, when an architect assumed the position of an advocate, to be more than sure he understood the subject, and to bring to bear upon the work that skill

without which advocacy was a mere sham. He must be not merely conscientious, but must understand how to secure justice in spite of opposition, which might be technical or be mere quibbling, and which might defeat him if he were not a good advocate. There was a practice which prevailed in the profession regarding which he (the speaker) entered his protest, viz., the practice of giving reports which only dealt with one side of the question. The architect thus employed did not want to hear the other side. Being engaged to survey *ex parte*, he made a report accordingly, and by that report he was bound to stand through thick and thin, however far he was proved to be wrong. When a case of that sort came before the law courts, and the architect was proved to be in the wrong, it provoked the remarks from the judge that all "these surveyors were all alike." When an architect was called in, he should deliver his opinion in writing, but before doing so he should master all the facts. Affidavits, again, were often called for from surveyors. An affidavit was a statement of facts within the knowledge of the witness, which had to be sworn to, and handed in to a court of justice; therefore it was solemn in its character. How very important it was, then, that a person making an oath in that formal and decided way should be exceedingly careful as to the absolute certainty of all that was contained in such an affidavit. Without casting any blame upon the profession, it would be useless for him (Professor Kerr) not to acknowledge that sometimes architects were in the wrong in this respect. Lawyers complained of these affidavits, and stated that they could too readily be obtained on either side, one side swearing that black was white, and the other that white was black. Judges, too, held a similar view unfortunately, and though it was not expressed in such forcible language it was more vexing. This was a pity, but it could be all prevented and the evil cured, if architects, in making affidavits, would bear in mind the necessity of putting in writing only that which they fully understood and knew to be true.

Professor Kerr then proceeded to classify the various subjects which would come sooner or later under the control of architects in the administration of cases of dispute with references to building matters, either as advisers, advocates, or arbitrators. First, in regard to valuation of property. No matter by what incident, the necessity might arise amongst them for the determination of the value of property. It was perfectly plain to start with that this was a surveyor's question and not an architect's, and when architects were called in as advisers upon any question affecting the valuation of property, they must remember that, however expert they might be in that particular business, it was the work of the auctioneer, who alone knew completely the selling value of the property. At the same time, if the architect understood the business, he was invariably very much deferred to in an inquiry of this sort, showing that the profession, in spite of its critics, was an estimable and honourable one. In compensation work, therefore, they must bear in mind that it was the business of a specialist; but if a client came to them for advice, then their proper course was to become possessed of the knowledge that was required. They must, however, be very careful of being tripped up in cross-examination if they should happen to be called upon to give evidence at a trial; hence the necessity of having special skill in advocacy. If they had to participate in the appointment of an arbitrator, let them see that the man who was chosen had a scientific knowledge of the subject. Turning to dilapidations and fixtures, the settlement of disputes as to these matters was an architect's work, by which he meant the practical architect who was acquainted with all the questions in relation to building.

The law of dilapidations was this, that a tenant occupying a house as the leaseholder entered into an obligation to keep the house in repair, to leave it in repair, and to hand it over at the end of his term in a substantial condition. The law of fixtures, on the other hand, was that any work which the tenant did upon or in the house, or anything which he added to the house, the which could not be removed without damaging the house when it was left, must be considered to belong to the owner. In most leases there was a provision that anything additional which the tenant might supply should be kept in repair and handed over with the rest. When any question of

* To be continued.

slipshodness or fixtures was brought before a court of law, it was perfectly astonishing how lawyers reduced everything to mere words. For instance, they had argued that if a mirror was affixed by a screw to the wall it belonged to the tenant, but if it was affixed by a nail it belonged to the landlord! If architects should be called in to advise in this respect, it must be borne in mind that the law was extremely difficult, and they must become thoroughly acquainted with it before they could advise. As a general principle it must be admitted that landlords were grasping; and if they were on the side of the landlords, then "honesty is the best policy," for justice would last longest. If they were advising a tenant they must be thoroughly acquainted with the principles of law that they had to deal with, doing their best to secure him fair play. In choosing an arbitrator they should fix upon a man of experience, one who was possessed of an elastic mind, and who would give a proper interpretation to the first principles of law. Turning on to the question of ancient lights the lecturer said that the law in this respect was this. If a window had been in existence for more than twenty years, and had possessed the light from a certain sky-area, that sky-area, as a lighting power over a neighbour's property, belonged to the owner of the window for ever against all the world. But, in order to reduce to common sense, the phrase "materiality of damage" had been invented, and the person who encroached upon the sky-area was entitled to encroach to any extent which was not material. The word "material" might mean anything that any one pleased. The consequence was that the whole result of a question of light and air turned invariably upon the point whether the damage was material or immaterial, and if it was immaterial it was beneath the dignity of a court of law to take notice of it. If architects were called upon to advise upon such matters they would find that, although the principle was easy enough, any architect who took upon himself to advise a client, whether a plaintiff or a defendant, ought to know very distinctly what he was about. There was no question that there was great ignorance of the law of the subject, as evidence in courts of law amply showed, to the damage of clients who employed architects in this important question, and found cross-examination did them much harm to their case.

In regard to the Building Act regulations, they were voluminous in their number, but simple in their principles when once understood. The rules which were laid down by Parliament had two objects. In the first place, they were to compel builders of houses to attain a certain minimum of substantiality, and a miserable minimum it was,—which should prevent houses falling about the ears of their occupants; and, secondly, to prevent the spread of fire. The principles of the Act were not difficult of comprehension, and all architects ought to become acquainted with them so as to acquire sufficient knowledge of the building regulations to be able to advise, in a moderate way, any client who wanted their opinion. If they were in a difficulty, as a rule, they would find that district surveyors ready to help them with advice. With respect to disputes as to building regulations, the police-courts, as a tribunal, were exceedingly unsatisfactory. As a rule the magistrates did not wish to have anything to do with Building Act cases, but where else were such questions to be decided? At the same time, the court, if treated respectfully, would give architects justice to the best of its power. Then came the question of arbitration, and they would do well not to have any arbitrator unless he had acquired his experience as a district surveyor. The question for the district surveyor was how to perform his duty and get rid of the responsibility. In reference to this question, the District Surveyors' Association could be appealed to; the Metropolitan Board officials also would always give assistance; they were courteous and intelligent, and would endeavour to settle any question which might arise in an amicable way.

As to party-walls, the law was laid down in the Building Act. The object was to keep lawyers out of disputes. The party-wall was the partnership property of two unwilling accidental partners, and, therefore, inasmuch as it was a principle which could not be got over that the whole of the partnership property belonged to each partner, by this principle of law each owner on the party-wall

possessed an undivided moiety of the whole. Consequently, the building owner on one side of the wall dared not touch a brick on his own side of the wall without giving his neighbour three months' notice, at the same time specifying what was intended to be done. Professional men were then engaged upon each side, by whom a third surveyor was appointed; and by the three it was directed what was to be done, and the manner of doing it. They must be very careful in the election of the third surveyor; it was best to have a district surveyor, because he understood all the ins and outs of the subject. Of course, they must be able to state their client's case. The third surveyor would pursue his own course from his own knowledge.

In regard to dangerous structures, the law was this:—The Metropolitan Board was placed in charge of the dangerous structures, and upon receiving a letter,—it might be an anonymous one,—stating that a certain building was, in the opinion of the writer, dangerous to passers by, the house in question was duly entered in the books at the office, and the responsibility was then thrown upon the Board. An order was at once given to the district surveyor, who surveyed and reported upon the condition of the building. If an architect were called in to advise an owner of one of these houses, he should not rashly encounter the district surveyor with opposition, inasmuch as he would then have shifted the responsibility on the shoulders of the owner, and the adviser might be criminally liable if any person were killed by the falling of the building. In the case of a tenant holding a house at the end of a long lease it might be very hard to call upon him to pull down and rebuild it for the benefit of the owner, but the architect must do his duty if such was the law.

Turning next to questions of structural failure, the lecturer said that anybody who wished to act as an adviser in this respect must be acquainted with the scientific character of the subject. Hence it was that engineers were much better authorities than architects on such questions. Although architects ought to be and might be highly scientific men, at the same time any one who took up the position of advocate in questions such as the law of support and various other matters of the kind, should thoroughly understand the subject, and advise his client most carefully.

As to the performance of contracts, there was an unfortunate phrase "best quality" used in specifications which had no meaning. This should be borne in mind when the lowest tender was accepted, for how could one blame a man who tried his utmost to avoid losing money by a contract? Contractors, no doubt, suffered great hardship, and he (the speaker) was told that there was scarcely a builder in London who was making money by building contracts. There were such people also as exacting architects; and he urged more generosity on their part in dealing with builders. A contract in the eye of the law could not be compromised in any way; but when they came to appoint an arbitrator under the arbitration clause, they must be extremely careful to choose one of the best and most experienced men who could be found, whose public character for elastic equity would justify the choice.

If called upon to advise in the selection of competition designs, they must be guided by the principle of fair play. There was no contract between competitors and promoters, and that was the unfair element in it. The promoters took very great care that they would establish no contract, and the professional adjudicator ought, in the first place, to insist upon perfectly equitable conditions, or else should have nothing to do with the competition.

Referring to the question of architects' bills, Professor Kerr said that when they had to judge of this matter let them be very careful how they expressed an opinion. In the first place, let them be certain that they knew both sides of the quarrel. Let not one architect go behind the back of another architect and report upon his bill without his knowledge,—a thing, unfortunately, which was sometimes done. If they were to act as advocates against brother architects in respect of bills, let them ask themselves whether they were acting in accordance with the etiquette of the profession? Architects often passed an expression of opinion which they could not justify; they should hear the story of the other side. When they had to appoint an arbitrator he should

be guided by strict justice. There was an offence called negligence in law, which was a most incomprehensible and treacherous word as applied to architects, and members of the profession assailed on the question of negligence would find it very difficult to defend themselves. It was advisable to have nothing to do with this question; for there was always a great deal to be said on both sides. Ten to one the architect was in the right; but the lawyers made quite a different story out of nothing, with the object of obtaining a verdict for their clients. For an architect to act as an advocate against any architect in this respect was called "cannibalism," and he warned them against adopting such a course.

In conclusion, upon the subject of etiquette, the lecturer said that architects in practical business were associated with a considerable circle of men in other departments of business. Some of them were professional men of high standing and some of low standing; some were men of highly honourable feeling, while others were the reverse. Some were working people. According to the individuality of a man's mind so would he copy the manners of one or another class with whom he came in contact. So long as they imitated the manners and customs of the best class of people it was very well, but let them not imitate the manners and customs of an inferior class. In trades there was competition for business, which admitted of a man canvassing against another; but, in professions of anything like high standing, the idea of one man canvassing for business against another was utterly out of the question. Amongst tradespeople of a certain class it was competent for one of their number to vilify another, but with architects that ought not to be thought of. He (Professor Kerr) had said a good many severe things in his day, and intended to say many more, but no one had ever heard him speak in disparagement of the profession, which was a noble one, learned and honourable. Year upon year this learning had to be accumulated in order to enable them to give proper attention to multitudinous details. Vitruvius, in the Augustan age, said plainly in his day that the architect ought to possess universal knowledge, and really this was so, for theirs was in every respect a learned profession, dealing with important work of art and science. They were treated as men of accomplished character and were highly honoured in England as belonging to a most illustrious and an historical profession; therefore, when it became a question of etiquette amongst themselves, were they to act as tradesmen? He had heard of rivals cutting each other out in business, and treating each other, as the late Sir Gilbert Scott once said, "with mutual scorn"; but was that the way to act up to their traditions? Their conduct ought to be singularly high-minded and controlled by strict etiquette, bearing in mind, at the same time, that great truth of doing to others as they would be done by. He was very sorry that that practice was not pursued by some amongst them. They must remember also that self-sacrifice paid, and shabby conduct did not; and, finally, upon no account should they take up a case in an unfriendly spirit against a brother.

In the discussion which followed, the President said that the large attendance of the members had proved the great interest which was taken in the lecture. Professor Kerr's book upon "The English Gentleman's House" was one of the most useful of its kind, and the clearness and precision of that work characterised his excellent address.

Mr. Trubshaw, in proposing a vote of thanks to Professor Kerr, was glad that stress had been laid upon the etiquette of the profession, and of the high estimation in which architects were held, notwithstanding contrary statements which had been published. With reference to hardships experienced by builders in fulfilling their contracts, he could not but think that they were themselves to blame in undertaking to provide work and materials of "best quality" at prices which they knew could not be remunerative, merely for the sake of getting a job, hoping to avoid too close a scrutiny by the architect. In his opinion the building-owner certainly had a right to receive what he bargained for.

Mr. Appleton, in seconding the vote of thanks, urged the necessity of having specialists, who might be resorted to for advice in difficult matters connected with professional practice.

The vote of thanks was carried by acclamation.

Professor Kerr, in reply, thanked the members for the way they had received his address.

Mr. H. Lovegrove requests us to state that Question 4 on Foundations, in the Architectural Association Class of Construction, should read "What is piling? When adopted, and how constructed?"

SOME PICTURE EXHIBITIONS.

THERE seems to be a remarkable tendency now to the adoption of very large names for picture exhibitions which, even when not small in quantity, are by no means of the first importance in quality. A foreigner, with a knowledge of the names and reputations of our leading painters, but not knowing the style and standing of the various places of picture exhibiting, would be rather puzzled, on entering a large set of rooms bearing the name of the "Society of British Artists," to find scarcely a work there, certainly not one of any size or importance, bearing any name of celebrity among British artists. He would be still more puzzled if he entered a much smaller exhibition bearing the still bigger title of the "Nineteenth Century Art Exhibition" (a title, it will be noticed, not even limiting the collection to the representation of the art of our own shores), and found not a single name which has hitherto been prominent or distinguished in the art of the nineteenth century. This "addition," to use Polonius's word, in the case of a collection of small works, many of them bad, by obscure artists, is one of the most ludicrous pieces of "swagger" that we have come across in the world of art, even in these days of much swaggering. It at once makes the whole thing laughable; whereas, if a little more according with the real character of the collection had been adopted, we might readily admit there are some clever and interesting little works to be found there, amid a considerable preponderance of what is indifferent or eccentric. One which we noted is a good architectural interior, "Sta. Maria Maggiore" (221), by Miss Edith Pradez; "Missing," by Mr. W. A. Ingram (296), has tone and feeling, but one would like to know what the underwriters would say to the case of a ship abandoned, with all masts and nearly all spars standing. Mr. Edwin Ellis has several small sea-pieces which are spirited, somewhat too spirited; contrast them with Mr. Fraser's "Crossing the Bar" (42), a brilliant little work, nearly the replica of a larger one we have seen somewhere not long since. "An Orchard," by Mr. A. Wedd (43), is a clever bit of impressionism, and there is much light and air in Mr. Verstraete's "Summer Morning in Flanders" (44). Impressionism is represented a good deal in a kind of aimless way; one artist covers a large canvas with smudges and calls it "A Cloudy Night" (135). This is a very easy school of painting. There are some other pretty things; but to give the collection a title such as that we have alluded to is simply laughing in the face of the public.

The Society of British Artists sticks to its guns with a perseverance which is spirited, and has introduced the system of small illustrations or reminiscences of the leading pictures, in the catalogue. The present exhibition is rather above than below the Suffolk-street average. The best work there is certainly Mr. Hill's nude study, "a dancer" (133). This, if we are not mistaken, is nearly a replica of one that has been in the Royal Academy. In colour it is very good. The figure is rather expressionless, but it is a fine piece of drawing and painting. Mr. Leslie Thomson's "Tweed, Evening" (22) is a landscape of much richness of colour and fine in sentiment. Mr. Grace's "A Clouded Moon" (64) is a good work. Mr. Edwin Ellis is great in tumbling seas, but in his effort to be powerful he is certainly overdoing it, and his waves swing about in a very abnormal and alarming style. This is a pity, because Mr. Ellis has real powers if he would not try to make sensations. Mr. J. Fraser is here again powerful with his large work "Crossing the Bay" (567), which, indeed, is a little too much like an echo of Mr. H. Moore; but it is a thing that might have been more centrally hung. "Loiterers" (442), by Mr. Yeend Kung, looks like a study of the dreary Lancashire sea-shore; it is worth attention. There are other nice landscapes; a good study of horses and donkeys by Mr. J. S. Noble

(269); a fine architectural interior, a church at Caudebec (308), by Mr. Wyke Bayliss, and other architectural subjects by the same hand. The centre stand exhibits some clever little terra-cotta studies.

Mr. Henry Cook, a painter who had the misfortune, we believe, to lose the use of his eyes for some years, and has now happily recovered his sight, has opened an exhibition of his works in the upper room at the Egyptian Hall. The oil-paintings include a large portrait of Cardinal Howard, not finished,—an effective work, with very elaborate architectural and decorative surroundings. The part of the collection which interested us most, however, was the screen of water-colours, including some very good and effective sketches in Rome, as well as landscape subjects from different localities.

NOTES ON EARLY AND LATER PLUMBERS AND PLUMBING.

ALTHOUGH the craft of the plumber is a somewhat ancient one, the range of the art was very limited until the present century. It is to the advent and progress of sanitary reform that the plumbing trade owes its present importance and the great extension and diversity of the operations of our present plumbers. Of course, in speaking thus, we have in our mind efficient plumbing, for there are a large body of jobbing hands who call themselves plumbers whose workmanship and the materials they use are of the most worthless and dangerous character. As early as the 35 Edward III., 1365, we have in the Ordinance of the old City Guild of the plumbers some excellent regulations regarding the trade, the duties of the workmen, and the character of the workmanship they were expected to perform. Of course the old spirit of exclusiveness which existed in connexion with the trade guilds down to nearly our own time was rampant in the fourteenth century, for no one was allowed to meddle with operations touching the trades in London unless he was what was called free of the City, nor was he to take a house or apprentices. But, when once made free of the City, and when he could show "by assent of the best and most skilled men in the same trade, testifying that he knows how well and lawfully to work, and to do his work, that so the said trade may not be scandalised, or the commonality damaged and deceived by folks who do not know their trade,"—then, and not till then, was the plumber allowed to carry on his trade. The old system of seven years' servitude was insisted upon in regard to an apprentice, and at the end of his term the master was to make him take up his freedom, according to the usage of the City.

Although the old City guilds of trade have been for long years only nominal ones, and their places supplied by the modern trade unions, no reason exists why a supervision should not be exercised over the turning out of work and the quality of the materials. No trade society has a word to say about the bad work turned out constantly by certain employers, and the workmen themselves for obvious reasons will not speak. It rests, then, only with respectable and conscientious employers to execute good work, though in regard to building where there is a responsible architect, care will be taken that it will be as specified. District and parish surveyors may keep a sharp eye on badly-built walls and house drainage, but it often happens that bad plumbing escapes attention. List to this fourteenth-century ordinance, which shows that our ancestors were in some matters much in advance of us:—"That every one of the trade shall do his work well and lawfully, and shall use lawful weights, as well in selling as in buying, without any deceit or evil intent against any one, and that for working a clove of lead for gutters or for roofs of houses, he shall take one halfpenny, and for working a clove for furnaces, tappetroghes, belfries, and conduit-pipes one penny, and for the waste of a way of lead when newly molten [he shall have an allowance] two cloves as has been the usage heretofore." The allowance of two cloves was perhaps about 14 lb. in 180 lb., but the weight of clove and was varying. Folks who stole lead were not unknown, and the practice is still very common. Stealing or taking a "pigeon" is a modern slang term for the act of dishonesty, making away with and selling a quantity of lead which has been stripped from a building. One of the ordi-

nances of the plumbers of 1365 says,—"That no one of the said trade shall buy stripped lead of the assistants to tilers, lagers, masons, or of women who cannot find warrant for the same. And if any one shall do so, himself, or by his servants, or if any one of the shall be found stealing lead, tin, or nails in the place where he works, he shall be ousted from the trade for ever, at the will and ordinance of the good folks of such trade." What would of our dishonest building workmen of the present day think if such a rule were enforced against him for a theft committed for drink, if lead unfortunately has been too often stolen, a sold by dishonest workmen for drinking purposes alone? The offence of ousting another from his work undertaken or begun, or taking away his customers, or his employers to his damage, whether by enticement through carpenters, masons, tilers, or other persons, was visited by a fine. The violation of any of the ordinances of the plumbers entailed for the first offence forty pence, for the second half a mark for the third twenty shillings, and for the fourth ten pounds, or else a forewarning of the trade. The money value of the fines was pretty high for the period mentioned.

In the civic records for 1371 there is complaint as to a smelting furnace leased to plumbers in Eastcheap with the decision given thereon by the mayor and alderman who we applied to. The complaint speaks of "The great damage and peril of death of all who shall smell the smoke from such smelting"; but the defendants asked that they might be allowed to follow their trade, as they were accustomed to do for forty years, contending that the place where the smelting was done was not so noxious as was alleged. The civic dignitaries allowed the smelting of the lead to be carried on "provided that the shaft of the said furnace should be heightened, for the benefit of the neighbourhood." If this was not an early effort at abatement, it was at least a movement in the direction.

The plumbers of the Middle Ages were pretty well accustomed to covering roofs and other surfaces in connexion with ecclesiastical buildings, and supplying and laying down small conduit-pipes for the supply of water. As early as 1278 we have mention of the conduit of Chepe, which Stow says was built in 1228. In an ancient and curious book in possession of the Corporation of Dublin, called the "Domestic day Boke of Dyvelyn City," there is a memorandum in Latin to the effect, "That on the morrow of St. Leonard, in the thirty-ninth year of King Henry (7th Nov., 1239), the Prior of a Convent of the Holy Trinity, Dublin, received the water from the vase (basin or reservoir) the citizens of the said city of Dublin; that the vase situated opposite the Tholsel of the said city, and near the gate of the Holy Trinity. To be held by them for three next following years from the said day." From this and other entries it appears that there were basins or reservoirs for the reception of the water from various parts of the city from which the inhabitants could have pipes laid on to supply their houses. In 1287 there is a grant by the Mayor of Dublin to Sir Richard de Exeter, a certain portion of water, that is of a pipe equal to the size of a goose-quill, and also to the fellow-citizen Henry le Marshall, for the convenience of himself and his neighbours dwelling near him, that he should be allowed, at his own expense, to attach a pipe to theirs near the corner, which led to Kilmaholmok-street, and conduct the water to his house, near the Church of the Holy Trinity, into his cistern or reservoir, but the pipe not to exceed the grossness of a goose-quill." In 1329 and 1342 we have other grants to citizens, of a right to such pipes "the size of a goose-quill" to cisterns in certain streets for the conveyance of water to their houses. The minute particularisation that the pipe should not exceed the size of a goose-quill goes strongly to prove that the water was always flowing and the value put to a constant supply. From an early date particular care was taken in London that the water of the great conduit in Chepe should not be wasted. William Hardy, the keeper of the conduit, had to appear before the Mayor and Aldermen in 1310, to make oath "that he well and trustily, with the greatest diligence, cause the conduit in Chepe to be kept, so that neither brewers nor fishmongers shall waste or sell the water thereof to any one by night or on peril of losing his freedom, &c." From that time down to a late date there are frequent

tries in the Civic records relating to the great conduit in the Chepe. In 1388 leave was granted by the Mayor and Aldermen to certain inhabitants in Fleet-street, to erect a penthouse over the aqueduct passing there, as there were frequent inundations through the breakages of pipes, to the damage of the houses. This aqueduct of London, so called, was the system of water-pipes conveying water from Tyburn to the great conduit in Chepe. It would appear that these pipes were partly laid above ground, and exposed to the weather and accident. The water was conveyed by pipes from Tyburn to St. James's Hill (now Constitution Hill), thence to the mews near Charing Cross, and thence through the Strand and Fleet-street to Chepe. In 1415 we find an ordinance as to the use of the pipes in connexion with the great conduit. The Mayor and Aldermen were given to understand that the brewers and others near to the conduit, who rented the fountains and the great upper pipe, were drawing their water for their brewing out of the pipes that ran below the conduit, "whereby the common people are oftentimes greatly impeded." It was ordered that the brewers and other persons should not in future draw any water from the small pipes on pain of a stated penalty. As late as 1754 we find the Corporation of London exercising power over the plumbers in the City, and passing a number of by-laws for the regulation of the craft or guild. The old custom of exclusiveness was, however, broken through before that time by a new race of employers, building, and other workmen.

Though small leaden pipes were used at an early date for conveying water into houses from public cisterns or reservoirs, the increasing growth of London and other cities soon necessitated large main pipes being laid down. The water mains that were first laid in various directions through London were of timber, lengths of roughly-squared elm trees, bored through, similar to the old wooden pump shafts, one end of which was tapered for some inches, to enable it to be driven into the next length. These timber pipes were soon found to decay, being attacked by worms, and, moreover, they gave a bad taste to the water. The timber piping was gradually replaced in London and other British cities by metal mains, and these again by some larger dimensions. Our plumbers did not profit by the laying of metal mains directly, but after a short time they began to profit by the applying and fixing of several fittings in connexion with a better water supply to our domestic dwellings. Plumbing and glazing in this country has been often combined, though the painters of our days are generally the glaziers, so far as putting in glass to wooden frames is concerned. Ecclesiastical metal sash-work glazing in the past has been claimed by the plumbers as their legitimate work, but all our trades have of late years been undergoing a state of transition by the subdivision of labour. Glazing in lead quarries was the general method at an early period, and we have among us some architects who adopt this method for its picturesque effect, notwithstanding the advantages that accompany large panes and clear glass. In respect to glazing, painting, or making a painted window, it is well known that many pieces of glass are fixed together in a leaden framework. Glazing with putty has long been a general practice, though lead is still used for fixing glass. Where a large quantity of glazing has to be done for new houses, builders have long been in the habit of sending their sash-work to be glazed at those establishments which supply glaziers', painters', and paper-hangers' materials.

About the opening of the present century the plumbers' work made up but a short list of items, and consisted chiefly of gutters, sash-weights (leaden), backs of sinks, coppers, &c., cramping with lead, solder, milled lead or roof-coverings, hips, flashings, linings, &c., and pipings. Bath, lavatory, water-closets, and other kindred plumbing work particularly belongs to a later period in the present century, speaking in a general way, though there are exceptions. There is, of course, a considerable amount of brass, copper, and other metal work in connexion with the work of our present day plumbers. There is scarcely a branch of the building trade which needs more careful inspection than plumbing work. In this branch of the building trade, perhaps more than any others, there is an enormous amount of scamped work perpetrated. The facilities are so numerous for

deception that unfortunately many unprincipled employers and workmen avail themselves of them. The certain results of such vile practices are not only continual annoyance and expense in many households, but illness and often death. Bad drainage will generally be found in connexion with bad plumbing, and the house drainage of a very large number of the low class of speculative dwellings in our suburban districts is of a most rascally kind, though our parish surveyors or their deputies are supposed to inspect the construction of the house-drains and see that they are properly connected with the street sewers.

NOTES FROM BIRMINGHAM.

ANOTHER excellent example of the public spirit which animates our wealthy citizens has just been shown by the offer by Mr. John Jaffray, J.P., one of the proprietors of the *Birmingham Daily Post*, of a new suburban hospital, to be built on freehold land at Erdington, as an adjunct to the general hospital, for chronic cases. As this establishment will, when in operation, extend and enlarge the scope of that institution's usefulness, there will be a corresponding expenditure involved, and as that is best met by an endowment fund, other citizens have been invited to contribute to form such a fund, and already nine contributions of 1,000l. each have been promised towards it.

The suspension of payment by Mr. Alfred Humpage, one of our largest building speculators, has been the immediate cause of a very extraordinary proceeding on the part of the Gas Committee of the Corporation. When the Corporation took over the business of the old Staffordshire Gas Company, they inherited the branch supplying gas-pipes and fittings, which have on many occasions since been the subject of much heart-burning amongst the gas-fitting trade of the town. But they also inherited their Act of Parliament, one clause of which gave them the same powers of distraint for debts due to them which an ordinary landlord possesses. Mr. Humpage is building a large block of buildings called Lincoln's Inn, the contract for which was taken by the Messrs. Horsley Bros., and also the new theatre which he undertook to build for Mr. Melville. In both of these buildings the Gas Committee contracted directly with Mr. Humpage to supply and fix the gas-pipes, which has been done but not paid for. On the announcement of Mr. Humpage's failure, the Gas Committee put an execution into each premises and seized every portable thing belonging to the contractors,—scaffolding, barrows, planks, grates, &c.,—and advertised the same for sale. Mr. Melville paid the claim on the theatre, but Messrs. Horsley obtained an injunction and stopped the sale of their plant. This action of the Gas Committee has provoked much adverse comment in the town, on account of the apparent inability of the committee to see the difference between seizing the goods of their debtor and those of third parties, fellow contractors with themselves in the same building, and the inequity of the original clause was felt by Lord Redesdale to be so great when the Consolidation Bill was recently before the House of Lords, that he caused it to be struck out entirely, so that the power will cease at the end of the present year. The moral of all this is, that if the Corporation become traders they must be content to accept the risks of traders.

Tenders have been received for building the new chapel, &c., for the Old Meeting congregation, according to the premiated design, which seem to prove the said design to be so costly that the architect has instructions to reduce the same by fully one-third. The lowest tender is understood to be over 20,000l.

A new step in co-operation for production has just been taken up by Messrs. Tangye, Limited, of Smethwick, the celebrated engineers and machinists. At their first annual meeting, recently held, Mr. Richard Tangye announced that the firm were about to introduce an important arrangement with their workpeople. In order to give certain old and valued foremen and other servants a direct interest in the business, without the rights and privileges of shareholders, they have decided to issue to each a certificate of indebtedness or bond, which sets forth that the bearer is entitled to interest upon it at the same rate as the dividend declared by the Company upon its ordinary shares, and in case the bearer dies

before the end of the year for which the bond is good, his family is entitled to the value of the bond. The firm reserve to themselves the right to pay the value of the bond at once in cash, or for the school fees of the children, or for the rent. The ordinary bond will be for 50l., and must be renewed annually, and the recipients must belong to a provident society. This firm has already provided a large and commodious dining-room, with special facilities for providing cheap and wholesome meals therein, and in which lectures are given at the expense of the firm twice in each week at least. In addition, medical attendance is found for the workpeople and their families on nominal terms, besides which there are Sunday schools and science classes, provident societies and trust funds, and, greatest boon of all, regular and generally constant employment. If a man leaves Tangye's it is seldom from slackness of work.

The remarkably sudden death of Mr. J. H. Chamberlain, architect, has given a great shock to this community. All differences of opinion,—and there were many,—respecting the man and his work have been resolved into one long stream of condolences and regrets. At a public meeting called by the Mayor, and attended by the President of the Board of Trade,—who is no relative of the deceased,—a resolution was adopted to open a subscription list to commemorate the public services of the late Mr. Chamberlain, and to appoint a committee to consider the form the memorial should take, and report to a future meeting, and a sum of 1,250l. was subscribed in the room for that purpose. The Messrs. Tangye have intimated their intention to present to the Art Gallery of the town a picture they have recently purchased in the local exhibition for a large sum, Mr. Albert Moore's "Dreamers," a work much admired by the late Mr. Chamberlain, as a memorial of the deceased. At the last meeting of the School Board, Mr. Kenrick, one of the members, announced that he had determined to present the Board with 1,000l. wherewith to found a scholarship in the Board Schools to deceased's memory.

The School Board is awaking to the necessity of teaching youth something more than merely literary knowledge, and has discovered that boys and girls of fourteen, although they may have passed the sixth standard, are still very incapable of earning their own living by reason of their not having received any technical instruction in the arts. To remedy this state of things the chairman of the Board, Mr. George Dixon, has moved, and Mr. T. C. Barnes seconded, the resolution, "That the Education Committee be authorised to consider the question of the advisability of establishing a technical school in connexion with the Board, and report thereon." The resolution was adopted. We may now expect that boys will be taught the use of tools.

A new Roman Catholic church is about to be built in Alcester-street, by Messrs. Barker & Son, of Handsworth, from designs by a London architect, and a new Established church is about to be built in Giltot-road, by Messrs. Sapcote & Sons, from designs by Mr. Chatwin. The same architect is also about to extend and restore the Church of St. George, Edgbaston, and has also in hand the extension and restoration of Aston parish church. Tenders have been received for building the new school of art, from designs by Messrs. Martin & Chamberlain, the lowest of which is that of Messrs. Sapcote & Sons, a little over 17,000l.

The Midland Railway Company are about to make a most important change in their system here. The West Suburban Line, built some years ago as a single line, runs from Granville-street through the lower part of Edgbaston, Selly Oak, and Northfield, on to King's Norton, where it joins the main line from Worcester and the south. This has always been a purely local line, having no Sunday traffic. The Midland are now proceeding to reconstruct this road and laying down a double line of rails, and are about to connect it up to New-street Station by a tunnel from Granville-street, between which station and New-street they have acquired some six to seven acres of land on which stood some 700 houses of the lowest class, all of which are being cleared away to form a goods station. The work is being executed by the Messrs. Firbank, who have over 700 men engaged on the work, which is expected to be completed in two years. The reconstructed line will then be used as a main line from the

south into Birmingham, leaving the present main line through Camp Hill as a through line for goods and a local line for passenger traffic.

The District Drainage Board some time ago acquired a large additional area of land at Tyburn, some four miles out of Birmingham towards Lichfield, for the purposes of a sewage farm, and have been engaged laying this land out, and have built extensive and commodious farm buildings and cattle-sheds, labourers' cottages and superintendent's house. The cost of these has been about 15,000*l.*, and the contract was taken by Messrs. Horaley Bros., of Birmingham, who have executed their work in a very commendable style. The drawings were prepared in the office of the Birmingham Borough Surveyor.

E. G.

THE COMPLETION OF THE ARLBERG TUNNEL.

ALTHOUGH the official opening of the Arlberg Tunnel took place on November the 19th, the great work may be said to have been virtually accomplished when, on November the 13th, through communication was established by boring. It speaks well for the science of tunnelling under great difficulties that the elevation and height of the new tunnel were found to have been hit off exactly. There has only been a slight error in calculating the length of the tunnel, which was found to be shorter by 7 metres than estimated. Strangely enough, a similar miscalculation was made in the cases of the Mont Cenis and St. Gotthard tunnels. The great undertaking of the Arlberg, from the time tunnelling operations (by hand) were commenced, on the east side on June 24, on the west side on June 25, 1880, has occupied three years and 142 days. Machine boring was begun just three years ago, in November, 1880. The rapidity of construction has been greatly facilitated by the cordial co-operation of the two contractors, Signor Ceconi (for the eastern side) and Herren Gebrüder Lapp (for the western side). Both firms of contractors worked on their own account, but greatly assisted each other by mutual support, and the only emulation between them appears to have been who was to do the greatest amount of work. They employed different systems of boring. Ceconi used the so-called "percussion" boring system, employing Feraux machines; Lapp Brothers the "rotation" boring system, with Brandt machines. The former system was used in the boring of the St. Gotthard Tunnel, whilst the latter was tried for the first time. From the results it appears that percussion in boring is to be preferred, it having been possible with its aid to perform a larger amount of tunnelling on the side on which it was employed.

The present road over the Arlberg, which forms the frontier between Austria and Switzerland, is 5,400 ft. above the sea-level. The tunnel is much lower down, the opening on the Tyrol side (St. Anton) being 4,030 ft., that on the Swiss side (Langen) 3,770 ft. above the sea. The total length of the great tunnel is nearly 6½ miles (10,270 metres); the Mont Cenis Tunnel being 7½ miles (12,330 metres), and the St. Gotthard Tunnel 9½ miles (14,912 metres) in length. The tunnel runs for the most part in mica schist. The method of tunnelling employed differed from that practised in making the St. Gotthard Tunnel. Instead of piercing the upper part of the passage first, and working down, the engineers of the Arlberg Tunnel preferred to begin at the base and work upwards. The boring-machines were worked by compressed air pumped into the tunnel by turbines stationed at the two extremities. The usual mode of operation was pursued. When a sufficient number of holes had been drilled, they were charged with dynamite and exploded; the debris was then removed by trucks following closely on the track of the boring-machines, and in a few minutes the drilling was going on as rapidly as before. The drift thus made was 2-75 metres wide and 2-5 metres high. While one drift was being driven below, another, to which access was gained by vertical shafts, was being driven above. This part of the work had necessarily to be done by hand, and the debris chunted through openings, made for the purpose, into a lower gallery. It is stated that at no time was there any difficulty experienced with regard to ventilation, the heating rarely exceeding 14° C. (55° Fahr.). At the opening ceremony, the ventilation was described as "per-

fect," a statement which contrasts strangely with the facts experienced in tunnels at home. What the atmosphere will be with the traffic at full swing, experience alone will show.

The contractors have throughout well kept up to the time of their agreement, and the tunnel has been completed long before the time stipulated. In fact, the tunnel itself has been finished five months before the completion of the approaches. The total cost of the Arlberg Tunnel and Railway has been 35,000,000 florins. Nearly half of this sum has been expended on the tunnel itself, the approach lines on the east (from Landeck to St. Anton) and west (from Pludenz to Langen) sides costing 12,000,000 florins, and the so-called Upper Inn Railway (from Innsbruck to Landeck) the remainder.

The quickness with which the work has been completed is a performance without an equal in the history of tunnelling. The figures below show that, whilst the average daily progress in the St. Gotthard Tunnel was 5-5 metres, in the Arlberg Tunnel it rose to 9-2 metres; in the latter case it is consequently 67 per cent. greater. But it should be taken into account that the greater the length of the tunnel, the greater the difficulties of tunnelling. Supposing the same progress were made with the proposed Simplon Tunnel (to be 124 miles long) as has been obtained in the Arlberg Tunnel, it would take six years to complete it, whilst the St. Gotthard Tunnel (9½ miles long) took seven years and 149 days up to the day on which through communication was established. The following figures show the comparative amount of work done in the three tunnels of the Mont Cenis, St. Gotthard, and Arlberg respectively:—

	Mont Cenis.	St. Gotthard.	Arlberg.
	Metres.	Metres.	Metres.
1st month.....	22-93	42-4	74-9
2nd	54-99	65-0	136-6
3rd	85-14	67-7	135-1
4th	109-2	98-4	168-6
5th	73-60	155-7	170-0
6th	72-60	110-4	192-2
7th	79-45	130-0	238-4
8th	87-05	126-1	217-8
9th	70-80	143-2	243-8
10th	78-90	123-7	228-8
11th	78-35	121-1	227-4
12th	82-75	145-3	254-4
13th	68-15	110-3	237-0
14th	83-35	128-8	262-0
15th	84-00	129-8	309-2
16th	99-45	157-0	297-3
17th	67-87	173-8	303-3
18th	75-70	159-4	292-4
19th	107-00	180-5	303-0
20th	87-05	163-3	290-6
21st	102-15	172-9	294-5
22nd	119-55	191-0	294-0
23rd	99-15	181-1	246-3
24th	100-95	173-8	304-4
25th	103-75	225-6	261-1
26th	112-25	216-5	274-6
27th	121-40	214-3	341-2
28th	112-85	240-6	377-1
29th	153-95	219-7	351-7
30th	114-65	229-1	379-2
31st	90-15	243-8	332-6
32nd	85-65	157-3	—
33rd	88-40	129-3	—

It need scarcely be added that the Arlberg Railway will form an important outlet for Austrian produce, and cannot fail to increase the trade of the Austrian Empire with Switzerland and France. But it is not to be expected that, while the present highly protective tariff of Austria is maintained, much benefit will accrue to the two countries named from greater facilities of traffic. Already, therefore, Swiss papers express a fear that, after all, and for this reason, the Arlberg Railway may not realise the expectations of its promoters, and they are urging the Swiss Federal Council to propose to the Austro-Hungarian Government a revision, in a liberal sense, of the existing commercial relations between the two countries. A very little experience will show whether there exist grounds for those apprehensions.

The Longfellow Memorial.—Many of our readers will be glad to hear that the bust of the poet Longfellow, intrusted to Mr. Brock, is approaching completion. It has come well out of the mould, and is far advanced in the marble. It promises to be a very fine work. It is expected that it will be unveiled in Westminster Abbey on the 27th of February, 1884, the anniversary of the poet's birth.

* Dec., 1862. † March, 1873. ‡ Jan., 1881.

THE ORACLE OF DODONA.

On the site of the ancient temple of Zeus, Dodona, in Epirus, celebrated as the seat of the oldest oracle of Greece, a series of excavations have recently been commenced by M. Constantine Carapanos, and have already been attended with gratifying results. Remains of the foundations have been discovered sufficient to enable the excavators to identify the exact position and ground-plan of the Temple. Amongst the ruins there have been found a considerable number of leaden tablets, which are written questions which were put to the oracle in ancient times. Such questions were naturally left behind by the questioners while they would, of course, take the answer with them on their departure home. One of the lead plates, however, is exceptional in that it has the question on one side and the reply on the other. The inquirer is certain Antiochus, and he asks to what deity it is to address his prayers in order that the members of his family may recover from maladies that had long afflicted them. The answer of the oracle is in the usual indirect and ambiguous style. Antiochus is told that he must go to the city of Hermione and worship the goddess who will meet him from the opposite island of Idrea, which may, perhaps, be interpreted as a roundabout way of recommending the invalids to try the effects of a sojourn at the seaside. This remarkable tablet has been sent to the Academy of Inscriptions and Fine Arts at Paris.

THE DWELLINGS OF THE POOR IN LIVERPOOL.

On Monday last the Insanitary Properties Committee of the Liverpool Corporation met in the Municipal Buildings, under the presidency of Alderman A. B. Forwood.

The Town Clerk (Mr. G. J. Atkinson) reported on the various statutes relating to the subject of insanitary property and the dwellings of the poor. Having regard to the importance of retaining the powers of the local Acts, the Town Clerk recommends to the consideration of the committee the desirability of extending the existing borrowing powers. The Public Health Act, 1875, section 303, enables the Local Government Board, by provisional order to alter or amend any sanitary Act, and the Town Clerk is of opinion that this enactment will cover an extension of the borrowing powers contained in the Act of 1864. There does not appear to be any power to compel an owner to make structural alterations in a house within the local authority incurring the liability of purchase it, unless the case comes within the limited scope of the Public Health Act, 1875.

Before proceeding to discuss the Town Clerk's report, the committee considered the report of the Insanitary Sub-Committee in regard to property inspected since the last meeting. The committee resolved to acquire various properties, particularly at the south end of the town, for the purpose of widening streets; and in regard to one street, Mr. Stephens proposed that some property should be acquired in order to make a transverse street or streets, which was carried.

The Town Clerk's report was then discussed, and the conclusion arrived at generally with respect to it was that, taken as a whole, the powers of the local authority, though extended over a number of public and local Acts of Parliament, were limited to the purchase of insanitary property, without any adequate power of compelling an owner to structurally alter, though by the operation of the Improvement Act of 1882 the Corporation were empowered to deal with courts and alleys to a much greater extent than they had been hitherto; street less than 40 ft. wide being, in the opinion of the Town Clerk, a court or alley. Insanitary houses fronting the street in streets beyond that breadth could not be dealt with except by purchase.

Mr. A. B. Forwood then submitted the resolution of which he had given notice, namely, that Parliament be applied to for powers to extend the borrowing powers of the Corporation to the extent of 250,000*l.* It appearing from the treasurer's report that the amount remaining unexpended for insanitary property was about 80,000*l.* Mr. Forwood explained that the amount would, in his judgment, be quite inadequate, and that it was necessary to

should give notice for a provisional order to extend their powers by the next Council meeting, otherwise they might lose a whole year in carrying on the work of the committee.

Mr. Stephens seconded the resolution.

Mr. J. B. Smith opposed the resolution, remarking that nothing that he had seen had transpired during the last few years to warrant any great expenditure on insanitary property.

After some further discussion, it was eventually agreed that the amount for which powers to borrow should be sought should be reduced from 250,000l. to 200,000l., and in this modified form Mr. Forwood's resolution was passed, it being understood at the same time that it did not necessarily follow that the whole of the 200,000l. was to be expended.

THE HOUSING OF THE POOR.

EARL GREY, in a letter to the *Times*, discusses the many difficulties which beset the efforts of social reformers and legislators to bring about an appreciable and speedy improvement in the dwellings of the poor. He suggests that the principle of the law relating to common lodging-houses as laid down by the Act of 1875, and the Public Health Act of 1875, should be extended to houses of the kind usually occupied by working men. This, however, he says could not be done by simply enacting that these last should come under the regulations now in force with regard to lodging-houses.

"There is too much difference between the two classes of houses, and those let to working men are far too numerous to admit of the same regulations being applied to them as to common lodging-houses. But what I regard as the really important principle of the law with regard to the latter is that it makes the persons who let lodgings in these houses responsible for preventing them from being used in a manner injurious to health or decency, and this principle might, as it seems to me, be applied with equal advantage to houses let to working men. For this purpose I would enact that the owners of all houses or rooms let by the month or year should be held responsible for their condition, and should be made liable to a fine for every room they had let which should be proved to have been occupied in a manner prejudicial to health or decency, whether the evil arose from defects in the building or from overcrowding and neglect of cleanliness by the tenants. For the purposes of this law the immediate lessors to the actual occupants should be considered the owners. It may, perhaps, be thought hard that the owner of a house should be fined because his tenant had crammed too many people into it or kept it in a filthy state; but it must be remembered that this regulation is only intended to apply to houses or rooms let by the week or month, and that the landlord has complete control over tenants holding for so short a term, since, if they refuse to occupy their rooms properly, he can speedily get rid of them. The control he thus possesses it is only just to the public that he should be compelled to exercise."

Earl Grey further proposes that it should be made part of the duty of the sanitary authorities to see that the law is duly executed, and that the fines recoverable should go in aid of the rates.

Under the title of "Labourers' and Artisans' Dwellings," the Right Hon. Joseph Chamberlain has contributed an article to the *Fortnightly Review* for December. The following are some of his conclusions:—

"1. The law should make it an offence, punishable by heavy fine, to own property in a state unfit for human habitation. The law already punishes the retail tradesman who exposes diseased meat for sale, and it is a much more serious offence to make a profit out of conditions which are absolutely incompatible with health and morality.

"2. In every case in which the local authority acquires property under these conditions, the arbitrator should be empowered to deduct from the actual value such sum as he thinks fit by way of fine for the misuse of the property and the offence committed in allowing it to be the cause of disease and crime.

"3. Local authorities should have power, subject only to appeal to the High Court, to close such property, or to make at the expense of the owner such alterations or repairs as he may be ordered by the sanitary officer, without being compelled to acquire it.

"4. Local authorities should be further empowered to acquire any lands and buildings for the purpose of a scheme under the Artisans' Dwellings Acts, at the fair market value of the same, to be settled by an arbitrator appointed for the purpose, and instructed to give in every case the value which a willing seller would obtain in the open market from a private purchaser, with no allowance for prospective value or compulsory sale.

"5. The valuation should be made in every case by an official arbitrator, and no appeal should be allowed from his decision.

"6. The scheme of improvement should include any surrounding property which will be benefited by the reconstruction of the unhealthy area, and the confirming order should authorise a rate to be levied on the owners of such adjacent property, fairly representing the appreciation of their holdings by the proposed improvement. The principle of this proposal has always been adopted in the case of town improvements in the United States, and it has even found its way into English legislation. The Artisans' Dwellings Act, 1882, provides that when, in the opinion of the arbitrator, the demolition of the property dealt with adds to the value of other property belonging to the same owner, the amount of such increased value may be apportioned and levied as an improvement rate on lands, &c., affected; and a similar provision has been inserted in a Provisional Order, 1879, obtained by the Corporation of Liverpool. All that is now required is to extend this principle to all lands benefited, whether belonging to the same owner or not.

"7. The best and only scheme for the reconstruction of an unhealthy area should be levied on all owners of property, including long leaseholders, within a certain district to be determined by the scheme. The promoters would, in fact, in every case specify a contributory district, and the official sent to conduct an enquiry into the scheme would decide whether or not it had been rightly defined. The contributory district might be, in London, the whole metropolis, or, in the provinces, the whole borough; but if the improvement were essentially local in its character, and likely to be to the immediate advantage of a more limited district, the cost might be thrown entirely on the owners within such district."

SEWER VENTILATION.

At a recent meeting of the Chelsea Vestry. Mr. G. H. Stayton, the surveyor, read letters from Mr. C. E. Jesper, agent to the patentees of the "Hygienic Sewer Furnace," and Mr. G. F. Harrington, patentee of a system of sewer ventilation which has been tried at Ryde, I.W. Accompanying these letters was the following report by Mr. Stayton upon the two systems, and upon sewer ventilation generally:—

"*The Furnace System.*—The proprietors of the patent hygienic sewer furnace claim that the principle of applying heat as an extracting power is a sound one, and that it can be best applied by means of their patent gas furnaces fixed in suitable chambers attached to ordinary sewer ventilating shafts or manholes. It is assumed that the furnaces act in assisting the natural diffusion of sewer gases, and in destroying organic germs before they are discharged into the atmosphere. It is stated that with a consumption of 7 to 10 cubic feet per hour a temperature of 600 deg. to 700 deg. is maintained within the furnace, which creates a constant gentle current from the sewer, and the experiment at Wiltshire shows that the fœtal germs are destroyed in their passage through the furnace. The price of a furnace suitable for pipe sewers is 12l. (exclusive of fixing), and the consumption of gas would probably cost 13l. per annum. It is not suggested that the furnaces should be generally fixed, but only at those points in a sewer system where accumulations of foul air take place, and in such cases the effect of so high a temperature near the surface of a street is found to be objectionable, and the possible danger of explosion, which might be caused by gas escaping into a sewer from a defective main or service pipe, should not be overlooked.

"*Mr. Harrington's Patent.*—Before describing the system, I would venture to remind the Vestry that it has reference to a method of sewer ventilation patented by the Mayor of Ryde, to which the attention of the President of the Local Government Board was called in the House of Commons in August last. From the information which Mr. Harrington has supplied, and from a report of the borough engineer of Ryde, I learn that the system necessitates the erection of tall shafts communicating with a sewer. The 'in-draught' shaft is placed in the centre of the section to be ventilated, and is fitted with a patent lobster-back revolving cowl at the top, which cowl is so designed that a 'wind-force' is exerted in the sewer with a current about 50 per cent. greater than the wind itself, and by which the sewer gas is driven out through the 'up-cast' shafts into the open air at a height of upwards of 20 ft. from the street level. The sectional area of the shafts is proportionate to the size of the sewer to be ventilated. Mr. Harrington claims to have successfully ventilated a pipe-sewer in Arthur-street, Ryde, and to have removed a very serious cause of complaint on the part of the occupants of the seventy-six houses draining into it; and if the system could be as satisfactorily applied in Chelsea, it would undoubtedly be a means of promoting purer air in the streets and of minimising existing dangers from exposure to sewer gas from sewers and house-drains. As I have not had an opportunity of inspecting the operation of the system I naturally feel reluctant in recommending its adoption, but, at the same time, I submit that the result

of the experiments appear to justify a consideration of Mr. Harrington's proposal.

"*Sewer Ventilation generally.*—In offering a few remarks upon the general question of sewer ventilation, I venture to take the opportunity to record a strong personal conviction that sanitary authorities ought to adopt all possible means in endeavouring to improve the present system of ventilating sewers. The 'open-grating' system has not only become a nuisance, but is injurious to health, and is thereby at variance with the provisions contained in the 71st and 72nd sections of the Metropolitan Local Management Act of 1855. As I have stated in previous reports, the Vestry in ordering open gratings to be fixed in the streets have adopted the best known method of sewer ventilation, and how ever strongly such method may be open to condemnation, it would (in the absence of a more effective system) be highly reprehensible to adopt the rough-and-ready mode of closing the gratings in the streets, and so driving the sewer gas into the adjacent dwellings. The Metropolitan Board of Works and the leading sanitary authorities throughout the country have given the question great consideration, and considerable outlays have been incurred upon various systems, such as forming connections to factory chimney-stacks, the erection of shafts with coke furnaces, fixing charcoal-baskets in the shafts, fixing open stack-pipes some 20 ft. or 30 ft. in height, the use of disinfectants, flushing, a patent cowl system, the isolation of sections of a sewer system by trapping and shaft ventilation; but, as Sir Joseph Bazalgette reported in November, 1882, 'nothing has occurred to throw any new light upon the subject.' In the face of this experience it may seem somewhat discouraging to re-open the question, and I readily admit the difficulty in advising the Vestry as to the means to be taken, but feeling assured that it is one of the most pressing questions of the day (especially where the sewers are inefficiently ventilated and frequently complained of as in parts of this parish), I think the Vestry might advantageously resolve to expend a sum (say 1500l.) in inquiring into the merits of improved systems, in the inspection of their actual operation at those places where they are apparently giving satisfaction, and in subsequently making such trials thereof as may be found desirable."

The subject has been referred to the Committee of Works for consideration and report.

BUILDERS' BENEVOLENT INSTITUTION.

An election of five pensioners on the funds of this Institution took place on Thursday last at Willis's Rooms, St. James's, the President, Mr. Henry G. Smith, in the chair. There were twelve candidates, ten men and two women.

The following are the names of the candidates, together with the number of votes recorded for each:—William Mansell, Little Titchfield-street, Marylebone, aged 66 (third application), 455 votes; Edward Bagridge, Usher-road, Bow, aged 62 (third application), 607 votes; William Voysey, Manor-street, Clapham, aged 71 (second application), 315 votes; William Humphrey, Barnes Green, aged 65 (second application), 331 votes; Ralph White, Selsdon-road, South Croxson, aged 64, 854 votes (including 180 votes placed to his credit in consideration of his having been a subscriber to the Institution); Matthew Harrison, Exeter-street, Lisson-grove, aged 72, 373 votes; Temple George Tolley, Laytonstone, aged 72, 438 votes (including 50 in respect of subscriptions); George Shaw Powell, Albany-road, Camberwell, aged 67, 850 votes (including 200 added for subscriptions); Thomas Theodore Spreadbury, Short-street, Lambeth, aged 78, 195 votes; Jacob Appleford, Oakley crescent, Chelsea, aged 64, 785 votes (including 30 on account of subscriptions); Charlotte Austin, Melton-chambers, Chelsea (widow of Henry de Bruno Austin, aged 60, 1,221 votes (including 760 votes placed to her credit on account of her husband's subscriptions to the Institution); and Lillias Greig, Stanton-road, Barnes (widow of Robert Greig), aged 71, 250 votes.

The successful candidates were therefore Edward Bagridge, Ralph White, G. S. Powell, Jacob Appleford, and Mrs. Austin.

Votes of thanks to the scrutineers (Messrs. T. Stirling and C. Busell) and to the chairman, terminated the proceedings.

Proposed Museum of Science and Art, Dublin.

The following architects have been selected from among the competitors in the first competition, to be invited to send in designs for the final one: Mr. T. Drew (with whom was associated Mr. Mitchell, of Dublin); Messrs. Miller & Symes, Dublin; Mr. Owen Williams, Bangor; Messrs. T. N. Deane & Son, Dublin; and Mr. F. Holmes, Liverpool. The Committee of Selection were Lord Powerscourt, Sir W. Gregory, the Lord Mayor of Dublin, and as assessor, Mr. John McCurdy, President of the Irish Institute of Architects, assisted by two officers of the Royal Engineers.

THE VICTOR EMANUEL MONUMENT IN ROME.

THE monument to Victor Emanuel will be erected in the middle of the Pantheon at Rome. The base will be lofty and polygonal in shape, and will be adorned with four lions, one at each corner. Upon the pedestal will stand a funeral urn, executed in the style of the urns of the emperors, and the structure will bear the simple inscription "To the Father of his Country." For twelve hundred years the Pantheon has been a Catholic church, and there have been rumours that the Pope would oppose the intention of the Italian Government to place the Victor Emanuel monument within its walls; but it is believed that in the end prudent counsels will prevail at the Vatican, and no resistance will be offered to the execution of the project.

BALHAM AND UPPER TOOTING CONGREGATIONAL CHURCH AND SCHOOLS.

THESE buildings have been designed to cover a site having a frontage of about 70 ft. to the Balham High-road, and of very considerable depth.

The church consists of a wide nave without clearstory, and narrow aisles, to be used only as passages, with transepts thrown out on either side. The interior is lighted by grouped lancet windows, in two tiers in the aisles and transepts, and stone traceried ditto in the front façade, and the roof of the nave is treated internally as a wagon-headed boarded ceiling, with curved ribs and light tie-beams at intervals.

The organ and choir are accommodated in a rather deep semicircular apse, lighted by an upper arcade of pointed windows, and with a wooden vaulted ceiling.

The exterior faces of the buildings are finished with red bricks and Bath stone dressings and bands, and the interior with picked stocks, relieved in red brick, the piers of the nave arcade being in red Corshill stone, with Bath stone moulded caps and bases.

The church will accommodate 650 persons on the ground-floor, and is designed for end and side galleries, which will eventually increase the accommodation to 1,000 sittings. It is also intended to complete the design at some future time by the erection of a tower and spire at the south-east angle of the building, which will also contain the second staircase for access to the galleries.

The lecture-hall or schoolroom, erected in 1880, is at the rear of the site, approached by a connecting corridor, and the space between the hall and the church is used for minister's and deacons' vestries and offices, and a large ladies' vestry or church parlour.

The completed scheme will probably include additional class-rooms, kitchen, and caretaker's house, &c., on the lower portion of the site behind the lecture-hall. The estimated cost of the church and vestries is £6,044, the contract being undertaken by Mr. George Candler, of Brixton-hill, who erected the lecture-hall. The architects are Messrs. Searle & Hayes, of 66, Ludgate-hill.

LEWISHAM PUBLIC BATHS.

DESCRIPTION OF ILLUSTRATIONS.

THERE will be two separate buildings, one at Ladywell, the other at Forest Hill. The accommodation provided in each is similar.

Each building has first and second class swimming-baths, each 30 ft. by 30 ft., together with ten first-class and twenty second-class private or slipper baths, and the necessary engineering apparatus. It is proposed that males and females shall use the swimming-baths on alternate days, but the private baths, first and second class, are distributed among the two sexes, so that both sexes can have private baths every day of the week. Distinct and separate entrances and waiting-rooms are provided for each sex, and each class. It is proposed to utilise the first-class swimming-bath in each building as a public hall during the winter months, and ante-rooms have been provided for this purpose, together with galleries and wide corridors, staircases, and extra means of exit, all doors being made to open upwards. A residence is provided in each building for the superintendent, as also the requisite office accommodation. The engineering arrangements will be of the simplest and most economical

character, and unnecessary expense and all extraneous ornament have been most carefully avoided. The use of the swimming-baths upon alternate days has necessitated a special arrangement of doorways to be closed on these occasions. These doorways are marked A on plans. The total cost of the two buildings will be about 17,000l. The architects are Messrs. Wilson, Son, & Aldwinckle, of 2, East India-avenue, Leadenhall-street, E.C., whose designs were selected in limited competition a short time since. We think the architects have succeeded very well in giving a certain degree of picturesque effect to buildings of a generally plain and practical character.

THE CONVENT OF HIMMELSPORTE NEAR WURZBURG, AND THE OLD HOSPITAL AT OCHSENFURTH.

THESE two buildings, which we now illustrate, are excellent examples of what may be called the "Religious-Domestic architecture" of the Middle Ages. In other words, they belong to that class of domestic work which appertains to religious uses. They both, for the most part, date from the fifteenth century; in fact, the Hospital at Ochsenfurth is probably entirely a work of that age, but there are attached to the Convent of Himmelsporte examples of both an earlier and a later style.

The Convent of Himmelsporte was founded in the year 1231, for nuns of the Cistercian order, but is said to have been removed and rebuilt between 1345 and 1372. Now there is rather a curious thing about these dates: it is that the doorway of the chapel (which can just be seen in our view) is evidently "First Pointed" work, and might date very well from 1231, but is certainly too early for 1345. As, however, it is the only example of thirteenth-century work in the building, and the rest of the chapel, with the exception of the roof and spirelet, certainly date from the fourteenth century, it is just possible that it formed a portion of the earlier building, and that when that was pulled down, this doorway was saved, and removed to the new site as a kind of memorial of the original foundation.

The chapel is very singular in its arrangement, but we will attempt to describe it. At the east end is a small low chancel of very fair fourteenth-century work, with traceried windows. It is nearly square in plan, and contains the altar. It opens into the nave through an acutely-pointed arch. The nave is divided into two parts, the two easternmost bays being open to the public, but the three western bays are in two stories, the upper forming the nun's choir, and the lower a kind of crypt. The spirelet, or *fleche*, is of stone, and is not, as is the usual plan, supported upon an arch, but is carried right down through the chapel, its lower portion forming a staircase leading to the nun's choir! The interior of the nave and nun's choir are not in their original condition, but have been modernised; however, the arrangement is evidently original. The gables at the east and west ends and the pretty little spirelet date from the close of the sixteenth century, and are probably the works of the celebrated Bishop Julius von Meisselbrun.

The more domestic portions of the convent date chiefly from the end of the fifteenth century, and the date 1497 (which we have copied in our illustration), is to be seen upon the corbel of the pretty bow-window shown in our view. As the convent is still inhabited by a very strict order of nuns,—we believe Carmelites,—we were not permitted to penetrate further than the outer garden and the chapel. We were, however, informed that there are interesting cloisters. The great or outer garden is open to the public (under certain restrictions), and is a charming example of an old-fashioned garden,—just such a one as Augustus Pugin would have revelled in, with currant-bushes, apple-trees, cabbages, rose-bushes, onions, and peonies, all planted together, and the whole enclosed within grand, old walls of red stone.

The hospital at Ochsenfurth is now disused, and rapidly falling into decay. It is an oblong building, running north and south, covered with one vast roof gabled at each end, and divided into three floors in height, exclusive of the great lofts in the roof. The two upper floors were used as wards, and the ground-floor for stores. On the east side, near to the south end, is a

tower, the ground-floor or basement of which forms an entrance to the cellars and store-rooms. The first floor is an open porch leading to the lower ward, the second floor is a very pretty vaulted chapel or oratory, with a three-light window, having tracery of the curvilinear type. What the story above the chapel was used for is difficult to say. The upper wards contain a curious example of a Mediaeval "w.c." It is entirely of stone. This hospital is situated close to the city walls, and the tower is surmounted with a spire which, at a short distance, gives the building the appearance of a church. This might have been purposely done in order to secure greater protection for the inmates.

NEW COUNCIL CHAMBER, GUILDHALL.

THE illustration shows an interior view of the new Council Chamber now in course of erection for the Corporation of the City of London. It is duodecagonal on plan. The diameter of the chamber is 54 ft. between the screen, with a corridor outside this 9 ft. wide. Its interior height from floor to bottom of lantern light is 62 feet, and to the top of lantern is 82 ft. A gallery for the use of the public and the press, accommodating about 150 persons, is provided over the corridor, the entrance for strangers and general public being from Basinghall-street by a special staircase. A private one from the corridor and offices, below the chamber, is also provided for the use of the members of the corporation only.

The general style and character is in harmony with the Guildhall and Library. The materials used are Portland and Bath stone for the windows, dressings, &c.; the walls are faced externally with "Kentish rag." The columns and arches are in polished Hopton Wood stone. The twelve traceried and carved screens are executed in wainscot, as also the ribs of the dome and lantern over, the filling-in between the ribs being specially prepared for colour decoration.

The entrances are arranged so that the Lord Mayor and Aldermen will enter the chamber from the eastern end of the Guildhall through an ante-room, the members of the Court of Common Council having a separate entrance from the existing corridor leading from the centre of the north side of the Hall to the present Council Chamber.

Sitting accommodation is provided for all the members of the Court of Common Council, 206 in number, the seats being arranged concentrically to the Lord Mayor's chair, and on a rising stage. The Sheriffs, Aldermen, and Recorder, about twenty-eight, and other officers and clerks necessarily in attendance, with the sword and mace bearers, being about sixteen or twenty more, will be provided for on the raised dais on each side and below the Lord Mayor, a space in the centre of the chamber being reserved for the exhibition of plans, papers, models, &c., and the accommodation of petitioners to the court.

The various practical questions connected with warming, ventilation, acoustics, &c., have been carefully considered.

The work is being executed from the design and under the superintendence of the City Architect, Mr. Horace Jones, P.R.I.B.A.

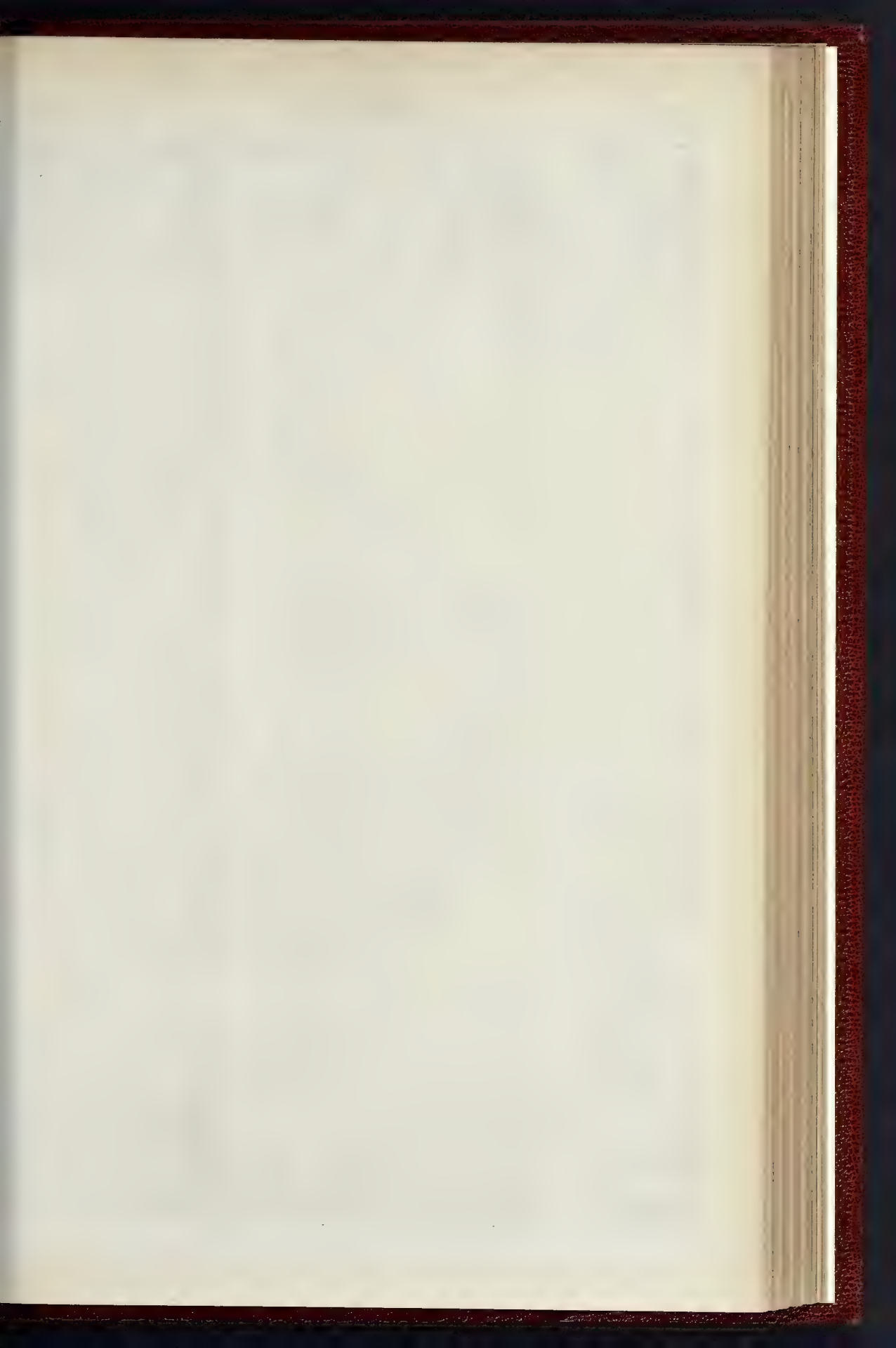
Mr. B. E. Nightingale, of Albert Works, Lambeth, is the contractor.

The estimated cost is about 35,000l., exclusive of fittings.

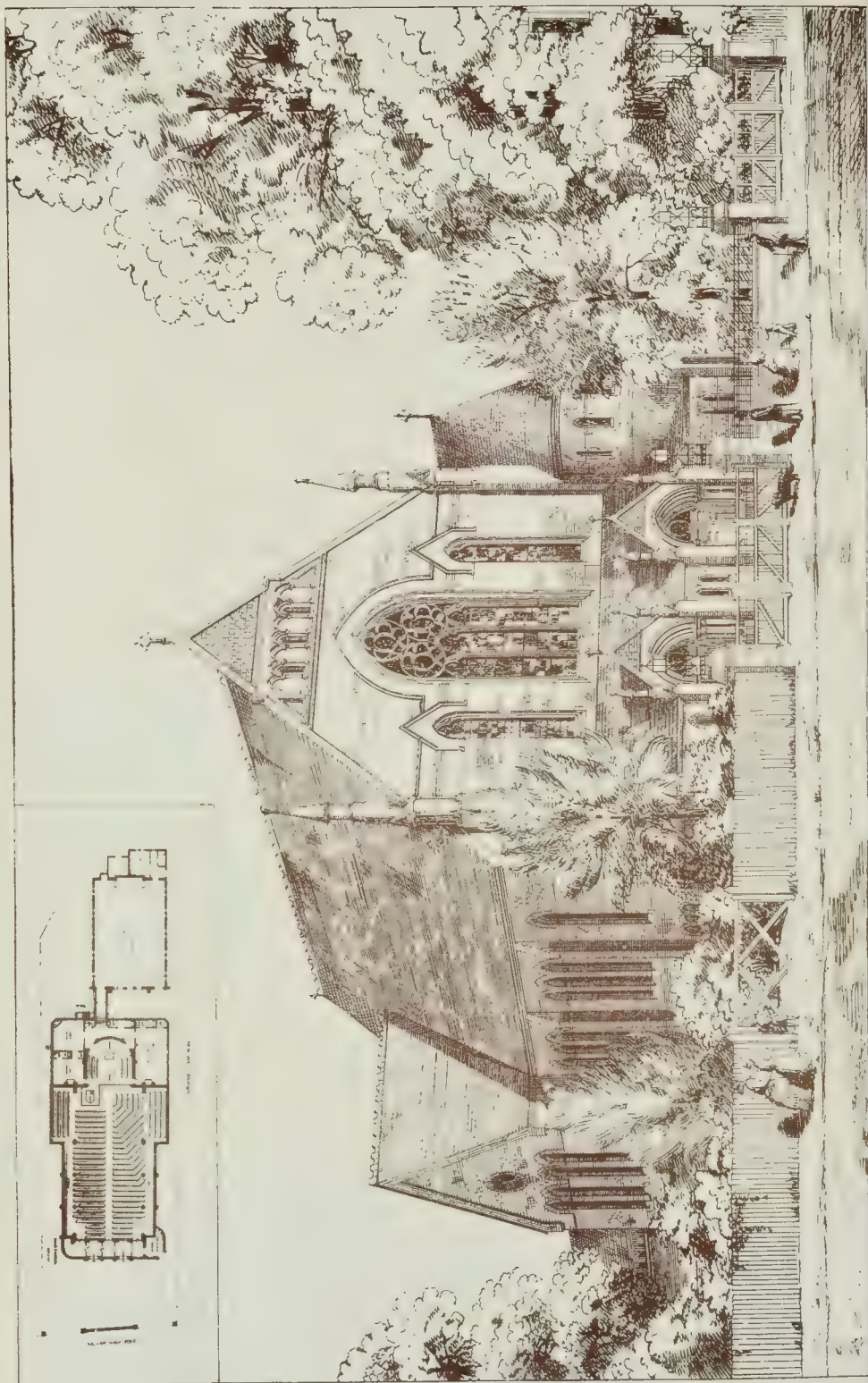
THE LIEBIG MONUMENT AT MUNICH.

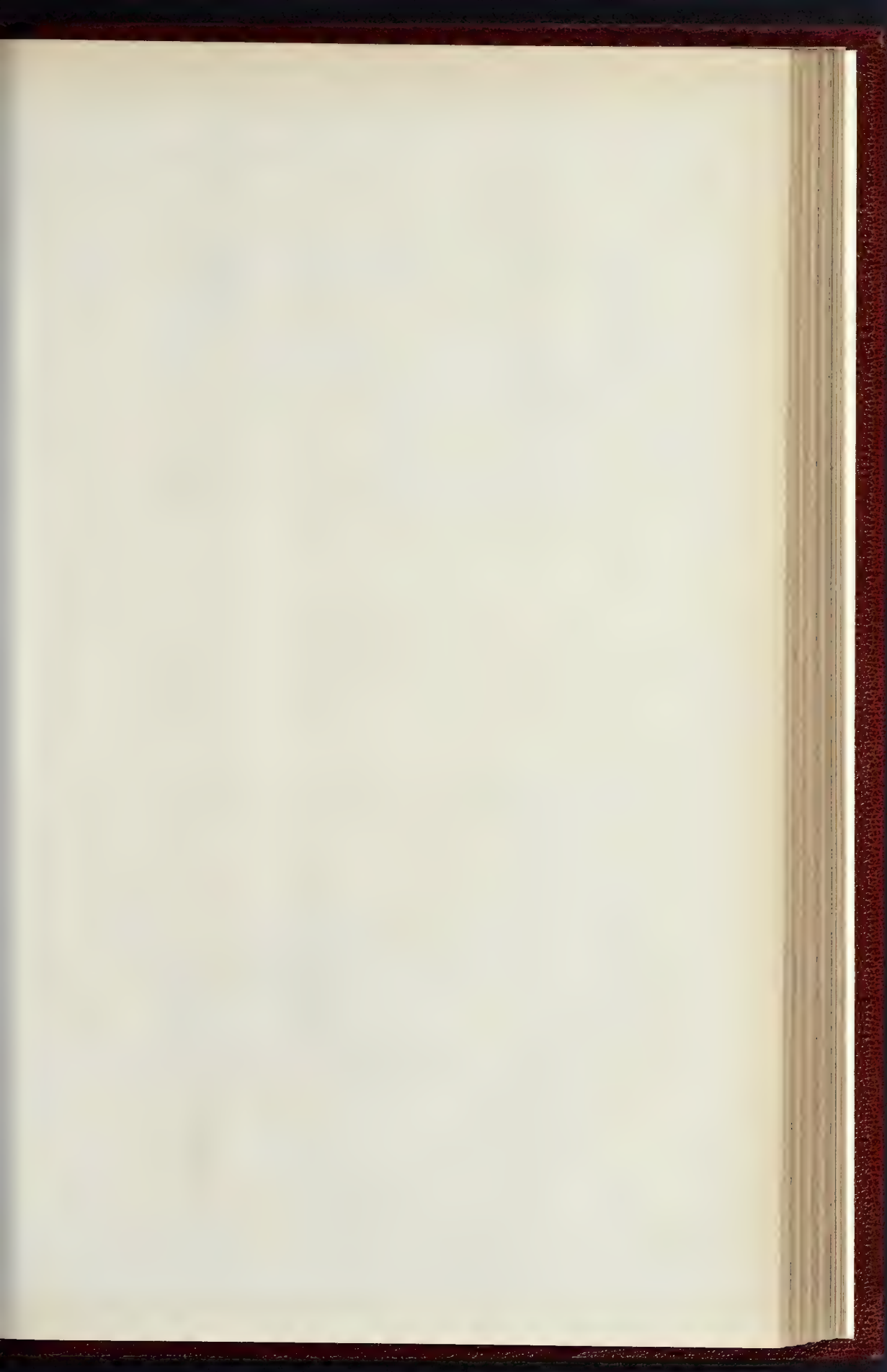
GREAT indignation is felt in the Bavarian capital at an unexampled piece of vandalism perpetrated upon the statue recently erected in that city in honour of the celebrated chemist, Baron Justus von Liebig. A few nights ago some unknown person wantonly disfigured the monument by throwing over it some liquid which not only caused a number of ugly discoloured patches, but which ate into the surface of the marble to a very appreciable depth. An official examination of the statue has been made by Professor von Pettenkofer and Dr. Baeyer, who report that the liquid employed in the commission of the outrage was nitrate of silver. The portions of the marble on which it was thrown are eaten away to a depth of from two to three millimetres.

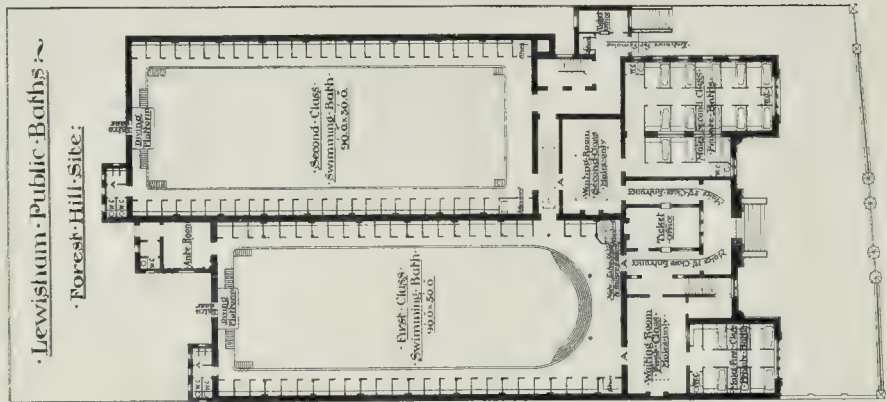
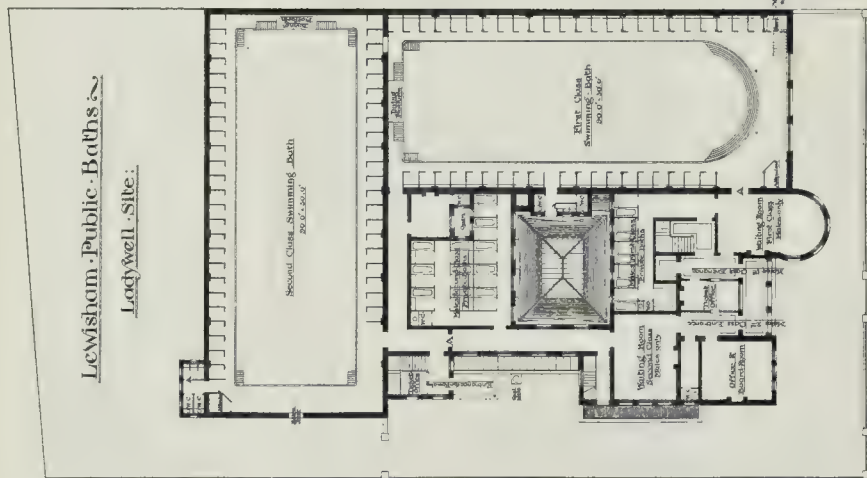
The authorities have offered a reward of a thousand marks for the discovery of the guilty parties.



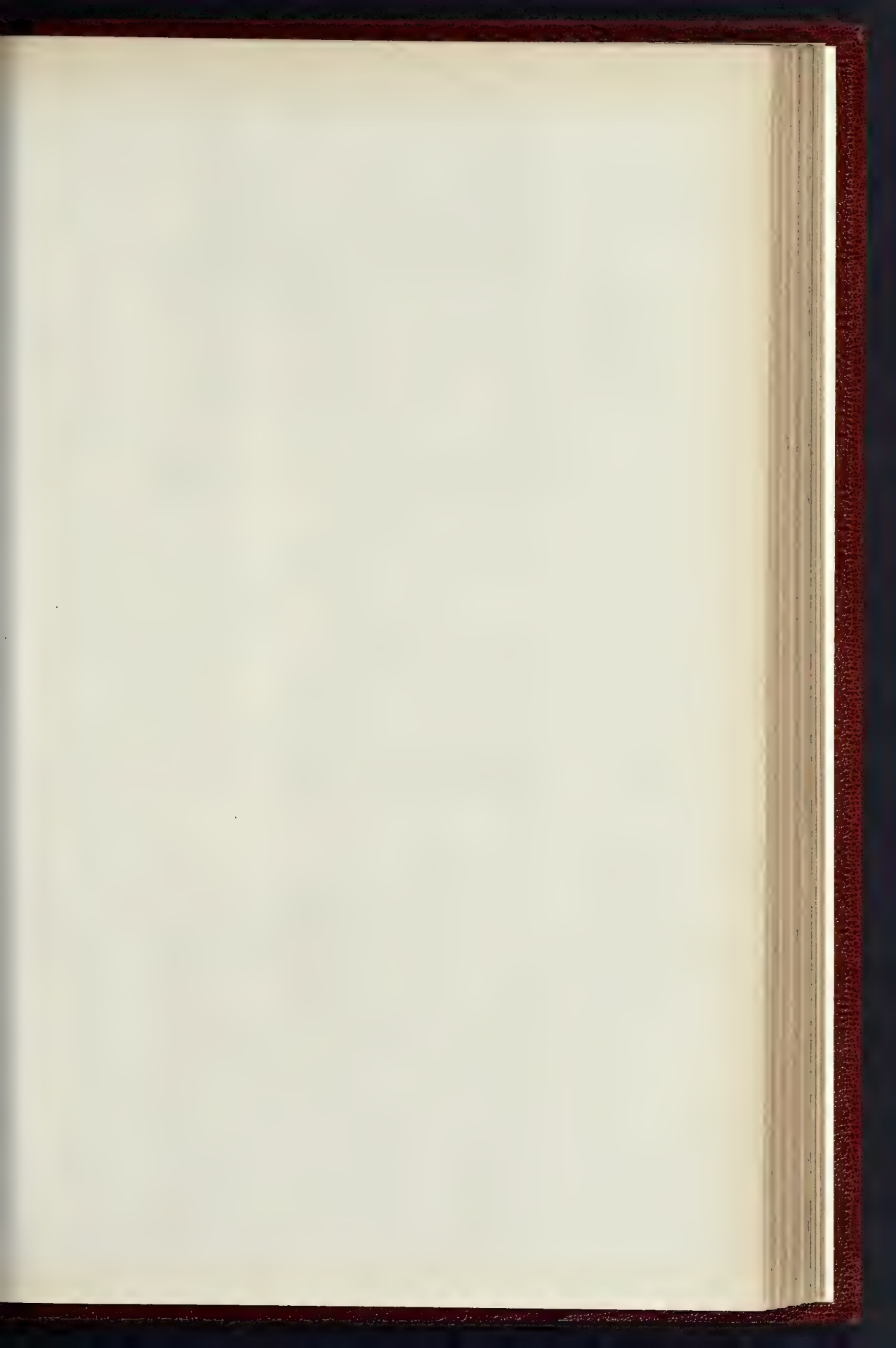
THE BUILDER DECEMBER 1 1893

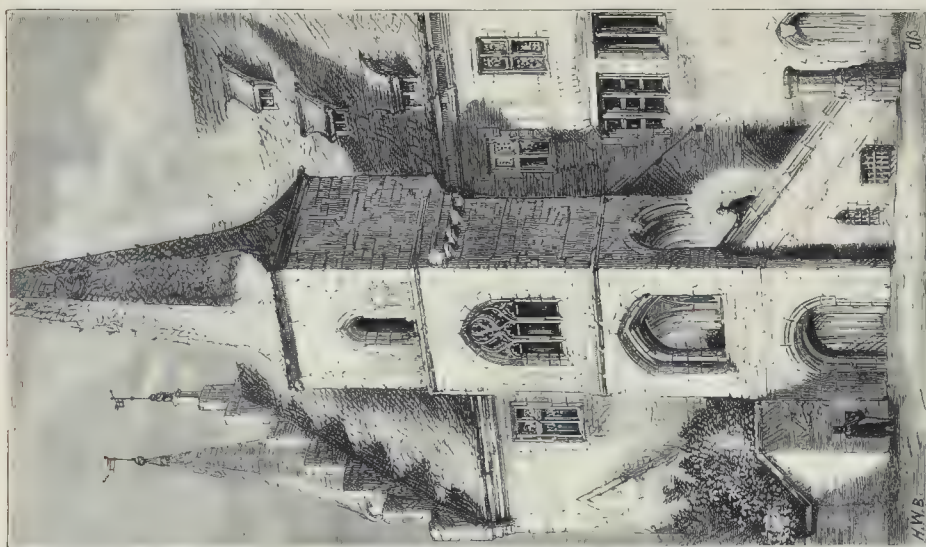




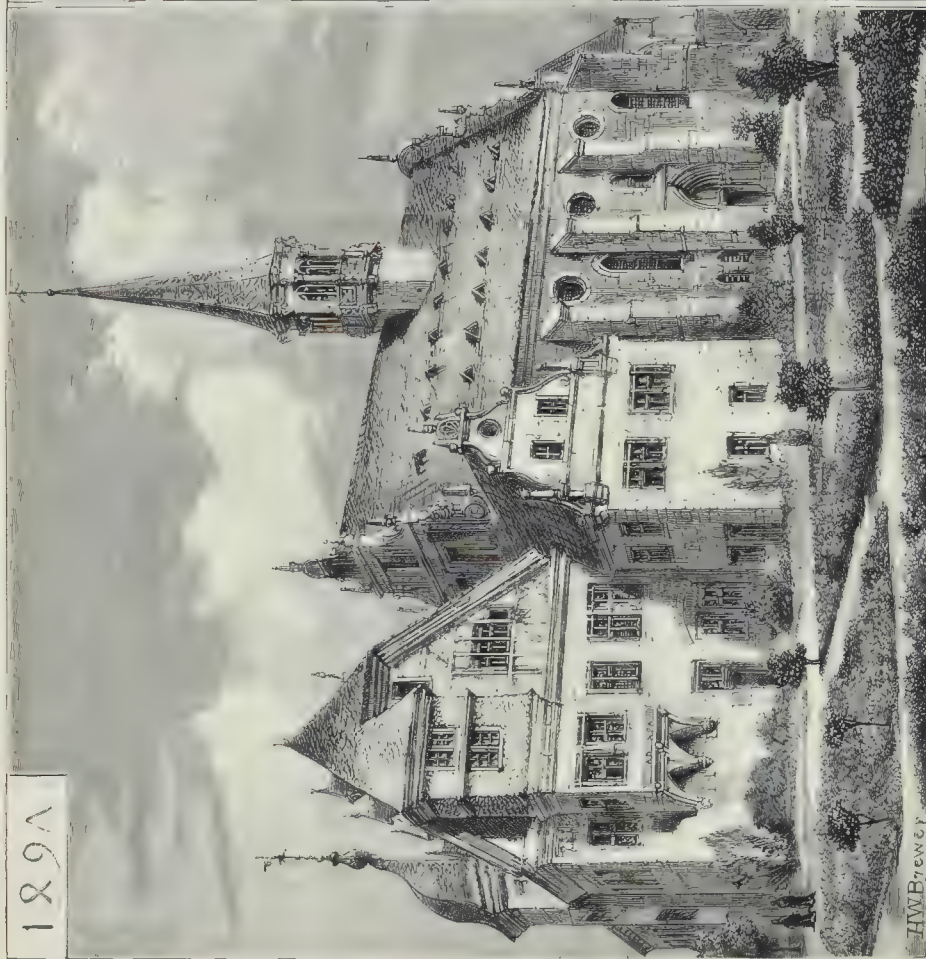


Messrs. Wilson, Son, & Aldwinckle,
Architects.



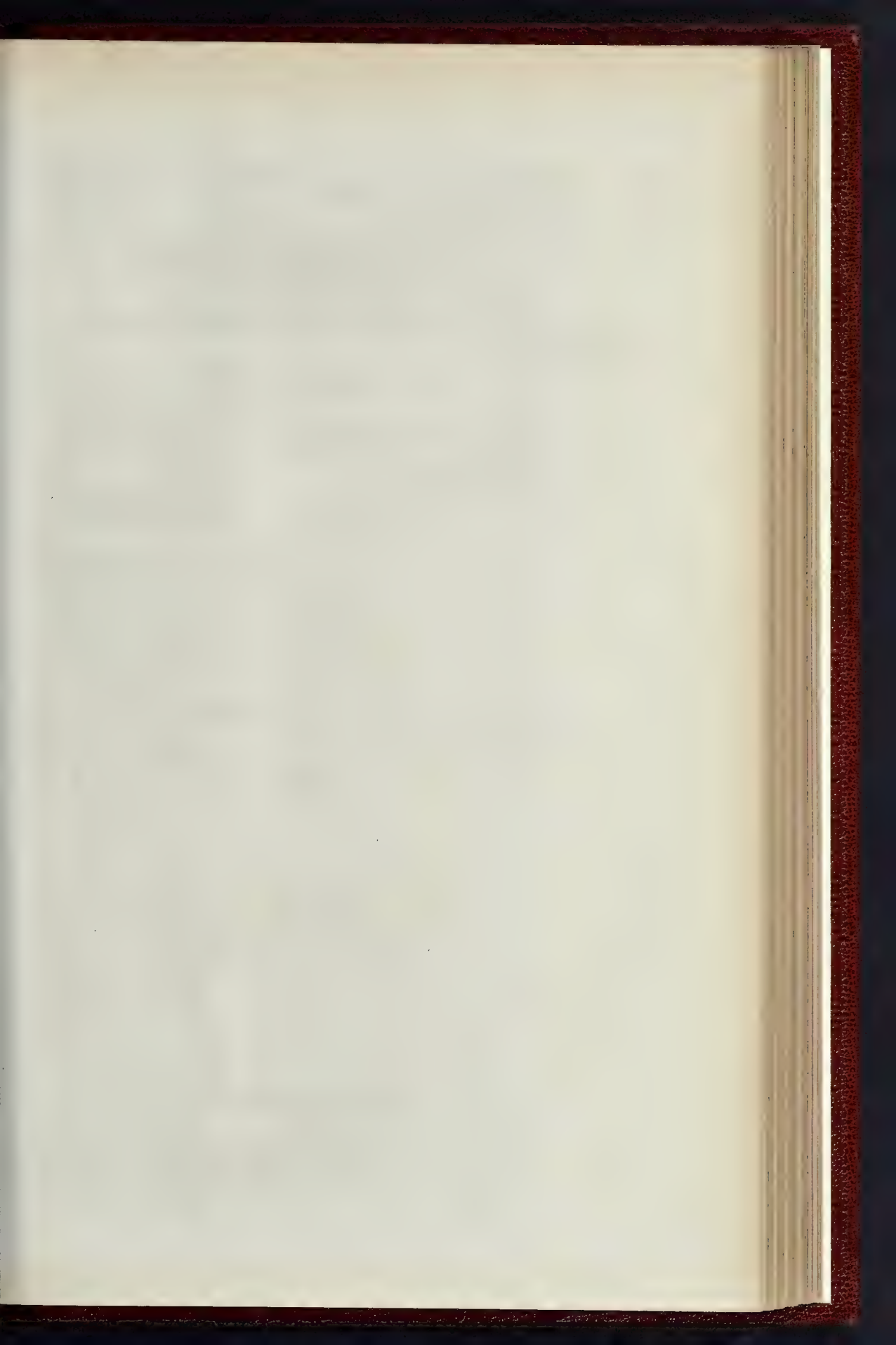


HOSPITAL, OCHSENFURTH.



CONVENT OF HIMMELSPORTE, NEAR WURZBURG.

189A



THE BUILDER, DECEMBER, 1883

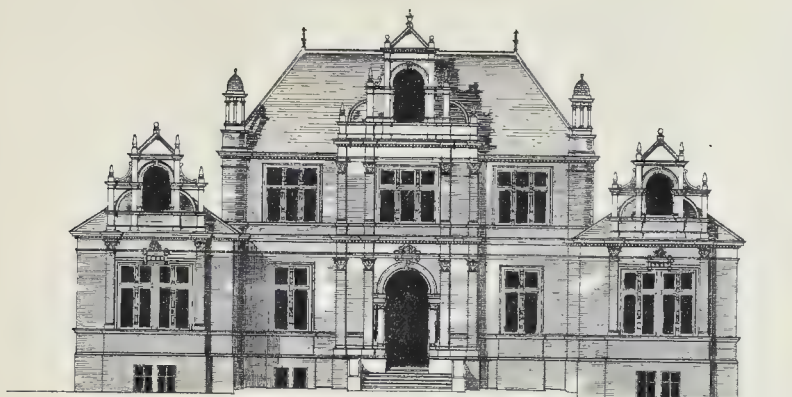




THE NEW COUNCIL CHAMBER, GUILDHALL. — Mr. HOMER JONES, ARCHITECT



CHURCH OF ST. GIL, SARAGOSSA.



Front Elevation: Forest Hill Site:



Front Elevation: Ladywell Site:



Vincent Brooks, Day & Son, Photo Litho

NEW ZEALAND INSURANCE COMPANY'S BUILDINGS, AUCKLAND. MR. ALFRED SMITH, F.R.I.B.A., ARCHITECT

THE PARISH CHURCH OF SAN GIL ABBOT, SARAGOSSA.

HISTORICAL Casarea Augusta (the modern Saragossa) was one of the first Iberian cities in which Christian churches were established at the earliest period of our era, even before the heathen persecutions were over. The first church, del Pilar, was founded in the second century. Solemn worship to the memory of the numerous martyrs was carried on in the catacombs long before the exterior church was raised, in the beginning of the fourth century. A little later the church which, since the twelfth century, bore the name of San Gil Abbot was constructed. This church was one of the few which remained open for Christian worship during the domination of the Moors.

We give an exterior view of this church, which rises in the street of the same name, and appears to have been rebuilt in the eleventh century, to judge by the pointed arches, devoid of all ornamentation, disposed in its decaying walls. Its lofty and well-shaped square tower, of a later period, is a graceful specimen of Arab architecture, not, however, improved by the extraneous helmet, in very bad taste, which carries on its top the cross. In the interior, of more recent date, which consists of a wide nave and six side chapels, with good frescoes and of plain ornamentation, are preserved some very remarkable pictures.

The Church of San Gil was bestowed by Don Alfonso I. (el Batallador), after the re-conquest of Saragossa in 1118, on the bishop and canons of the church of Huesca, and the donation was confirmed by the prelate Don Pedro de Librana. But a few years later, in 1145, by virtue of the concordate signed at Soría in the beginning of March, with a view of adjusting the disputes between the two dioceses, Dodon, bishop of Huesca, ceded the church of San Gil and all its privileges and revenues to the bishop of Saragossa, Don Bernardo II.

NEW ZEALAND INSURANCE COMPANY'S BUILDINGS, AUCKLAND.

THE New Zealand Insurance Company having purchased the lease of the city endowment property from the Post-Office and Custom-house to Queen-street, having frontage to Shortland, Queen, and Fort streets, offered recently a premium of 250l. for a suitable design for the buildings to be erected. The competition was open to the architects in all the colonies, and the result was that forty-five plans were sent in, five of which came from Melbourne. All the plans were on exhibition in the hall in the New Zealand Insurance Company's building, and a good many people took the opportunity of inspecting the collection. The directors made a full and careful examination of the plans, and made a selection of one as being worthy of the premium offered. This proved to be by Mr. Alfred Smith, F.R.I.B.A., of the firm of Messrs. Smith & Arnold, architects, Queen-street.

The main idea in the successful design is the construction of a spacious arcade from Shortland to Fort-street, thus giving three parallel rows of shops independent of those fronting Shortland and Fort streets. The principal entrance is at the corner of Shortland and Queen streets to a vestibule 20 ft. wide, leading into a grand staircase and an elevator, behind which is a sloped passage to the basement. On the Queen-street side of the entrance on the ground floor is a single shop, and on the Shortland-street side a double shop. In the Queen-street frontage to Fort-street corner (where there is a double shop) there are six shops, inclusive of Fort-street corner. There are on the Shortland-street frontage, next to the Post-office, two shops; then an arcade running through to Fort-street, the arcade to which on either side is occupied by series of shops. The space above is an open court used for a lighting area. There is also a small court for lighting purposes to shops on the eastern side of the arcade. The Fort-street frontage, east and west of the arcade, is also devoted to a series of business premises. The basement is so arranged that the cellars are lighted and ventilated both from the street and arcade. The elevator which runs up to the gallery of the tower communicates with the basement, as also with a staircase at the opposite corner, provision being also made for hydraulic lift. Round the shaft of the elevator is a handsome staircase to every floor.

The first floor contains twenty-three offices, and the second and third twenty-two each. The roof being high-pitched will afford an excellent range of rooms, suitable for artists or photographers, or any occupation requiring special lighting. A handsome verandah of light wrought-iron will run round the street frontage of the block.

BUILDING TRADES' EXHIBITION IN BRISTOL.

ON Monday last a Building Trades' Exhibition was opened in the Rifle Drill-hall, Queen's-road, Bristol, under the auspices of the National Trades' Exhibition Association, of which Mr. Philip Shrapnel, well known in connexion with the annual Building Exhibitions in London, is the secretary. The exhibits include recent inventions and novelties in construction, sanitation, decoration, sculpture, art furniture, hardware, majolica, terra-cotta, smoke abatement, gas fittings and stoves, and electric lighting apparatus.

We note among the exhibitors some well-known firms. Messrs. Ashton & Green (Limited), of London and Bristol, have four stands, and show a variety of marble, stone, and enamelled slate chimney-pieces, with other of their specialties. Messrs. John Hall & Sons, of Broadmead, Bristol, have a good display of glass used for building and decorative purposes. The Cattbrook Brick Company exhibit white-pressed facing and other bricks. Among other local exhibitors are the Fishponds and Bedminster Brick and Tile Company, and the Great Western Pottery Company, Newton Abbot. Other well-known exhibitors are Messrs. Pictor & Sons; Clark, Bunnett, & Co.; H. & C. Davis & Co.; J. L. Bacon & Co.; and the Bower Barff Rustless Iron Company.

The Exhibition will remain open until the end of next week.

THE LONDON AND SOUTH-WESTERN BANK BUILDINGS AT STREATHAM.

New business and other buildings are at the present time being erected in and immediately around Streatham, which is expanding at a remarkable rate by the laying out of the Telford Park and other adjoining estates for building purposes. A feature in the buildings which are in quick succession rising up is the ornamental character of the shop and other business establishments in the main road. Amongst these are new premises which have just been erected for the London and South-Western Banking Company. The building has two main frontages, with the entrance at the angle. The ground-floor part of the elevation is in Portland stone and polished Aberdeen granite, the upper portion being in red brick with Portland stone for window dressings and ornamentation. There is a handsome balcony immediately over the entrance, with balconettes above the ground-floor, carried entirely around the two frontages. The floor of the telling-room is laid with tessellated pavement. Under this apartment is the strong-room, the walls of which are composed of fire-brick 18 in. in thickness, and lined with hoop iron, the safes and door having been supplied by Milner's Safe Manufacturing Company. The door of the safe weighs 2½ tons. The upper part of the building consists of the manager's residence.

Mr. Crews is the architect, and Mr. Johnson, of Wimbledon, the contractor.

Cantor Lectures.—The first course of Cantor lectures, at the Society of Arts, will commence on Monday next, and the subject will be "The Scientific Basis of Cookery," by W. Matthei Williams, F.C.S. The introductory lecture will treat of modes of applying heat; radiation, conduction, and convection; roasting, grilling, baking, boiling, and stewing. The second lecture will deal with the constituents of flesh; the action of heat on albumen, gelatine, fibrin, &c.; exosmosis and endosmosis as operating in the kitchen; maceration; caséine; the cookery of cheese and its nutritive value; milk, butter, and "Bosch." In the third and concluding lecture will be considered the nutritive constituents of vegetables; the changes effected by cookery on vegetable substances, &c. The lectures will be illustrated by a selected exhibition of cooking apparatus and appliances.

THE PATENT "LAZY" VENTILATOR.

MR. ALFRED R. HOLLAND, manager of the Grand Hotel, Charing-cross, thinking (as others before him have thought) that it would be a considerable convenience to have an easy method of admitting into dwelling-rooms, direct from the outside, a constant stream of air (provided it can be done without causing any draught, and that it can be readily controlled), has devised and patented what he has christened the "Lazy" ventilator,—not very happily, as it seems to us, inasmuch as the idea intended to be conveyed by the name is that the ventilator is one likely to commend itself to people who do not care to take much trouble about ventilation. The ventilator can be applied to any existing window at a moderate cost. It has been practically tried and adopted in the Grand Hotel, and arrangements are pending for its introduction into several other establishments.

Its construction is, briefly, as follows:—An opening is made between the meeting-rails of the sashes; this opening is covered by a hinged valve, consisting of a strip of brass or other metal. To admit the air it is only necessary to pull a cord, which raises the valve; the incoming air strikes against the underside of the hinged plate, and is deflected upwards without causing any draught to persons near the window. On releasing the cord, the valve closes automatically. The valve may be made of metal, india-rubber, glass, or other material, and may be covered on the under-side with felt or cloth, so as to entirely shut out the draught when the valve is closed.

We have had an opportunity of seeing the ventilator in action, and it appeared from tests applied to answer admirably. It should not be forgotten, however, that previous inventors (among them Dr. Peter Hinckes Bird) have devised means for effecting practically the same end, as an inspection of the models and inventions in the Parkes Museum will show.

AN ARCHITECT'S CLAIM.

TAXED COSTS.

THE vexed question of taxed costs of architects and other professional men was fought last week by Mr. H. J. Snell, a West-country architect. The *Daily Mercury* (Plymouth), in reporting the case, says:—

"At the Stonehouse County Court, before the judge (Mr. J. Giffard), Mr. H. J. Snell, architect and surveyor, brought an action against Mr. J. Carnell, of Yelverton, to recover 12l. 2s. 9d. for services rendered.

Mr. J. Shelly appeared for the plaintiff, and Mr. J. E. Curteis for the defendant.

Mr. Shelly said that in the year 1881 the plaintiff was employed by the defendant to prepare for the erection of a dwelling-house upon his property at Yelverton. This he did. Just at this time Mr. Carnell received notice from the Princetown Railway Company that they required to run through the land. Mr. Snell then prepared plans showing how the land might be laid out for building purposes. In order to do this, Mr. Snell visited the land on several occasions, made tracings, held consultations, &c. Mr. Snell drew up his evidence, and attended two days at the hearing of the arbitration. The defendant won the arbitration, and Mr. Snell sent in his costs, which were taxed in the ordinary way, and his bill was cut down. The taxation was, of course, as between party and party, but the defendant had refused to pay Mr. Snell the balance of his account.

Mr. Snell said his valuation of the land was 659l., but the railway company had only offered 260l. The arbitrators awarded 502l. As a result of the arbitration, he received a cheque for nine guineas in settlement of a bill of 22l. 2s. 9d. He was told that his bill had been taxed.

Mr. Curteis cross-examined the witness at length, and elicited the fact from the witness's own private diary that he was engaged altogether in this work twenty-two hours, and his clerk eight hours.

Mr. Curteis said the witness was allowed 2l. 2s. a day, and 5l. 5s. as qualifying fee. Taking the ordinary scale of allowance to professional men, that was a fair allowance.

His Honour.—I am not so sure of that.

Mr. J. H. Keats, architect and surveyor, and Mr. J. B. Foster, surveyor, said the charges were fair and moderate.

Mr. Curteis said the defendant fought this case as a matter of principle, as it was likely to be a test case. This action came with particularly bad grace from the plaintiff, as he had been already paid a considerable sum of money in connexion with works on the defendant's lands. He considered that some of the charges,—1l. 1s. 8d. for two hours, and 3l. 3s. for five hours,—were unfair. The costs of 2l. 2s. a day

allowed to plaintiff, and 5l. 5s. for preliminary work, were fair and just.

His Honour said he did not see anything unreasonable in these charges, considering the amount of ability, knowledge, learning, and skill which the plaintiff brought into operation for the benefit of the defendant. He did not agree with Mr. Curteis that the amount of costs allowed on taxation was any criterion at all.

He gave judgment for the plaintiff for the full amount claimed, with costs on the higher scale.

ASSOCIATIONS WITH THE AVENUE HOTEL SITE.

SIR,—In a footnote to the account of the new First Avenue Hotel in your impression of last week (p. 682), "Dryden" is, I think, a mistake,—though doubtless a typographical mistake,—for "Haydn." The circumstances under which the composer of the "Creation" came to reside at No. 45, High Holborn,—a house that could scarcely have been contemporary with Dryden,—may be not uninteresting to your readers.

Mr. C. H. Purday, who wrote and set to an older air "The Fine Old English Gentleman," calling one morning some forty-five years since at his brother's music-shop (the house in question), met there a fine-looking hale old gentleman, who said, "I don't suppose you know who I am?" Mr. Purday bowing assent,—I give the story in almost his own words,—the elderly gentleman resumed, "My name is Bland. You see in me the first proprietor of this establishment. About forty years ago, having made up my mind that music could attain no higher degree of excellence or cultivation, and that it would lose more rapidly than it had gained favour, I resolved to dispose of this business and embark my capital in some other venture. I am now ninety years of age nearly." Mr. Bland then went on to recount how he was the first to cross over to Germany to bring the celebrated Haydn to this country, adding that it was at the very house in which they were then conversing that Haydn was domiciled for some while on arriving in England. Reaching Vienna, Mr. Bland was introduced to Haydn when the latter was shaving. "Ah!" he said, complaining that the process was by no means easy, "what would I not give for a good pair of English razors! Why, I would give one of my best quartets for them." "So," said Bland, "I hastened to my hotel and returned with a pair of my own, with which he seemed greatly pleased, and at once handed me the quartet which I published by the name of the 'Razor Quartet.' He, at the same time, gave me the cantata 'O Naxos.' Haydn removed subsequently to No. 1, Bury (Berry) street, St. James's.

W. E. MILLIKEN.

WOTTON'S "ELEMENTS OF ARCHITECTURE."

SIR,—In the interesting abstract of Sir Henry Wotton's "Elements of Architecture," contained in your last week's number, it is conjectured that that composition first appeared in 1651 under the direction of Izaak Walton. I beg to say that I have a copy of the "Elements," consisting of 123 pages, printed in 1624. This formerly belonged to J. Britton, having his name on the title-page, followed by that of Mr. J. Elmes.

From a memorandum in Mr. Elmes's writing he seems to have considered it the author's own copy; for it runs thus:—"N.B.—This copy has a note in manuscript by the author at page 88, the style of which is evidently of the time.

J. O'CONNELL.

ELM-WOOD BLOCKS.

SIR,—In reply to the inquiry made [p. 704, *ante*] as to the use of elm for wood-block floors, I introduced this material in the floor of the new church at Merfield, near Torpoint, fifteen years ago; and the blocks have lasted and worn perfectly. But they were 2½ in. thick, and were burnt before laying, which process does not seem to afford any certain protection from decay, though it seasons the wood by driving out the sap, and makes it less liable to the same amount of shrinkage. With elm, again, there is not the same danger of decay from a damp bed as there is with other wood. They should be laid nevertheless, in a waterproof composition so as not to cause the wood to swell in the laying and shrink in the drying. The floor above alluded to has been kept in a fine condition by rubbing with wax and turpentine, and is quite ornamental.

WM. WHITE, F.S.A.

ARCHITECTS, BUILDERS, AND ESTIMATES.

SIR,—I observe in your report of the annual dinner of the Builders' Benevolent Institution [p. 650] that Mr. Howard Colls makes some strong remarks on the subject of architects and quantities, one natural inference from which may be that builders should put no faith in architects in this matter.

Allow me to say that an architect, strictly speaking, ought to have nothing whatever to do with the quantities. It is not his business, but the builder's, to prepare estimates; and the architect's duties are complete when he has furnished the working drawings and specification, except the superintendence during the progress of the work. Although, of course, the practice of providing bills of quantities has some conveniences and advantages in obtaining estimates, and a basis of uniformity for the same, in many respects it was an evil day for architects when they undertook to prepare them; for, though it may have put much money into the pockets of some, it has undoubtedly lowered the prestige of the whole body. It has also exposed them to the suspicion and distrust of the building public and their clients of sharing with the quantity surveyor, or builder, in surreptitious profits and commissions; and lastly, but not least, the custom which has been developed in some offices of good standing, of deputing the specifications to surveyors, has put a whip into the hands of builders to be scourged with by them, as exemplified in the speech referred to.

E.

BRICKMAKING MACHINES.

SIR,—A paper from America states that at the Louisville Exhibition (Kentucky) now open, one of the great attractions is a brickmaking machine by Cyrus Chambers, of Philadelphia, which every day kneads, squares, throws into an oven, and dries up dozens of 50,000 bricks of perfect shape and quality. Is it not worth while bringing this result before the notice of our brickmakers at home, and could not any of your contributors give further particulars concerning recent improvements made in an industry of such primordial importance to those connected with the building profession in our country?

C. H. C.

BUILDING PATENT RECORD.*

APPLICATIONS FOR LETTERS PATENT.

- 5,411. R. Schulz, Dresden. Petroleum-heating apparatus. Nov. 16, 1883.
- 5,421. E. Hurley, Birmingham. Closet-pan apparatus. Nov. 17, 1883.
- 5,438. T. E. Bladon and W. Matthews, Birmingham. Apparatus for ventilation. Nov. 17, 1883.
- 5,467. M. Mackay, London. Plastic compounds. Nov. 20, 1883.

NOTICES TO PROCEED

have been given by the following applicants on the dates named:—

- Nov. 20, 1883.
- 4,944. A. C. Kennard, Falkirk. Heating stove. Oct. 17, 1883.

Nov. 23, 1883.

- 3,634. B. J. B. Mills, London. Hygienic joint for doors, windows, &c. (Com. by J. Couturier, Lyons.) July 24, 1883.
- 5,019. E. Newton, Hitchin. Securing glass in greenhouses, window-frames, &c. Oct. 22, 1883.

ABRIDGMENTS OF SPECIFICATIONS,

Published during the week ending November 24, 1883.

- 1,570. R. A. Hunter, Dublin. Ventilators and chimney-exhausters. March 28, 1883. Price 6d.

Across the top of the pipe or shaft are two horizontal plates, the pipe projecting a little above the lower one. The wind blowing across between these two plates establishes an upward draught.

- 1,643. F. J. Biggs, London. Latches and locks. April 2, 1883. Price 2d.

This relates to methods whereby the lock is adaptable to either right or left hand doors. (*Pro. Pro.*)

- 1,658. J. Wright, London. Manufacture of cement. April 3, 1883. Price 2d.

This is made from different furnace slags pulverised and mixed together. (*Pro. Pro.*)

- 1,688. H. J. Allison, London. Coloured glass windows. (Com. by T. La Farge, New York, U.S.A.) April 4, 1883. Price 4d.

A light metallic framing is substituted for the usual "leading," and a thin sheet of glass is placed on one side of the coloured glass work. (*Pro. Pro.*)

* Compiled by Hart & Co., Patent Agents, 180, Fleet-street.

- 1,690. F. P. Preston, J. T. Prestige, and E. J. Preston, Deptford, and E. W. de Russett, Annerley. Lavatories. April 4, 1883. Price 6d.

This is an improvement on Patent No. 4,013, of 1887, in arranging the fittings of folding lavatories. The basin is shaped that when turned up a spout shoots the water into the receiver below. The supply vessel above may be pivoted so that the water can be poured out, or a pipe may lead thence to the basin. A locking-glass is pivoted above, and shelves or racks are made for the water-bottle, tumblers, &c.

- 1,705. T. O. Olney, Manchester. Construction of hot-water apparatus for heating buildings, &c. April 5, 1883. Price 6d.

To combine the advantages of the high and low pressure systems a vertical closed tube is connected with the hot-water circulating pipe, which again is connected with a closed cylinder, within which is a double-acting inlet and outlet safety-valve, similar to that described in Patent No. 4,393, of 1881. This cylinder is connected with the supply-cistern.

- 1,712. J. Barnes, Manchester. Damp-proof and non-inflammable material for lining walls, &c. April 5, 1883. Price 2d.

This is made of the pulp of pyrrus pressed and rolled, and then coated with a mixture of tallow, cotton-seed oil, Burgundy pitch, tar, resin, alum, and gum arabic, in a boiling state, over which again is placed a sheet of textile fabric. (*Pro. Pro.*)

- 1,728. F. Service, London. Tool for use in pointing the joints of brickwork and masonry. April 5, 1883. Price 6d.

This tool has two spring blades, the distance between which is regulated by a screw. The ends of the blades are turned outwards at right angles, and are V-shaped. The edges of the blades are sharpened near the bands, and the putty is cut off on both sides simultaneously.

CLOCKS AND BELLS.

Tiverton.—A new clock for the tower of St. Peter's Church, Tiverton, has just been set in motion by the donor, Mr. H. S. Gill, J.P. The preparation of the chamber for the reception of the clock was, with other work in the tower, entrusted to Messrs. Grater & Pyle, builders. From the bells to the bottom of the tower everything has been thoroughly renovated, and the various chambers have been substantially floored,—not too soon, as the floor of the belfry was found to be in a dangerous condition, the beams supporting it being broken. Formerly the clock chamber was entered from the room beneath by a door of a ladder through a trap-door; but now a doorway, 6 ft. high and 2 wide, has been constructed a foot or two above the clock chamber, which is now conveniently entered from the staircase by a short flight of steps. The clock itself is an eight-day turret clock made by Messrs. Gillett & Co., of Croydon. The skeleton dial on the eastern side of the tower is 7 ft. 6 in. in circumference. The quarter-hours are chimed on the eight bells of the church, and the hour is struck on the tenor bell.

Ladock (Cornwall).—A new peal of six bells has just been hung in the tower of the parish church to take the place of the three old ones, one of which had been in use since the time of Charles II. They bore the dates 1670 and 1743. These dates have been retained on the new bells as well as the old inscriptions. The old frame work, as also the beams and floor, had become so decayed as to render it dangerous to ring the bells. The six new bells are in the key of G the tenor weighs about 12 cwt., and the weight of the peal is about 2½ tons. They are supported on beams of massive English oak, and the frame work is of the same material, and are well hung for scientific ringing. They were cast by Messrs. Taylor, Loughborough, and fitted and hung by Mr. W. Agget, of Chagford, Devon. In 1864 the restoration of the church was completed, the whole of the expense being borne by the Rev. Canon Wise, rector of the parish, and after an interval of nearly twenty years the parishioners with unanimity and zeal decided to raise the necessary funds for the erection of the peal of bells, and thereby testify their appreciation of their rector's many acts of liberality during the past thirty-seven years. The sum of £160. was raised, which, with £24. given by the rector, provided for the cost of the new bells.

Cardiff.—A large clock has just been completed and fixed in the tower of Wenro Church, Cardiff. It is fitted with all the latest improvements, and is by Messrs. John Smith & Sons, Derby.

British Museum Lectures.—Sir Jam Alexander occupied the chair at the third Mr. Hodgkin's lectures, in the Anglo-Sax Room, on Wednesday. The lecture was very successful. We shall give a detailed report of the first three lectures in our next.

PROVINCIAL NEWS.

Northampton.—The whole of the new offices of the London and North-Western Railway, at the Circle Station, in this town, were opened on the 19th ult. The new building is two stories high, with a ground measurement of 120 ft. by 40 ft. The materials most largely used in its construction are Loughborough red pressed bricks, with white glazed jambs, Hollington stone sills, and Duston stone strings and cornices. The building has been erected for the company by Mr. J. Hartley, of Birmingham, who was also the contractor for the adjoining goods warehouse. Mr. J. Savage, who has acted in this capacity during the construction of the entire station, was clerk of the works, and the Dalston Iron Co. supplied the ironwork. The cost of the passenger station approaches 40,000l.

Woolston (Southampton).—On the 19th ult. the Clausentum Masonic Hall, Woolston, which has just been erected for the accommodation of the brethren of the Clausentum Lodge of Free and Accepted Masons, was consecrated by the R.W. Provincial Grand Master of Hampshire and the Isle of Wight, Br. W. W. B. Beach, M.P. The building is constructed of red bricks, pointed externally with black mortar, and relieved with bands of white bricks, and Bath stone dressings to doors, windows, &c., a prominent feature in the front being a representation of a Roman eagle, surrounded by a laurel wreath, with the word "Clausentum" under, emblematic of the lodge, carved in stone by Mr. Munday, of Fremantle. The lodge-room is approached through an ante or robing room, and is 40 ft. by 24 ft., 14 ft. high at the sides, and 20 ft. in the centre, being ceiled halfway up the rafters. The ceiling is cut up into four bays by three ornamental roof-trusses, each bay being subdivided into panels by moulded wooden ribs. A lantern extends the whole length of the two central bays, the sashes of which are glazed with obscured glass in geometrical patterns. A semicircular-headed recess is formed in the eastern end, containing a circular window, glazed with stained glass in Masonic patterns and colours. The whole of the premises are lighted by gas, the lodge-room having, in addition to four brackets, two special made brass tripod pendants from lanterns, each having Sugg's patent 100-candle burners. This portion of the work has been done by Mr. George Vivian, of Bernard-street. The building has been designed, and the work carried out, under the superintendence of Br. W. H. Mitchell, architect, Southampton, the contractor for the works being Br. W. H. Chapman, P.M., of Woolston.

Leeds.—At a meeting of the Leeds Town Council on Monday last, Mr. Emsley introduced a series of resolutions, the first of which was to enable the Corporation to make and maintain a new street commencing in Park-row, opposite the south-eastern corner of the General Post-office, and terminating at the junction of Aire-street with Wellington-street; and also to widen and improve Infirmary-street, Quebec-street, Wellington street, and Aire-street. Another resolution authorised and empowered the Corporation to purchase by compulsion or agreement the Coloured Cloth Hall estate and other lands, houses, and property required for the new street and street improvements before mentioned. Other resolutions submitted sought to make provision for preventing the pollution or fouling of streams and water-courses communicating with the water-supply of the Corporation; and to alter and enlarge the borrowing powers of the Corporation. A long debate took place, and several members opposed the carrying out of the whole scheme, on the ground that they were without information as to the cost, and ultimately Mr. Emsley limited his motion to the acquirement of the Cloth Hall site, and as thus amended, it was carried by a majority of forty-two to ten votes. Other items mentioned in the original proposal were then put separately and carried.—At the same meeting, Alderman Firth moved,—

That the Council confirm the provisional agreement made by the Highways Committee with the lessors of the Apton Quarry for the termination of the lease of the same upon the 1st of January, 1884, upon the following terms:—The lessors to pay to the Corporation the sum of 550l., releasing the Corporation from all claims and liabilities under the lease, and taking the plant of the Corporation, agreeing to take from Mr. Wino, the proposed new lessee of the quarry, 8,000 tons of good machine-broken stone per year, for two years, at 4d. per ton, delivered on the rail in Corporation wagons at Great Apton.

Mr. Hunt seconded, and the motion was agreed to.

Newcastle-on-Tyne.—Extensive building operations are about to be commenced at Elswick by the laying-out for building sites of a very large portion of the late Mr. Buddle Atkinson's estate. The estate begins exactly at the western boundary of the borough, and extends westward over 800 yards and northward to Benwell 820 yards, the total area of the estate being 473,000 superficial yards. The portion at present put into the market has an area of 140,000 superficial yards. It was originally intended to give the streets a width of 40 ft., but to meet the requirement of the Benwell Local Board they were reduced to 36 ft., to make the back streets 24 ft. in width instead of 20 ft. as originally laid out, and the streets will contain, on an average, twenty-eight houses, with an eastern and western aspect. The houses will be tenemented and self-contained, with large yards and all the usual useful outhouses. Clara-street, which will be 46 ft. in width, will be the main artery, running from south to north, and will extend from Scotswood-road on the south to Buddle-road on the north. It will afterwards be extended to Benwell-road, the extreme northern portion of the estate. The houses here will be built on a larger scale than those in the other streets and will consist of twenty-four with a western aspect, and twenty-two with an eastern aspect. The next street will be School-street, in the middle of which stands a school. The last and the most western street on the estate at present will be Atkinson-road, with a width of 50 feet. The houses, 31 in number, to be built in this street, will be of a superior class, and will be self-contained. Running from east to west, at the northern portion of the estate, will be Buddle-road, having a width of 50 ft. Facing this road blocks of houses will be erected, each block to contain five houses. Plans for the laying-out of the whole estate have been prepared by Mr. William Glover, architect, Market-street, Newcastle.

Exeter.—At a quarterly Court of the Governors of the Devon and Exeter Hospital, held a few days ago, it was resolved to make certain additions and alterations, at an estimated cost of 970l.

NEW POST OFFICES.

Belfast.—The committee appointed at a recent meeting of the Chamber of Commerce to examine the plans of the new post-office and report thereon have conferred with Mr. Owen, the architect, who came from Dublin for the purpose. After a lengthened consideration of the question, during which the committee pointed out their views, and the alterations they suggested, Mr. Owen stated that he believed the Board of Works was anxious to accede as much as possible to the wishes of the Belfast merchants.

Llanelli.—The plans for a new Post-office here, with two shops attached, have been approved by the Postmaster-General, and the work in connexion with the new buildings has been commenced. The masonry part of the contract has been entrusted to Mr. David Hughes, of Aunesley-street, and the carpentry to Mr. John David, Lakefield. The buildings, which will cost about 2,000l., are to be completed about June next.

ORGANS.

Lustleigh (Devon).—The new organ in the parish church of Lustleigh has been opened. The instrument contains:—Great organ,—open diapason, 8 ft.; rohr flute, 8 ft.; salicional, 8 ft.; flute, 4 ft. Swell organ,—Geigen principal, 8 ft.; bohl flute, 8 ft.; dulciana, 8 ft.; vox angelica, 8 ft.; principal, 4 ft.; oboe, 8 ft.; pedal-organ bourdon, 16 ft., thirty notes; two composition pedals to great organ; two ditto to swell organ. The whole woodwork inside mechanism is of hard wood, varnished to protect it from damp, and the wood pipes are treated in the same way. The case is of Indian oak. The organ was built by Mr. Geo. Tucker, Martin-street, Plymouth.

Stonehouse.—The organ at St. George's parish church, Stonehouse, has just undergone several alterations and additions. In the execution of this work Messrs. Hele & Co. have been engaged.

CHURCH-BUILDING NEWS.

Horseheath.—The chancel of Horseheath Church, Cambridgeshire, was re-opened on the 21st ult., after restoration necessitated by the south wall having fallen considerably out of the perpendicular. The wall has now been entirely rebuilt of the old flint stone, and a new chancel door erected. An old oak roof, which was hidden under the plaster ceiling, has been opened out. The old seats in the chancel have been cleared away and oak stalls erected in their places. The interesting old monuments, with the two effigies of Sir Giles Alington, Master of the Ordnance in the reign of Henry VIII., and of his successors, have been carefully restored, and the coats of arms re-painted, and they are now situated within the new altar-rails so as to be preserved as much as possible from further injury. The brass of Sir Philip De Argentine remains in its position, having by the side of it a brass which was removed from the south aisle, and had been covered many years with seats. The restoration has been carried out by Mr. G. E. Pritchett, of Bishop's Stortford, and the work has been executed by Messrs. Rattee & Kett, of Cambridge. The chancel dates back to the fifteenth century.

Hunslet.—The foundation-stone of St. Cuthbert's Church, Beeston-road, West Hunslet, Leeds, was laid on the 24th ult., by Mr. Reginald Wigram. The new church is intended to supersede a temporary structure which has been used for church services since 1878, in which year it was erected at a cost of 500l. The cost of the new church will be 3,000l. The building will be in the Gothic style, and will accommodate 500 worshippers. Messrs. Parkin & Bulmer, of Leeds, are the architects, and the contractors are Messrs. Longley Brothers, of Hunslet.

Linslade (Leighton-Buzard).—A handsome reredos has just been erected at St. Barnabas's Church, Linslade. It is principally composed of Corsehill red sandstone, the central part above the altar having a pediment enriched with carved cresting and a finial at the apex. The central panel has a richly moulded and cusped arch, with a mottled alabaster inlay, over which is a circular medallion containing the Agnus Dei. The panels on either side of it are square trefoil-headed, with inlay of alabaster. The wings, containing circular cinque-foiled cusped panels, inlaid with white Mansfield stone, have a rich running foliated frieze with circular medallions at intervals, containing sacred emblems. The surbase of the wings is of Forest of Dean stone. At the same church a memorial pulpit has been erected, the upper part of wainscot richly carved, with some open panels; the lower portion of Corsehill stone with richly-carved capitals, containing various emblematic flowers and foliage. The architect of both works was Mr. B. Edmund Ferrey, F.S.A., and they have been executed by Messrs. White & Sons, of Vauxhall Bridge-road.

Canton (Cardiff).—The foundation-stone of the projected Church of St. Catherine, on a site given by the Ecclesiastical Commissioners, in King's-road, Canton, Cardiff, was laid on the 14th ult. At present the erection of three bays of the nave and the north and south aisles are being proceeded with. About 3,000l. has been subscribed towards the cost of the edifice. This amount will be nearly expended in the erection of the first part of the building, which will be constructed from designs by Mr. J. Prichard, diocesan architect. The contractor is Mr. S. Shepton. The total cost of the structure, when complete, will be 5,000l. There will be immediate accommodation for 422 worshippers, and eventually this will be extended so as to provide for 800 seats.

Edgbaston.—It is proposed to considerably enlarge St. George's Church, Edgbaston, Birmingham. Only the south aisle of the old structure will be interfered with, and the walls of this will be rebuilt in a new position next to the Westbourne-road. It is proposed to build a well-proportioned nave; this is the main feature of the design. There will be an effective clearstory, and the arcades will have to correspond in height with the present ones, but will be more substantial in character. There will be a large chancel, suited to the requirements of a modern choir. The nave of the present church will become a north aisle, and the present chancel will become a chancel aisle. A new south porch will be built, ample pro-

vision being made for the exit of the congregation. It has been the aim of the architect (Mr. J. A. Chatwin) to make the interior effective, and of good proportions. The exterior will be carried out in the same style of architecture as the present structure. The cost of the work is estimated at 6,000l. This does not include a reredos, pulpit, or oak choir stalls. The church, when enlarged, will seat 1,300 persons, or 350 more than at present.

St. John's Wood.—Through the liberality of a member of the congregation, a rich traceried carved oak screen has lately been added to the chancel of St. Mark's Church, Hamilton-terrace, N.W., filling up a wide archway on the south side, and thus better connecting the scheme of coloured wall decoration. The architect was Mr. B. Edmund Ferrey, and the screen has been executed by Messrs. Underwood & Sons, of Buckhurst-hill.

Newport (near Barnstaple).—New choir-stalls and prayer-desks have just been placed in the chancel of Newport Church. Mr. Hancock executed the work, including the carving, which is made of pitch-pine, polished. The only thing now wanting to complete the restoration is the seating of the nave and aisle.

Liverpool.—The new Church of St. Mary, Waterloo Park, Waterloo, was opened by the Bishop of Liverpool on the 21st ult. The church is in the form of a Latin cross on plan, with central tower. It is constructed of red sandstone, with freestone dressings of corn-grit, from Bath. The interior is lined with dark crimson bricks, with black bands, interspersed with stone, and all the piers, archings, and mouldings are of Corsham stone. The woodwork is entirely of pitch-pine, and of massive character, with open boarded roof. There is a chancel, with reredos designed by Messrs. O'Neill, of Church-street.

Twyford.—The Church of St. Mary, Twyford, near Reading, Berkshire, has just been enlarged by the addition of a north aisle having an eastern transeptal projection, as also an organ-chamber and new vestry on the south side. All the new open-timber roofs, as well as the new benches, are of English oak, like the rest of the church, which was erected in 1847 from the designs of the late Mr. Ferrey, F.S.A. The walls are principally built of flint, with Westwood stone dressings. The glazing is of cathedral rolled glass in various ornamental lead patterns. The extension and improvement of the warming apparatus has been effected by Messrs. Rosser & Russell, the additional lighting arrangements being by Mr. John Court, of Brompton. The builder was Mr. Weyman, of Henley-on-Thames, and the clerk of works was Mr. Chinnock. Mr. B. Edmund Ferrey, F.S.A., was the architect concerned.

Darlington.—Holy Trinity Church, Darlington, which was re-opened on the 22nd ult. by the Bishop of Durham, has been re-seated, ventilated, and lighted from designs by Mr. G. G. Hoskins, architect.

STAINED GLASS.

Chipping Norton.—A window in the mortuary chapel of the Chipping Norton Cemetery has recently been filled with stained glass, in memory of the late William and Esther Bliss, at the cost of the children of the late Edwin and Mary Bliss. The subject chosen is the appearance of our Lord to Mary Magdalene after His Resurrection. The window is by Messrs. John Hardman & Co., of Birmingham.

Godmanchester.—The large east window of the south aisle of the parish church has just been filled with stained glass to the memory of the late John Thomas Baumgartner, M.D., and also to Philippa, his wife. The window, which consists of five lights, is divided into a top and bottom compartment. The top is illustrative of a portion of the *Te Deum*. "We praise Thee, O God: we acknowledge Thee to be the Lord," being represented in the centre light, and "The glorious company of the Apostles," "The goodly fellowship of the Prophets," "The noble army of Martyrs," and "The Holy Church throughout all the world," being depicted in the other four lights. The lower compartment illustrates the following passages from the New Testament: "I was an hungred and ye gave me meat," "I was thirsty and ye gave me drink," "I was a stranger and ye took me in," "I was naked and ye clothed me," and "I was in prison and ye came unto me." The work was undertaken by Messrs. Thompson, builders,

Peterborough, but the glass was stained and glazed by Messrs. Burlison & Grylls, Newman-street, London.

Barkisland Church, Yorks.—The three-light east window of this church has just been filled with stained glass in pursuance of a bequest by the late Mr. Daniel Collins. The subject of the chief central light is the Ascension. In the flanking lights are respectively St. Peter bearing the keys, and St. Paul the sword. These are richly and deeply coloured on diapered ruby backgrounds. The canopies, bordures, and tracery lights are enriched with foliated ornamentation in harmony with the style of treatment, viz., the Late Decorated. The work is by the firm of Powell Bros., of Leeds, whose design was selected in a limited competition, the supervising architects being Messrs. Leeming & Leeming, of Halifax.

Longstock.—The village church of Longstock, Hants, has recently received the addition of three Munich stained-glass windows. That at the east end represents the Crucifixion, one at the south the Holy Family, and one over the font the Lord's Baptism. The whole of the work in these windows has been designed and executed by Messrs. Mayer & Co., of Munich.

DISSENTING CHURCH-BUILDING NEWS.

Gulval.—A new Wesleyan chapel is being erected at Gulval, Cornwall. It is to seat 340 persons, and will have schoolroom, class-rooms, &c., underneath. The cost will be about 1,000l. Mr. James Hicks, of Redruth, is the architect.

Stranraer.—A new United Presbyterian church is being erected in Lewes-street by the West United Presbyterian Church congregation, Stranraer. The building adjoins the County Buildings, and is expected to cost about 3,000l. The architect is Mr. Pettigrew, Glasgow.

Belfast.—On the 17th ult. the foundation-stones of a new Methodist Church in the Crumlin-road, Belfast, were laid. The new building is to provide for a congregation at present meeting in premises which will shortly be required for other purposes. The building committee having obtained the services of Mr. W. J. Gilliland as their architect, he prepared the plans, and tenders were invited. That of Mr. Robert Corry, Donegal Pass, being the lowest, was accepted at 2,230l., which, with cost of railings, architect's commission, &c., will reach a total of 2,500l.

SCHOOL-BUILDING NEWS.

Hull.—New schools for the Scolcoates Union, Hull, have been opened. The building is at the rear of the Workhouse on the Beverley-road, and has an entrance from the Beverley-street. The school is entirely apart from "the house," the main object expected to be attained being that the children—who are paupers from no fault of their own—may be raised from that state, never to return to the workhouse after once clearing its gates. The building is planned upon the "pavilion" system, the central portion being appropriated to the administrative department, and the blocks to the right and left to the girls and infants and boys respectively. The entrance is placed in the centre of the main front, and opens into a spacious hall, to the right and left of which are the master and matron's rooms, with the necessary store-rooms and a staircase leading to the sleeping-apartments of the superior officers. The hall terminates in the central corridor, which is of ample width, and branches off right and left to the girls' and boys' departments. In the centre of the main corridor, and at the east side thereof, is situated the dining-hall (which is intended also for Divine worship), and still beyond this the kitchen, scullery, and pantry are placed, the wash-house and laundry occupying the ground at the eastern extremity of the site. The boys', girls', and infants' departments are approached through glass doors, and consist of schools and class-rooms, day-rooms, &c., capable of accommodating 300 children, the necessary lavatory accommodation and bath-rooms being provided in adjacent positions. The buildings have been erected in the most simple materials, plain native brickwork being the greater portion of the work, and stone from Yorkshire quarries, and wood from the ports daily communicated with, have been laid under contribution. The works have been

carried on and completed under the personal supervision of Mr. Samuel Musgrave, architect, of Hull, the builders being Messrs. Stamp Bros., of Barton-on-Humber.

Launceston.—The foundation-stone of new Congregational schoolrooms at Launceston has just been laid. The site is in Fore-street, extending back to Tower-street, and the buildings have been designed by Mr. O. B. Peter, architect, of Launceston. The contract has been taken by Messrs. Langman and J. & G. Strike, of the same town, at the sum of 1,061l. The design is semi-Gothic, and the material of which the buildings are to be erected is stone.

Books.

Elementary Applied Mechanics. By THOMAS ALEXANDER and ARTHUR WATSON THOMPSON, Civil Engineers. Part II. London: Macmillan & Co.

IN the second part of their work the authors continue the application of mechanical science to some of the ordinary structural forms employed by the civil engineer, devoting their attention more especially to the transverse stresses and induced strains of beams. They commence with a proof of the well-known law that the strains at each part of a cross section vary in magnitude in direct proportion to their distances from the neutral axis or plane. They then show how to draw the polygon or curve to represent the bending moments at each point, firstly, by estimating the moments at several points; secondly, by the polar polygon. They show that the ordinates of the parabolic arc represent the moments of deflection at each point in a beam uniformly loaded. They then proceed to the consideration of the effects of all conceivable combinations of local and distributed loads on cantilevers and beams supported on two, three, or many piers. Here it may be remarked that it is not usual to make the end piers closer together than the rest, as in the illustrations given, although it considerably simplifies the calculations and diagrams. The authors show how to represent graphically the maximum stresses produced at all points by various moving loads when a locomotive or train passes over a bridge. This is the most valuable part of the work, and contains much new matter and new methods, although the momentum of the load is not considered, but only its statical effect in its successive positions while passing over a bridge. The article on columns is very brief, but concise, and might with advantage have been amplified. The theory with regard to vertical shearing does not appear quite satisfactory. The following considerations may help to elucidate the subject:—Imagine a rectangular beam supporting a weight at any point, and cut vertically between the weight and one of the abutments, the severed faces being held together say by a magnetic force, allowing vertical slip to take place freely. It is evident that the part of the beam supporting the weight would descend, turning about its support, while the other part would have ascended in a similar manner, and through the same angle, in order to keep the faces in contact. Then, by the principle of virtual velocities, the force acting between the two surfaces necessary to prevent slip would be equal to the force at the support. Hence the vertical shearing forces are uniform between the weight and each abutment, and respectively equal to the supporting force at the abutments. The part of the work relating to girders will be found particularly useful to railway engineers. The mathematics are as simple as the subject allows, and the work is full of useful examples, which ensure a correct understanding of the principles they illustrate.

Miscellaneous.

Wrought-Iron Work.—In connexion with the Winter Exhibition of tapestries from the Royal Works at Windsor, and of wood-carvings under the direction of Mr. Alfred Rogers (wood-carver to her Majesty), to be opened on December 3rd at the above Galleries, there will be held a Loan Exhibition of Wrought-Iron Work, chiefly of ancient specimens, under the direction of Mr. Alfred A. Newman.

Liverpool Engineering Society.—The fourteenth meeting of the session was held on the 21st ult. at the Royal Institution, Colquhoun-street, Mr. H. Bramall, Mem. Inst. C.E., President, in the chair. A paper, entitled "The Velometer Universal Governors, and Compound Attachment for controlling Low-pressure Cylinders," was read by Messrs. Durham & Churchill, of London. The authors pointed out that absolute immunity from an acceleration of speed in the compound marine engine was impossible of attainment in marine engines, subjected as they are to such sudden and violent variations in the amount of power requisite to drive the propeller. They claimed that when one of their velometers of sufficient power was properly fitted and kept in working order, they could maintain an ordinary pair of compound engines to within a few per cent. of their nominal speed under the most trying circumstances. The second part of the paper was on the compound attachment, a very simple and efficient apparatus operated by the velometer, whereby it is claimed that they can control the low-pressure cylinder as effectually as they do the high-pressure cylinder. A description of the new "Institute Sealed Battery" was subsequently given by Mr. W. H. Fleming.

Lectures on Engineering Subjects.—The Council of the Society of Engineers have arranged for the following series of lectures to be given in the reading-room of the Society during the winter season:—First course by Mr. William Marriott, F.R. Met. Society, on "Meteorology," on Thursdays, December 6th, 13th, and 20th, 1883, and January 3rd, 10th, 17th, 24th, and 31st, 1884. Second course by Mr. John C. Fell, M.I.M.E., Professor of Electrical Engineering, City of London College, on "Electrical Engineering," on Mondays, January 7th, 14th, 21st, and 28th, February 11th, 18th, 25th, and March 10th, 1884. Third course by Mr. J. W. Wilson, M. Inst. C.E., and Mr. J. W. Wilson, jun., Assoc. Inst. C.E., Principal and Vice-Principal of the Crystal Palace School of Practical Engineering, on "General Engineering Construction," on Thursdays, February 14th, 21st, and 28th, March 6th, 13th, 20th, 27th, and April 3rd, 1884.

Sanitary Institute of Great Britain.—In an important meeting was held in Dublin on the 19th ult. to appoint the local officers and to consider the various arrangements to be made for the Congress to be held in that town by the Sanitary Institute in 1884. Sir John Lentaing presided, and there was a large attendance of gentlemen representing the various leading societies in Dublin. A deputation from the Institute, consisting of Dr. Alfred Carpenter, chairman of the council, Prof. W. H. Corfield, chairman of the exhibition committee, Mr. Ernest Turner, and Mr. E. White Wallis, secretary, attended the meeting to explain the objects of the Institute, and the nature of the congress and exhibition held in connexion with it. The deputation from the Institute visited the buildings proposed for the meetings of the congress and exhibition, and from the way that the preliminary arrangements have been made by the local committee there is every prospect of a very successful congress and exhibition. Sir Robert Rawlinson, C.B., has accepted the presidency of the Congress, which will open on October 14.

The Leeds School of Art.—The annual exhibition of students' work done at the Leeds School of Art was opened on Monday last, in the Mechanics' Institute. No fewer than 3,246 separate productions, the work of 524 pupils, were sent to South Kensington for examination previously to April 9th, 1883. There were 85 sets, consisting of 368 works in the advanced stages of study, 183 sets consisting of 1,001 elementary works, 667 drawings by 96 pupils of the boys' school, and 1,210 drawings by 160 pupils of the girls' school. The exhibition includes a selection of works from the advanced stages, together with a few elementary works, so as to fairly represent the whole course of study.

Bethnal-green.—It appears that the local authorities in some parts are being awakened to a sense of their responsibilities by the present exchange of ideas concerning the dwellings of the poor. The Vestry of the parish of St. Matthew, Bethnal-green, have served the owners of at least 380 dilapidated houses with notices requiring them to put the tenements in habitable state of repair. That is satisfactory so far, at all events.

Edinburgh Architectural Association.—The following lectures, visits, &c., have been arranged for:—Dec. 13, "The Rise of the Gothic Style in Northern France," by Professor Baldwin Brown. Dec. 20, "Technical Training in the Collateral Trades a great Factor of Success," by Mr. Edward Calvert. Dec. 21, Annual Dinner. Jan. 9, 1884, "Joiner Work," by Mr. Walter Kirkwood, and "Bellhanging," by Mr. R. Thornton Shiells. Jan. 23, "Celtic Art," by Mr. R. Thornton Shiells. Feb. 6, "Practical Plumbing," by Mr. Thomas Hume. Feb. 9, Visit to Cowgate, Canongate Tolbooth, and Moray House. Feb. 20, Paper by Mr. W. Iverson Macadam (subject not stated). Feb. 23, Visit to Lawnmarket and Edinburgh Castle. March 5, "General Police and Health Bill for Scotland as affecting Buildings," by Mr. James Simpson. March 8, Visit to Grange House and Craig House. March 13, "Some Notes, Thoughts, and Sketches on the Decorative Arts of Pot-pourri," by Mr. W. W. Macfarlane. March 19, "Renaissance Architecture of Italy," by Mr. R. Rowand Anderson. March 22, Visit to Peffermill, Prestonfield House, and Craigmill Castle. April 2, "Colour," by Mr. W. Scott Morton. April 5, Visit to Colinton House, Bonally Tower, and Baberton House. April 16, "Electric House Fittings," by Dr. R. M. Ferguson. April 19, visit to Hallyards Castle and Kirkliston. April 30, "Heating and Ventilating Appliances," by Mr. Hippolyte J. Blanc. May 3, Visit to Dalhousie Castle and Newbattle Abbey. May 14, President's Address. May 17, visit to Dalmeny House, Barnbougle and Dundas Castles. May 23, Annual Meeting.

Surveyors' Institution.—At the first meeting of the present Session, held on the 12th ult., the President, Mr. Thomas Smith Woolley, opened the Session with an address, as we have already mentioned. The following candidates were balloted for and declared duly elected:—as Fellows, Mr. Richard Clarke, Newhall-street, Birmingham; Mr. George Ferris, Pewsey, Wilts; Mr. Joseph William Kemley, Woodford, Essex; and Mr. George Dennis Martin, Mansion House Chambers, E.C. As Professional Associates, Mr. Arthur Erasmus Bond, Jernyn-street, St. James's; Mr. Harvey Chevallier, Singapore; Mr. Harry Græme Grant, Surveyor's Office, Great Western Railway, Paddington; and Mr. William Roper, Mount Pleasant-road, Tunbridge Wells. As Associates, Mr. Alfred Octavius Kirby, Old Palace Yard. The next meeting will be held on Monday, December 3rd, when a Paper will be read by Mr. J. W. Willis Band, on "The Agricultural Holdings Act, 1883." It is announced that voluntary examinations, qualifying for the Classes of Professional Associates and Fellows will be held in the month of April next. These will be the last voluntary examinations for the Professional Association. Names of applicants for these examinations are to be sent in before the 12th of January next.

Queen's Cross, Hardington, Northamptonshire.—Mr. R. G. Scriven writes to the *Northampton Herald* with reference to this erection, which stands upon ground within the jurisdiction of the Highway Board, and is in a sad state of disrepair. The Highway Board have no power to spend money in the repair of the structure, but they requested Mr. Scriven, as their vice-chairman, being also a member of the Committee of the Architectural Society, to take such steps as may be necessary for ascertaining what ought to be done, and then to appeal to the public for the funds required to carry out the work. Mr. Scriven has accordingly requested Mr. Edmund Law, whose father's name will be always connected with Queen's Cross as the architect under whose care the restoration of the upper portion was completed,—to prepare a report of the present state of the steps and foundations, with an estimate of the amount required to put them in a proper state of repair. This report is proposed to lay before the Architectural Society and to appeal for funds for executing the necessary repairs.

The First Avenue Hotel. We are asked to state that the marbles for the dados of the First Avenue Hotel, of which we spoke last week, have been supplied from the quarries of Mr. A. Folliot fils, of Laval, Mayence, France, who has opened an office in London at 24, Hop Exchange, Southwark.—The whole of the wrought-iron window-bins and cellar fittings have been supplied by Messrs. Farrow & Jackson, of Great Tower-street.

Vibration of Bridges.—At a recent meeting of the American Society of Civil Engineers, a paper on "Vibration, or the Effect of Passing Trains on Iron Bridges, Masonry, and other Structures," was read by Mr. J. L. Randolph, the chief engineer of the Baltimore and Ohio Railroad, which contained some very interesting facts. Thus, Mr. Randolph referred to the circumstance that double-track bridges are moved in the direction of passing trains, and are consequently twisted, and strains are produced not provided for; also to the fact that cattle-stops and open culverts, where built of rubble-work, have the walls shaken to pieces by vibration. The remedy Mr. Randolph has supplied for these culverts and stops has been to build them of large stones, as nearly the same size as possible. The tall, thin bridge piers and abutments on which iron bridges rest have their stones so much disarranged by vibration as to make it necessary to secure them with timber and iron straps. Iron bridges resting on stone pedestals vibrate in this manner, and receive a return blow from the vibration of the pedestal, particularly if the pedestal is a light structure; but, as the iron and the stone do not vibrate in the same period, there must be a time when the result is a movement in the direction of the force. The effect of this vibration has been particularly noticeable at Harper's Ferry Bridge, where there was a movement of 4 in. in four years. After the insertion of planks between the stone and iron this movement ceased. Where the masonry of piers has a platform of timber between its foundation and solid rock, no displacement of stone has been noticed. Mr. Randolph contends that a monolith would be the best support for structures subject to vibration caused by strains, but that a monolith of the specific gravity of granite would give a damaging return blow. Timber would answer the purpose, but it is perishable. The material which, in his opinion, is most serviceable is an artificial stone which is about two-thirds the weight of granite, is compact, durable, and with very little elasticity.

English Engineering in Germany.—About fifteen years since, the municipality of Frankfurt-on-the-Main determined on abolishing the cesspools and open gutters with which that, like most German towns, was disgraced, and on substituting a regular system of sewers. The work was intrusted to Mr. Lindley, an English engineer, domiciled in Germany, who adopted the method generally employed in this country, and known on the Continent as *tout à l'égout*, of egg-shaped brick sewers, ventilated into the streets, and receiving the whole of the rainfall as well as the sewage proper. Whatever may be the shortcomings of the system itself, they were in this case reduced to a minimum by the excellence of the workmanship and plan, as proved by the fact that periodical flushing suffices to prevent any deposit of silt in the sewers so effectually that no labourer has ever had to enter them with shovel or other implement; a strong contrast to the sewerage of London, where 150 men are constantly employed by the Metropolitan Board of Works, besides those in the service of the local authorities, in removing the solid deposits by manual labour. The sanitary results were as gratifying; the general death-rate has steadily declined from 40 to 20 or less per 1,000; typhoid, once ever present, has been reduced to an eighth of its former prevalence; and diphtheria, the scourge of other German towns, is less fatal than in those of our country.—*The Sanitary Record*. [A full description of the drainage of Frankfurt appeared in the *Builder* rather more than a year ago. See vol. xliii., pp. 388, 444, 474.]

Technical Education for Coventry.—In response to a requisition signed by large numbers of the manufacturers and artisans of Coventry, the Mayor recently called a public meeting of the citizens in St. Mary's Hall to take into consideration the advisability of establishing a system of technical education in connexion with the mechanical and textile industries of the city. Resolutions affirming the desirability of establishing technical schools, and promising aid in the work, were carried. It was stated that sums of from 3,000l. to 4,000l. would be needed for building and site, and from 2,500l. to 3,000l. for the fixtures and equipment of the building and workshops, making a total of 7,000l., and that it would be necessary also to provide an annual income of at least 300l.

The Alterations in the Minster Yard, Lincoln.—Sir Roger de Coverley remarked that "all church work is slow work." The worthy knight's observation is confirmed by the fact that it is exactly a century since the scheme, now happily near completion, for lowering the road along the south side of the Minster, removing the iron gates and railings at the west end, and throwing open the front, was proposed by "the ingenious Mr. Essex," who was at that time the consulting architect of the Dean and Chapter. In 1770, Mr. John Hayward, then cathedral surveyor, presented an estimate for "lowering the earth and pavements of the area within the stone basement and iron palisades, to make the outside level with the church floor," amounting to 137l. 17s. 3d. The stone basement and palisade, with the gates (which in themselves are beautiful specimens of iron work, and deserve honourable treatment if permanently removed from their present position), were erected "according to a draught made by Francis Bernard, esq., the consent of the Dean and Chapter being given December 1, 1748. Their erection is stated to have been "a generous design of Mr. Chanter Trimmell, with his own and his friend's subscriptions." Chanter Trimmell deserves to be commemorated as one of the first who took any decided steps for the improvement of the precincts of the Minster. The churchyard was levelled, the tombstones removed, and the area in front enclosed with the iron railing and gates, now removed. These last, though pronounced by the late Mr. Pugin "most offensive and more in character with Greenwich Hospital than with Lincoln Minster," are not without much dignity, which it is not unpardonable to recognise and to regret. Now that Chanter Trimmell's rails and gates are removed, and while it is still uncertain what form of enclosure will be adopted, it may not be amiss to quote Mr. Pugin's views on the point, *valent quantum*. He says, "A finely-moulded coiled wall, of moderate height, with massive gates (not of cast-iron tracery) would form a suitable enclosure, within which a stone cross, raised on steps, should be erected, similar to those formerly placed in the garths of all large churches." Mr. Essex's recommendation for removing the low walls and palisades in front of the "Number Houses" is also one that well deserves consideration. — *Lincolnshire Chronicle*.

The Old University Buildings, Glasgow. Mr. Alexander George Thomson, I.A., in a letter to a Glasgow paper, suggests that steps be taken for the conservation of the picturesque façade of the old University in the High-street. The railway company has, he says, on more than one occasion, been urged by the city authorities to carry out the widening of High-street in front of the College Station; but this public improvement, desirable though it may be, would involve the demolition of the street frontage. The company would, Mr. Thomson thinks, be willing to meet the wishes of the community in the disposal of the materials. On this assumption, he suggests that the chief decorative members of the ancient stonework should be embodied in the construction of a principal gatehouse or lodge at one of the entrances to the grounds of the new university, say the north-western entrance, opposite Hillhead-street, which is still unprovided with permanent buildings. An inscription should here record the circumstance of the escutcheon (which bears the date of 1658) and principal architectural details having formed part of the original edifice. As a successful instance of adaptation of the same nature, Mr. Thomson points to the fine old staircase which formerly stood in the quadrangle in High-street, and has been re-erected at the west end of the new university.

Overcrowding at Camborne.—The *Western Morning News* has been describing the serious overcrowding which exists at Camborne. At a meeting of the Local Board held on the 23rd ult., it was admitted that there was a great deal of overcrowding in the town. Mr. Vivian asked whether the Board could not use its influence for better terms for building? The Chairman was afraid the Local Board was helpless in the matter. He understood ground could be had for building for 8d. a lace, or 5l. 6s. 8d. an acre. He did not suppose land would now fetch more than 30s. an acre. The subject dropped with expressions of regret on the part of the Board that it had no power to remedy the evils.

M. De Lesseps and St. Giles's Cathedral, Edinburgh.—M. de Lesseps, in the course of some remarks at Edinburgh the other day, laid claim to Scottish descent. Mr. Will Findlay, writing to the *Scotsman*, says that M. de Lesseps's twice-repeated story of an ancestor of his named Lesseps or Lessels being the builder of St. Giles's Kirk, must be dismissed as a "traveller's tale." "Somebody," says Mr. Findlay, "has been hoaxing the distinguished Frenchman. There are, of course, no vestry books which he could have seen, for St. Giles's never had a 'vestry'; and if that term be taken as a foreigner's error for 'kirk-session,' it is equally impossible that he could have seen in any session-book such a statement as he supposes. In fact, there is no Edinburgh session-book of the period he refers to known to exist, and there certainly was at that time no kirk-session of St. Giles's. Nobody knows who built St. Giles's Church, although the builders of important additions to it are mentioned in old documents. 'Jonno of Scone' added five chapels on the south side of the nave in 1387, and from about that date we have no record of any great work on St. Giles's till the building of the Preston and Chapman aisles, the architects of which may yet perhaps be identified. After the Reformation, when the church suffered some injury internally, those who cleared out the rubbish and built the 'parpal' walls could scarcely be called builders of St. Giles's, and there was no other important change on the fabric till 1636, when the famous master-mason, John Mylne, the builder of the Parliament House, undertook the 'reparation' of the east end of the choir, a work which was not completed when Jenny Geddes flung her stool. The next material change was in 1829, when Mr. Burn, who has also the distinction of erecting the lath-and-plaster Church of Dunfermline, expressed in stone the best idea of that dark age of architecture which we see in the present external aspect of St. Giles's. These are all the works which might be described even by hyperbole as 'construction' of St. Giles's, and no Lesseps or Lessels had anything to do with them. M. de Lesseps has evidently not seen Mr. Hay's magnificent, and at the same time reverent, restoration of what remains of our famous metropolitan parish kirk, or else he would hardly have imagined that it was constructed so recently as 200 or even 300 years ago."

Modern Sculpture and Competition.—On Monday evening last Mr. E. W. Gosse delivered a lecture to the members of the Birmingham and Midland Institute on "The Public and Private Uses of Modern Sculpture." In commencing, Mr. Gosse said he believed the subject of his lecture was one which would within the next ten years occupy a great deal more of public attention than it had hitherto done. Sculpture had been fostered in France in some degree by the Roman Catholic religion, and in this one art France was far ahead of any other country. The present system of public patronage was, he thought, altogether unwholesome to English art, and distressing to the sculptors. He referred to the system of public competition. The profession, whenever it found occasion to speak, bewailed its fate on this question, and many sculptors talked of forming a sort of trade union to put down the system altogether. For his own part he was not opposed to it in theory, but he agreed with its fiercest opponents in what they said about it in practice. In the first place, the constitution of the juries was so careless and irrational that no artist of position liked to submit his work to judges so thoroughly unprofessional. The strongest objection, however, which sculptors had to the system was that it involved a great waste of time and money. Why should a competition be needed at all? The names of the eminent sculptors were well known, as the names of the eminent painters were; yet if a competition were proposed to painters they would laugh in our faces. The lecturer then dwelt upon the public and private forms of sculpture, remarking in reference that a great deal of what was most refined and beautiful was only fitted for the inner room.

Messrs. Clayton & Bell.—These well-known artists in stained glass, who have done so much good work, have just received an official recognition of their merits in the shape of a warrant from the Lord Chamberlain appointing them glass-painters to the Queen.

Thames Communication.—A meeting of the inhabitants of Aldgate and the neighbouring districts was held yesterday at the Board-room of the Whitechapel District Board of Works, Great Alley-street, Whitechapel. "To consider whether a communication across the Thames in a line with the Minories to Horselydown by means of a low-level bridge would not be preferable to the costly and inconvenient mode of communication proposed by the Metropolitan Board of Works, to be made by means of a tunnel or subway under the river from East Smithfield to Dockhead." The chair was occupied by the Rev. J. M. Robertson, M.A., vicar of St. Botolph Without, Aldgate, and there was a large attendance of the most influential inhabitants of the neighbourhood. The chairman remarked that nothing but a low-level bridge, with openings to allow of shipping passing through, would satisfy the inhabitants of East and South-East London. Mr. H. Hoare (Hoare & Co.) moved the following resolution:—"That this meeting is of opinion that the wants of East London are not met by the proposal for a tunnel from Nightingale-lane, East Smithfield, to Dockhead, and that a scheme, of which a low-level bridge, with an opening for shipping at or near the Tower of London, will form part, will alone meet the requirements of the inhabitants of East and South-East London." Mr. W. Horn, in seconding this, remarked that one of the principal arguments used against the form of communication advocated by the resolution was that it would destroy the trade of the port of London; but that argument, he contended, was utterly fallacious, and had been invented by those whose interest it was to prevent the construction of the bridge. The resolution was unanimously carried, as also was one declaring that, as the burden of the coal-tax had been borne for many years by the inhabitants of East London for the benefit of other parts of the metropolis, the erection of the much-needed low-level bridge should not be hindered by any question as to the renewal of that tax. A vote of thanks to the chairman brought the proceedings to a close.

Newcastle-on-Tyne Fine Art Exhibition, 1884.—It is proposed to hold an Exhibition of Fine Art at Newcastle-on-Tyne, from the 18th of January to the 16th of February, under the auspices and management of the Bewick Club. The Bewick Club is a recently-formed association, comprising nearly all the artists of the district, who are now attempting to institute an Annual Exhibition of Works of Art under their own management. They hope to obtain the support and co-operation of their brother artists throughout the country, inasmuch as the exhibition, though under the control of a committee appointed by the Club, will in no sense be a special exhibition of the works of its members, who, as exhibitors, will be placed on precisely the same footing as other artists. Artists who intend to contribute should send immediate intimation to the Secretaries, Bewick Club, 3, St. Nicholas Buildings, Newcastle-on-Tyne, from whom further information may be obtained.

Improvement of the River Tyne.—The Tyne Commissioners have unanimously decided to carry out another of the important series of river improvements included in the late Mr. Ure's comprehensive scheme for widening and deepening the Tyne. Bill Point, which projected at least 450 ft. into the stream, and was a source of danger to navigation, has been successfully removed, and a splendid channel of from 20 ft. to 22 ft. at low water and 37 ft. at high water, now flows in its place. A similar danger to navigation exists at present at Bill Quay, on the south side of the river, and it has been agreed to sanction the negotiations which the committee make for the purchase of the necessary land to effect the desired improvement. The total cost of the improvement is estimated at 53,600l.

Theatre Royal, Edinburgh.—At a meeting of the directors of the Theatre Royal, held on the 27th ult., the plans of Messrs. G. Dobie & Son were unanimously approved for the re-decoration of the house prior to the commencement of the pantomime season.

Society of British Artists.—At a general meeting of the Incorporated Society of British Artists, held on the 21st ult., the following were elected members:—Mr. M. P. Burton, Alfred East, Mr. W. Ayerat Ingram, Mr. James Macculloch, and Mr. Thomas Pyne.

St. Bartholomew's, Smithfield.—We read in the Church papers that the Rev. F. P. Phillips, the patron, has presented the Rev. W. Pantbridge to the grand old church of St. Bartholomew, Smithfield, of which the late Rev. J. Abiss had for sixty-four years been the rector. We earnestly trust that this opportunity will be seized upon for a complete restoration of a church which is certainly one of the finest examples of Anglo-Norman architecture in London. The church, spacious as it is, is but the choir of the priory founded by Rahere in 1124. Sequestered by Henry VIII., the advowson and a large part of the monastic building given to his favourite Rich, the church in the seventeenth century seems to have suffered a worse fate: much was then somehow alienated. Over the fine apse is a room used for manufacturing purposes, while the north transept is desecrated by being used as a shoeing forge. A large sum was expended, and well expended,—under the care of the late rector, but it was utterly inadequate for anything approaching a satisfactory restoration. We understand an effort will probably be made to restore the church to something of its original state, and though it is true a very large sum will be required, yet we cannot but hope private and public liberality will not fail to carry out a work so interesting alike to antiquaries and Churchmen.

Scheme for a Central London Fish-market.—The prize of 50 guineas for a scheme for a Central London Fish-market, offered in connexion with the International Fisheries Exhibition, has been awarded to Messrs. J. J. Cayley and H. H. Bridgman. The scheme adopted by the designers is to erect an iron structure at that part of the south side of the River Thames, opposite Charing Cross, which lies between Waterloo Bridge and Charing Cross Railway Bridge, where there is at low water a bank of mud the whole length, stretching out to about 320 ft. from the shore. This structure would be raised on columns so as to bring the principal floor on a level with the roadway of the two bridges, and would, in fact, join them to Waterloo Bridge at the one end and Charing Cross Railway Bridge at the other. This floor would be the principal market floor, and would have an area of about four and a half acres at a height of 50 ft. above high-water mark. The Market would be divided into wholesale, semi-wholesale, and retail sections, and through the wholesale section would run railways, which would be in communication with all the fish-bringing wharves in the kingdom. Twenty-five feet below such market floor there would be a sub-floor, upon which there would be room for twice as many vehicles under cover as are now estimated to attend the London market. Further particulars of the scheme were given in our columns two years ago, see *Builder*, Oct. 29, 1881, p. 556.

The Beginnings of Art.—On Monday afternoon Mr. Harry Quilter delivered in the Mayor's Parlour of the Town Hall, Manchester, a lecture on "The Beginnings of Art." Mr. Quilter said there was no time for art; it was either good or bad; it was never either new or old-fashioned. The essential qualities of art were always the same, and were subject to no change or decay. Whatever other qualities it might possess great art had always these three: love, gentleness, and truth. Art loved what it depicted, and from that love sprang the gentleness of its manner and the truth of its likeness. The beginning of art in the artist was the moment that his soul began to pass into his work. But what were the beginnings of art in communities like Manchester and London and individuals? They could never have even the beginnings of art until their thoughts were pure thoughts, until they had a true feeling for themselves and rest of the world; and the beginning of art in the people could not be attained until they were led to imbibe a noble sentimentality through their straitened bonds of existence.

Diphtheria in North Wales.—The outbreak of diphtheria at Bodford, a secluded village in Anglesea, continues to spread. Three fresh outbreaks have occurred and another is feared, making six deaths and twenty persons treated. Dr. Evans, medical officer of health, reports that Black's houses, where two fresh cases happened, were unprovided with drains, and pigs were kept very near them, the drainage from the styies being stagnant in open gutters close to the houses.

A New Exchange for Amsterdam.

Preparations are in progress for a competition for a new exchange in Amsterdam. The competition is to be international in character, both as to competitors and jury. In judging, the jury is to be guided solely by the disposition of the available space, the arrangement of the rooms, and the artistic nature of the design. No estimate is to be required, but the cost is not to exceed two million florins (167,000*l.*). Besides being international, the competition deserves mention on account of the preliminary competition which is to take place. Ten of the more meritorious designs are to receive premiums of 1,000 florins each; but only the authors of the five best designs are to be admitted to a closer competition, for which prizes of 10,000, 6,000, 5,000, 4,000, and 3,000 florins are to be given. The author of the first design will be appointed the architect of the building, at a salary to be fixed by the municipal council of Amsterdam, but in which the premium of 10,000 florins will be included. May 1, 1884, is the date by which plans must be sent in.

The Southport Foreshore Question.

Some time ago the Chancellor of the Duchy of Lancaster, in reply to the appeal of the Corporation to use his good offices in the settlement of the foreshore question, gave his final award, which was to the effect that the Corporation should purchase the borough for 10,000*l.* After some consideration the Corporation wrote to the Chancellor asking him to make certain modifications in his award,—that the area should be extended and the price reduced. The Chancellor has now written stating that he cannot depart from the terms he has already suggested for a settlement. The Parliamentary and Foreshore Committee met on the 23rd ult. to consider the Chancellor's reply, and after much deliberation came to the conclusion to refer the matter to the Council, not being able to see their way to accept Mr. Dodson's terms. They wish to possess the whole of the foreshore from Birkdale boundary to Crossens Channel.

Dynes Hall, Halsted, Essex.—We are asked to say that the sanitary arrangements and decorations at this mansion (to which reference was made in our last number) have been carried out by Messrs. David G. Laing & Sons, of Duke-street, Adelphi.

TENDERS.

For additions to the Workhouse Infirmary, Hampton, comprising a circular ward for seventy-two beds, new kitchen, corridors, &c., for the guardians. Mr. Charles Bell, architect, 9, New Broad-street. Quantities by Mr. Henry Lovegrove, 28, Budge-row.

Perry & Co.	£12,459 0 0
Joselyne	12,375 0 0
Condon	12,350 0 0
Nightingale	12,246 0 0
Bray & Pope	12,115 0 0
Peters	11,857 0 0
Green	11,810 0 0
Prior	11,760 0 0
Staines & Son	11,688 0 0
Allen & Son	11,080 0 0
Martin, Wells & Co.	11,540 0 0
Gould & Brand	11,371 0 0
Foster & Dicksee	11,222 0 0
Smith & Son	11,164 0 0
Gregar	11,141 0 0
Holliday & Greenwood	10,963 0 0
Bolding	10,919 0 0
Shurmut	10,890 0 0
Hebbs	10,800 0 0
Tink	10,693 0 0
Gibbons (accepted)	10,400 0 0
Ironwork.	
Young & Co.	£2960 0 0
Goddard & Massey	861 0 0
Shaw & Co.	815 0 0
Goodenough	809 0 0
Rowson, Drew, & Co.	765 0 0
Williams	750 0 0

For erection of sea-water baths, South Shields. Mr. J. H. Morton, architect. Quantities by Mr. G. Connell.

J. Elliott, North Shields	£5,259 0 0
W. M. Hudson, South Shields	4,995 0 0
D. Kennedy & Son, Jarrow	4,812 2 11
F. Mackey, South Shields	4,759 15 10
Broomhead & Kewick, Newcastle	4,745 0 0
H. Atkins & Co., South Shields	4,632 0 0
J. Storer, Jarrow	4,377 10 0
Holliday & Christie, South Shields	4,249 8 1
W. Scott & Son, Sunderland	4,145 0 0
D. Lawes & Co., South Shields	4,084 17 9

For building congregational church, South Shields. Mr. J. H. Morton, architect. Quantities supplied.

J. Elliott, North Shields	£3,770 0 0
F. Mackey, South Shields	3,740 0 0
Hogg & Barrow, South Shields	3,681 0 0
A. Thompson & Son, Gateshead	3,563 0 0
Holliday & Christie, South Shields	3,423 0 0
W. Scott & Son, Sunderland	3,342 0 0
W. M. Hudson, South Shields	3,243 0 0
J. L. Miller, Gateshead	3,204 0 0

Reduced and accepted at 3,160*l.*

For the erection of a house in Westoe-lane, South Shields, for Mr. Marshall. Mr. J. H. Morton, architect. Quantities by Mr. G. Connell.

A. Thompson & Son	£1,511 10 0
Holliday & Christie, South Shields	1,305 0 0
J. Moore, South Shields	1,305 0 0
J. Storer, Jarrow	1,288 5 0
Hogg & Barrow, South Shields	1,254 2 6
R. Aitken & Co., South Shields	1,279 10 0

* Accepted.

For proposed enlargement of the Royal Hospital for Diseases of the Chest, City-road. Mr. John O. Abbott, architect. Quantities supplied by Mr. Geo. Jackson.

With Additional Story.	
Cornish & Gaymer	£11,540
Longmire & Burge	11,240
Lyerman	10,850
Nightingale	10,680
Roberts	10,674
Paramor & Son	10,660
Lawrence & Sons	10,623
Dove Bros.	10,335
Brass	10,283

For the completion of No. 3, St. Ronan's-terrace, Southsea, for Messrs. Saunders, Hawkford, Bennett, & Co. Mr. T. Fleming, architect, Waverley House, Southsea. Quantities by Mr. Geo. Jackson.

Sheaf & McPhail, Kingston	£120 0 0
F. G. White, Louthport	315 0 0
A. Evans, Southsea	295 0 0
J. Howard, Southsea	295 0 0
C. Randall, Southsea	273 0 0

For erection of house in Lennox-gardens, on the Cadogan Estate, for Mr. Percy Mitford. Mr. G. N. Beazley, architect. Quantities by Messrs. Storer & Sons.

Extra for Panes of Glass.	
Peto Bros.	£5,937
Longmire & Burge	5,910
Higgs & Hill	5,834
Holland & Hannen	5,873
Larner & Son	5,691
Nightingale	5,612
Asby Bros.	5,492
Bovey	5,443
Stanley	5,418
Simpson & Son	5,197
Brass	5,187

For reconstruction of Sparsholt-road, for the Islington Vestry.

Pacey, Horney	£150 0 0
Trow, Dalston	149 10 0
Taylor, Holloway	135 0 0
Jackson, Finchbury Park	131 0 0
Walker, Holloway	128 0 0
Brown, Holloway	127 8 0
Williamson, Holloway	125 10 0
J. Bell, Wood Green (accepted)	112 0 0

For making up road and curbing and channelling same, for the Acton Local Board.

Narroway, Acton	£4,320 17 0
Sears, Acton	2,481 17 0
Nicholas, Wood Green	1,975 0 0
Atkins, Acton	1,601 3 4
Pacey, Horney	1,440 0 0
Bowles, Acton	1,430 0 0
Nowell & Robson, Kensington	1,369 0 0

* Accepted.

For works in connexion with the formation of Staveley Cemetery, for the Chesterfield Union Rural Sanitary Authority. Mr. R. Butterworth, architect. Quantities supplied.

Contract No. 1.—Excavators' Work.	
J. Fidler, Bickington	£157 0 0
S. Walker, Chesterfield	112 16 4
W. Forrest, Chesterfield	116 14 0
E. Littlewood, Mashborough	82 5 0
W. Froggatt, Chesterfield	87 17 2
J. Cropper, Brimington	82 0 0

Contract No. 2.—Ironfounders' Work.

H. Holdsworth, Rotherham	£2355 0 0
J. Fidler, Bickington	350 0 0
G. Woodhead, Rotherham	297 0 0
W. Haalun, Hardstaff	293 9 4
W. Brakes, Sheffield	272 8 0
F. Wharton, Chesterfield	270 0 0
F. W. Dudley & Co., Chesterfield	260 0 0
Merryweather & Co., Sheffield	218 10 0

Contract No. 3.—Builders' Work.

R. Langley, Bolsover	£1,728 16 3
J. Cropper, Brimington	1,673 0 0
J. Fidler, Bickington	1,568 0 0
W. Forrest, Chesterfield	1,413 4 8

For the whole work (inclusive).

W. Mullins, Staveley	£1,730 0 0
----------------------	------------

* Accepted.

For heating-apparatus for new schools, for the Leasing School Board. Messrs. Geo. Benjamin Nichols & Sons, architects, London and Handsworth.

Leicester.	
Jessie & Co., London	£495 0 0
W. Warwick, Leamington	228 12 6
E. Fardon, Leamington	228 12 6
W. Jenkins, Leamington	149 13 7

For the two.

Accepted for cleansing ashpits, &c., within the borough of Leeds, during the ensuing three years, for the Town Council	£26,900 0 0
E. Robinson	26,900 0 0

Accepted for road-making, New Maldon Estate, Mr. J. R. Gover, surveyor.

Atkins	£43 0 0
--------	---------

For Nonconformists' chapel and enclosure-walls, &c., for the New Brentford Rural Board. Mr. C. J. Gladman, architect, Bush-lane.

Bryant	£1,219 0 0
Miller	1,161 0 0
Haynes	1,000 0 0
W. D. & A. Brown	979 0 0
Bloomer	949 0 0
Everett	925 0 0
Mason	911 0 0
Barnes	893 0 0
Dorey	883 0 0
Grove	883 0 0
Hickingbotham	867 0 0
Gibson	831 0 0
Whitman	776 0 0
A. & C. Addis	780 0 0

For erecting stables to Cromwell Lodge, Lewin-road, Streatham, for Mr. A. S. Groom. Mr. S. B. Grosvenor, architect—

Oliver Bros.	£500 0 0
Fisher	191 0 0
Pickersgill	486 0 0
Beale	475 0 0
Freight	475 0 0
Ansley (accepted conditionally) ..	454 0 0

For fittings for premises in rear of No. 318, Oxford-street, and No. 1, Chapel-place, for Messrs. D. H. Evans & Co. Mr. Owen Lewis, architect, 7, Argyl-street.

Panter & Polditch	£1,645 0 0
Sage	1,598 0 0
Drew & Cadman	1,444 0 0
Salter (accepted)	815 0 0
A. Keeling, Ealing	£1,400 0 0
Geo. Cox, Ealing	1,216 0 0
Lipcombe, Walthamstow	1,137 0 0
Gillard & Gillard, Acton	1,050 0 0
Roberts, Hounslow	1,015 0 0
Pollard, Ealing	893 0 0
Van Camp, Kilburn	920 0 0

For improvement of Newport-road, and laying of new sewer, Ventnor, for the Local Board. Mr. Robert S. Scott, C.E., Town Surveyor. Quantities supplied—

R. Pritchard, Sandown	£850 0 0	Sewer.
W. Hall & Co., Portsmouth	943 0 0	69 1 6
J. Newham, Ventnor	887 4 0	67 18 0
G. Hayles, Sandown	845 0 0	75 0 0
N. Beavis, Ventnor	800 0 0	64 0 0
Sims & Neal, Ventnor	796 10 0	58 10 0
J. Harvey, Ventnor	790 0 0	69 0 0
G. Bannister, Ventnor	768 11 4	65 0 11
W. H. Walder, Ventnor	745 5 0	69 15 0
G. Beavis, Ventnor	67 18 0	

For new offices at Leyland, for the Blainscough Hall Cattle Company. Mr. David Grant, architect, Preston—

T. Croft, Preston (brickwork) ..	
R. Condale, Preston (plumbing, painting, &c.) ..	
A. Tomlinson, Leyland (joiners' work) ..	
W. Berry, Leyland (stonework) ..	
T. Spiby, Leyland (plaster work) ..	
J. Bowling, Leyland (slating) ..	
Total amount, 1883 ..	£2,827 0 0
Brightmore	2,759 0 0
Harris	2,229 0 0
Hoskings	2,216 0 0
Cutler	2,150 0 0
Greg	2,092 0 0
Hearle & Son	2,050 0 0
North Bros.	2,048 0 0
Cox	2,040 0 0
Red	2,025 0 0
Parfitt	1,971 0 0
Nightingale	1,969 0 0
D. D. & A. Brown (accepted) ..	1,785 0 0
Gentry	

For roads and sewers for the Parkstone Brick Company, Messrs. Whitmore & Reeves, surveyors, London and Chelmsford—

W. Nicholls, Wood Green (reduced and accepted) ..	£970 0 0
---	----------

For additions and alterations to school house, Sileia College, High Barnet. Messrs. Prickett & Venables, surveyors—

Sheppard	£511 0 0
G. W. Miller, High Barnet	499 0 0
Marriott Bros., High Barnet	477 0 0
W. James, High Barnet	367 0 0
Woodhall, Welstone	335 0 0

For building six cottages in Bailey's-lane, Stamford Hill, for Mr. A. Sanders. Mr. Edward Brown, architect, Hanbury-street, Spitalfields—

Christoffer (accepted) ..	£990 0 0
---------------------------	----------

For erecting villa residences at Higham Hall Park, Woodford, for Mr. T. C. Warner, under the supervision of Messrs. Farebrother, Ellis, Clark, & Co.—

S. J. Scott (accepted).

Superstructure, St. Luke's Church, Nightingale-lane.—Mr. Thomas Gregory, of Clapham Junction, writes to say that his tender, the lowest one, should have been marked "withdrawn"; otherwise it reads as though a higher tender had been accepted in preference to his, which is not the case. The omission was not ours.

Artisan's Dwellings, Petticoat-square.—In the list of tenders in last week's *Builder* (p. 709) for artisans' dwellings, Petticoat-square, the name of Mr. Horace Jones was given as the architect. We are informed, however, that the designs were prepared by Mr. William Haywood in his official capacity as Engineer to the Commissioners of Sewers.—In the same list of tenders, for "Dick's," 69, 000/1, read "Chas. Dickinson." We inserted the list as it was sent.

Disclaimer.—Mr. Alexander M. Greig writes to say that he is not the architect for either of the works at Chiswick and Brentford, the tenders for which were published in our last (p. 716).

To Contributors and Correspondents.

ALL LETTERS AND COMMUNICATIONS referring to LITERARY AND ARTISTIC MATTERS must be addressed—

"To the Editor of THE BUILDER,
46, Catherine-street,
Covent Garden, W.C."

And not to any individual by name.

T. C. S. Montreal (book mentioned is out of print).—J. B. P.—E. L. (send particulars).—C. F. H.—G. & S. (will be attended to).—A. W. (not required, except an occasional note of some special matter).—F. B. (below our mark).—C. N. (we will not publish any notice of which is not a matter of public interest).—The letter sent to the Editor referred to in the *Builder* (last week) cannot give more space to the subject.—G. & S. Altrincham (too late for this week).—W. J. H. L.

Correspondents should address the Editor, and not the Publisher except in cases of business.

All statements of facts, lists of tenders, &c. must be accompanied by the name and address of the sender, not necessarily for publication.

We are compelled to decline publishing out books and giving addresses.

NOTE.—The responsibility of signed articles, and papers read at public meetings, rests, of course, with the authors.

CHARGES FOR ADVERTISEMENTS.

SITUATIONS VACANT, PARTNERSHIPS, APPRENTICESHIPS, TRADE, AND GENERAL ADVERTISEMENTS.

Six lines about fifty words or under

Each additional line (about ten words)

Terms for Series of Trade Advertisements, also for Special Advertisements on front page, Competitions, Contracts, Sales by Auction, &c. may be obtained on application to the Publisher.

SITUATIONS WANTED.

Four Lines (about thirty words or under)

Each additional line (about ten words)

PREPAYMENT ABSOLUTELY NECESSARY.

* Stamps must not be sent, but all small sums should be remitted by Cash in Registered Letter or by Money Order, payable at the Post Office, Covent Garden, W.C. to

DOUGLAS FOURDRINIER, Publisher.

Advertisements for the current week's issue must reach the Office before THREE o'clock p.m. on THURSDAY.

The Publisher cannot be responsible for DRAWINGS, TESTIMONIALS, &c. left at the Office in reply to Advertisements, and strongly recommends that of the latter COPIES ONLY should be sent.

TERMS OF SUBSCRIPTION.

"THE BUILDER" is supplied at seven from the Office to residents in any part of the United Kingdom at the rate of 19s. per annum.

Foreign. Remittances payable to DOUGLAS FOURDRINIER, Publisher, 46, Catherine-street, W.C.

NOTICE TO ADVERTISERS.

Persons advertising in the *Builder* may have REPLIES ADDRESSED TO THE OFFICE, 46, Catherine-street, Covent-garden, W.C., FREE OF CHARGE. Letters will be forwarded if addressed envelopes are sent, together with sufficient stamps to cover the postage.

Best Bath Stone.

WESTWOOD GROUND,
Box Ground, Combe Down,
Corsham Down,
And Farleigh Down.
RANDELL, SAUNDERS, & CO., Limited,
Corsham, Wilts. [Adv.]

SUMMER-DRIED

Corsham Down Stone
For Winter Use.
PICTOR & SONS, BOX, WILTS. [Adv.]

Douling Freestone and Ham Hill Stone of best quality, in blocks, or prepared ready for fixing. An inspection of the Douling Quarries is respectfully solicited; and Architects and others are CAUTIONED against inferior stones. Prices, delivered to any part of the United Kingdom, given on application to CHARLES TRASK, Norton-sub-Hamdon, Ilminster, Somerset.—Agent, Mr. E. WILLIAMS, 72, Charlotte-street, Portland-place, W. [Adv.]

Douling Freestone, Of best quality, supplied from their own Quarries and Kilns by STAPPA HART STOKES, Ilminster, Agent, Mr. H. MICHELMORE, 5, Augustus-road, Hammersmith, London, W. [Adv.]
HAM HILL STONE,
BLUE LIAS LIME
(Ground or Lump),
Asphalte.
Seysse, Patent Metallic Lava, and White Asphalte.
M. STODART & CO.
Office:
No. 90, Cannon-street, E.C. [Adv.]

Asphalte.—The Seysse and Metallic Lava Asphalte Company (Mr. H. Glenn), Office, 3, Poultry, E.C.—The best and cheapest materials for damp courses, railway arches, warehouse floors, flat roofs, stables, cow-sheds and milk-rooms, granaries, tun-rooms, and terraces. [Adv.]

Immense quantities of
DRY WAINSCOT,
DRY MAHOGANY,
DRY WALNUT,
in all thicknesses.
B. J. HUDSON & SONS,
Whitfield-st., W., and Great Peter-st., S.W. [Adv.]
LONDON.

MICHELMORE & REAL
Manufacturers of

CHARLES COLLINGE'S PATENT.
COLLINGE'S PATENT HINGE
OF "F" BAR, SCREW, & BARREL BOLTS
Self-aligning "FALL DOWN" GATE STOPS,
and IMPROVED GATE FITTINGS of every Description.
36A, BOROUGH ROAD,
LONDON, S.E.
DISCOUNT TO BUILDERS.

IRON CISTERNS.

F. BRABY & CO.

LONDON, LIVERPOOL, GLASGOW.

VERY PROMPT SUPPLY.
LARGE STOCK READY.
CYLINDERS FOR HOT-WATER CIRCULATION.

Particulars on application.

Chief Office: 360, EUSTON ROAD, LONDON.

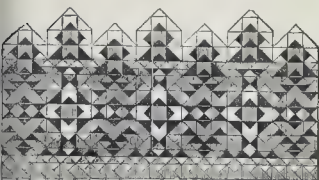
ILLUSTRATIONS.

Dwellings for the Poor, Holt Town, Manchester.—Mr. Lawrence Booth, Architect.....	754
Houses about to be Erected at Dover, Kent (Double-page Photo-Lithograph).—Mr. J. Treadway Hanson, Architect.....	756
New Wesleyan Church, Gosforth.—Mr. J. J. Lish, Architect.....	760
Old Lancashire Inns: The Old Boar's Head, Middleton; The Seven Stars, Manchester.....	761
Congregational Schools, Caterham Valley (Ground-floor Plan, p. 758).—Mr. Edward C. Robins, F.S.A., Architect.....	763

CONTENTS.

On the Rights and the Reasons of Rhythm in Architecture.....	743	Old Lancashire Inns.....	768	Royal Institute of British Architects.....	773
Determination of the Law of Water Rating a Water-Congressmen's Defence Committee.....	746	International Health Exhibition.....	769	Dwellings for the Poor.....	773
The Royal Society of Painters in Water-Colours.....	747	St. Mary's Hospital, Paddington.....	770	Chapel Bell, Lincoln's Inn.....	773
Dwellings for the Poor: a Provincial Experience.....	747	The Florida Ship Canal.....	770	English Engineering in Germany.....	773
Ando-Saxon Antiquities.....	748	Effects of Unhealthy Occupations.....	770	The Sexton.....	773
Royal Institute of British Architects.....	748	Latest Building Regulations in Paris.....	771	"Quantities".....	773
Diseases caused by Sanitary Defects in Houses.....	750	Progress in Electric Lighting.....	771	Elm-wood Blocks.....	774
Sanitary Inspectors and their Future of Office.....	751	The Bentinck Dock, King's Lynn.....	771	Competitions.....	774
Elevation of Terrace Houses, Dover.....	751	The Connexion between the Arts.....	772	Church Building News.....	774
The Congregational School, Caterham, for the Sons of Ministers.....	752	Trade Unions in France.....	772	Proposed Canal from the Tyne to the Solway.....	774
Gosforth Wesleyan Church.....	752	Building Patent Record.....	772	Miscellaneous.....	774
		Displacements: Galpin v. Hussey.....	772		

On the Rights and the Reasons of Rhythm in Architecture.



ARCHITECTURE has been called petrified music, and this description has been repeated so frequently that it would not be easy now to ascertain when it was first and by whom so characterised; remitting this query to the antiquaries, we turn to a

consideration of more real interest. That the paradox has been repeated so frequently may be taken as pretty certain evidence that, like many another paradoxical saying which has obtained favour and currency, there is some true analogy lurking beneath terms which in themselves have the air of only pretending to the merit of an epigram. Music and Architecture are arts which doubtless by the relations which they severally deal with, stand in an essential contrast as Time and Space, and as the absolutely permanent and the continuously fleeting. To bring them into comparison may seem as hopeless as to find a ratio between the date of the year and the height of the wall of China. Many things occur in Time which cannot in any proper sense be said to have an existence with relations in Space; and space is occupied by things of another class and nature which are stable facts and in no sense whatever to be interpreted as events. Nevertheless, the analogy which exists between these two modes of physical relation, like the association which is established between them in our ordinary experience, is exceedingly intimate. The impress of this pervading analogy is recognised unmistakably in the very earliest forms of language. The qualities of space which are chiefly and primarily appreciated by the sense of touch, are freely transferred by analogy to the various modes of essentially intangible time. Time is spoken of as long or short, and no incongruity is suggested by even such a phrase as a short space of time. It is in our experience and observation of motion that the two conceptions of space and time are so absolutely concurrent as to seem to finally blend. When the motion of an object is equable, any proportion of the total space traversed corresponds with a like proportion of the whole time occupied by the transit. And combina-

tions of longer and shorter periods of time occupied by different incidents, may agree with the longer and shorter successive lines of an object in varied directions, as we witness in the movements of the *bâton* of a musical conductor or the evolutions of a *corps de ballet*. Hence, it is found natural to speak of the successions of incidents as movements, even when no change of place whatever is in question; and we call a series of sounds, harsh and rugged, or smooth and flowing, without any sense of the fact that we are using language metaphorically. Again, it is by a convenient extension of this principle that we apply descriptive epithets involving the idea of motion, to combinations of form which are presented immutably in space. This is only apparently the case when we speak of an architectural composition as harmonious. It is true that harmony has its most familiar illustration in prolonged combinations of musical sounds; but still, the word itself, in its original appropriation among the Greeks, has even closer dependence on the primary idea of aptly "fitted" elements of solid construction. But we have a precise example of unhesitating application of terms expressive of motion to architecture when Vitruvius, copying the Greeks, requires that a fine building shall be not only symmetrical, but rhythmical,—shall have the quality of *eurythmia*,—of exquisite rhythm. The proper meaning of the word rhythm is flow, and, as used with intention, agreeable or suitable flow or flowingness; that is, appropriate and pleasing progressive movement of a liquid in space. So far as the word rhythm strictly postulates change of position in space, it might seem to be more violently applied to words or notes than to material objects; but words and musical notes are accompanied, as they are produced, by material movements, and the rhythm of the dancer's movements is easily ascribed to the regulated changes of the musical measure with which he accurately keeps time. We are more likely to be brought to a stand and pause upon the propriety with which the quality of flowingness is ascribed to the design of a great work of architecture.

Not much aid towards clearing our ideas upon the subject is obtainable from the treatment of it by Vitruvius in the second chapter of his first book. From the Greek equivalents that he introduces, it is evident that he is at once extracting and epitomising some Greek authority; but equally clear from the manner in which some of his definitions interfere with and run into each other, that his authority suffers at his hands, or was,—the less likely supposition,—originally defective. We have to interpret what is stated so confusedly, by independent consideration of what the interest of the subject would naturally and necessarily require to be said. With a little assistance of this kind, we can discern in the Latin text the scattered hints of a dismembered theory based on classification which was originally systematic

and even scientific, and have good hope of restoring and repiecing whatever in it was of most importance.

Excellence in the rhythmic ordination of a structure was subordinate to its leading symmetry, while mainly and indispensably conducive to the beauty of symmetrical effect. Having taken our cue so far from Vitruvius, it will not be necessary or helpful at the present time to cite him further,—and probably it may not be worth while later on to call upon him to explain himself in the fuller light obtained, without his assistance.

Symmetry, translated literally, is agreement in respect of measurement, and is for the most part predicated of an important composition in respect of its very broadest lines of comparison. Taken in the strictest and most limited sense, it implies the positive correspondence known as bilateral symmetry, when two halves repeat each other on either side of a median line. This formal regularity is as prevalent in nature as in art; in a horse or an elephant, as in a rose-leaf; in the Sainte Chapelle as in St. Paul's. But even in these cases the value of symmetry as expressing the proper bond and unity of a concluded totality, depends on the fact that it harmonises diversity. The presentation of the two halves is so far contrasted that whatever member lies to the right on one side is to the left on the other. A simple square pile of masonry has no more claim to be symmetrical in the proper sense than a mere heap of stones; it may be divided into equal halves by a central vertical line, but it might be halved as absolutely by a horizontal line, and in either case the halves would admit of transposition or might be accurately superposed; aggregation only is in question in such a case, not composition. True symmetrical composition is only effected when the disruption of the corresponding halves would involve destructive separation of component parts which have their subordinate but still important unity. If we divide the compound roseleaf along the line of its midrib, we are left with the terminal and characteristic leaflet torn apart, and to divide the west front of Cologne Cathedral by a central vertical line would be to find ourselves left with useless and unmeaning and impossible half-windows and half-doorways. Composition in the sense of effective combination is still more stringent when no important division of the lateral halves can assert independent bilateral symmetry. In the western front of the Cathedral of Paris the flanking towers and apertures below are no less susceptible of division into similar halves by a median line, than the intermediate portion which gives entrance and light to the nave. But elsewhere, and, for example at Cologne, a different principle is adopted, and the lateral divisions are no longer susceptible of symmetrical halving by a central line, whatever may be the case with their component elements, a window or a door taken separately, any more

than the right and left sides of an animal organism.

It is manifest that the principle which is here involved may be, and indeed constantly is, made available for keeping together the members of an extensive composition, for retaining divisions of secondary importance in due subordination and visible dependence. Whitehall may be cited as an admirable example of refined management in this respect; the wings, so to style the lateral divisions including pairs of windows, are just sufficiently independent to give contrast to the centre, and not so much so as to suggest the thought of liability to detachment.

It is precisely at this point that the consideration of symmetry leads on to that of architectural rhythm. Symmetry in architecture is statical and rhythm dynamical. The contrast is that between stability and motion; between fixedness and transition. Composition is nought unless it brings us round to the repose of perfect satisfaction in contemplation of a definite whole; but a whole is but dull or wearisome unless it comprises enticements for us to dwell with pleasure on particular parts, leads us on from one to another, and so after commencements from various points successively, to be conducted again "by many a winding bout," to enhanced delight in appreciation of concentrated beauty, of focalised power. Rhythmical flow is brought in upon us when we listen to the strains of music; but the sense of accentuated progression is the same when it is by our own transference of attention, from point to point, that we receive impressions of easy and graceful, or in any case of characteristic, transition. Movement is brought home to us indistinguishably whether we ascribe it to a constellation,—"the great Orion, slowly sloping towards the west," or care to reflect that the true change of place is that of the earth we stand on.

Rhythm in architecture therefore is a certain regulated arrangement of the secondary and subordinate members and details of a composition, effectuating combinations in harmonious relation to each other, a flow of transition satisfactory and characteristic. Rhythm, in consequence, is both complex and variously comprehensive, as it applies to more simple groups of elements or assemblages of groups. We recognise it in the proportioned succession of orders of arch mouldings, as in Wimborne Minster; of closer or more open forms in window tracery; in the relation of voids to solids;—of voids to voids, as of lateral portals to a central, or of portal to window openings; of solids to solids, as of entablature to podium, or buttress to roof.

It would, therefore, appear that the best and truest sense of architectural rhythm will be given when certain controlling proportions regulate the design of subordinate members; and then when those members again are associated in obedience to a principle of proportion which is either the same, or not indistinctly related to that which has already been made available in details.

The responsibility of the architectural artist in respect of rhythm will be best appreciated by comparing it with that of his brother of the brush. If we analyse our sense of rhythmical satisfaction in contemplating one of the masterpieces of the great epoch of Italian painting, we find that it depends on the careful relation of individual figures to each other in a group, then of one group to other groups; and, finally, of sets of groups to each other advancing more or less directly to a final consummation in one ultimate equation. Every group has a certain coherence within itself, yet betrays within an incompleteness that marks dependence on another, that indicates incompleteness, and so sends us onward in expectation of a relieving and satisfying transition, a rhythmical succession. The charm of such successions resides in duly attempered variation, in diversity supervening on agreement, in similarity which is not mere tame repetition, and novelty that does not shock by unprepared abruptness. The true secret of rhythm, therefore, be it pictorial, musical, metrical, or architectural, must be a matter of proportion. So far as concerns combinations of colours in painting, the determination of proportion in the relations of tints and depths of hues can only be left to the instinctive appreciation of the painter's eye and touch; as regards music again, though successful rhythmical effect can no doubt justify itself by demonstrated relation to strict mathematical laws, the inventor of an original melody

may be credited with accuracy no less spontaneous in the succession of his measures, than the painter in distributing the reflected light of his sunset. In the case of architecture, the primary responsibility for effective rhythm will no doubt also rest with imagination. The architect, like the musician, like the painter, may like the poet, must be "of imagination all compact," as his function also is "to body forth the form of things unknown"; but when he applies himself to the task of turning them to definite shape and giving to his airy nothings local habitation and solid reality, unlike his brother artists he must needs deal with proportions by compass and protractor, by numerical calculation and a scale that admits allegiance ultimately to a box-wood rule.

Let us endeavour to bring these more abstract generalities to the test of concrete application. The sense of rhythm has the best opportunity to be gratified, the most serious liability to be outraged, by the good or the ill proportion amongst themselves of features and distributions which, not only by their importance, but their similarity or analogous relations, thrust themselves forward for comparison. Such may be said to be in a Gothic cathedral the widths of the nave and aisles, and their proportionate loftiness, and the proportionate acuteness of their arrounment together with that of the lateral openings between the piers of the nave. Architecture probably does not supply an example in any part of Europe, of a more delightful rhythmical gradation in all these respects than we admire in Westminster Abbey. The triforium arcade still further falls into eurythmic sequence with an enhancement of the harmony which will leave those who can happily appreciate it, under no difficulty as to the theoretical analogy between music and architecture. A glance at the triforium arches of Salisbury Cathedral is a counter-example, so harshly discordant are their proportions with the pier arch below them. It is in rhythmical sequence that the charm resides of which we are sensible as we approach St. Paul's. The union of the central colonnade with the flanking towers, the gradation between the upper and the lower orders, the retention of the entire façade in subjection to the supreme dignity of the cupola, and the relation established by the intermediate forms of the attendant campaniles, produce a series of impressions of satisfaction equivalent in effect to the harmony of a sequence of movements or of sounds. It is when we enter and pass up an aisle which, narrow already, is narrowed, is choked still more, and suddenly, as it opens into the generous circle of the central area, that faulty rhythm tells upon us as painfully as when we walk arm in arm with one who does not keep step, or still worse when dancing with a partner destitute of a sense even of the time of the music. This awkwardness is admirably evaded in the transition to the octagon at Ely. One further illustration is all that we have room for. As regards the essential principle of rhythm the grouped architectural elements of a Gothic nave are analogous to those of a Doric portico. Pairs of metopes, which were originally perforate, are grouped by falling within the single interval of a pair of columns below them; even as the paired triforium windows of Lincoln or Westminster, are comprehended within the single bay marked out by the arch between a pair of piers. Both columns and piers fall into groups again in virtue of certain simple proportions of height to spacing, which do not tell the less effectively on our sensibility to grace, because they are not decisively marked and insisted on. In both cases monotony is avoided by a limit being given to indefinite protraction of a series of similars, and a sequence of rhythmical phrases becomes a concentrated expression by returning upon a distinctive terminal group, with all the value of a musical cadence.

A Narrow Escape.—The fine old parish church of Talland, near Polperro, Cornwall, had on Sunday last a very narrow escape from being burned to the ground. As the two daughters of the Rev. George Hales entered the church to arrange the music and other things for service, they found a portion of the flooring to be on fire. Closing the doors immediately they ran for assistance, and the fire was extinguished and the smoke dispersed before the commencement of morning service. The fire is stated to have originated in the close proximity of a stove to some woodwork.

DETERMINATION OF THE LAW OF WATER RATING.

A WATER-CONSUMERS' DEFENCE COMMITTEE.

THE final determination by the House of Lords, on the 30th ult., of the law of rating as applicable in the case of water companies, is of the first importance to all the householders and water consumers of London. For ourselves, the decision has the special value that it places beyond the range of controversy the value of the advice which, for a series of years, we have respectfully ventured to urge upon our London readers. It is not by crying to Parliament or to the Government for aid that the inhabitants of London are likely to obtain either purer, cheaper, or more abundant water. That there have been cases,—perhaps many cases,—of bad service, or of what may now be called unjust imposition, on the part of the water companies, our own columns have on repeated occasions shown; but we live in an age in which public spirit has almost everywhere sunk into the decrepit condition of party spirit, and it is idle, or worse than idle, for London to expect to have its water-supply improved on public and disinterested grounds. The three or four attempts which have been made in this direction since we first brought the outlines of the case fully before the public have been happily frustrated; nor do we think that the passage of either of the measures to which we refer would have led to anything better than the perpetration of an enormous job, and the saddling of the metropolis with higher charges for no better service than at present. It is by taking the case into their own hands, and coming to fair terms, as customers and purveyors, that needful reforms can be insured by the consumers of water; and Mr. Dobbs deserves public gratitude for the stand that he has made, and successfully made, in the matter.

For the rest, it is a scandal to our civilisation that the door should have been left open for the dispute. No genuine difficulty existed in the matter,—the question was simply one of definition, and of adherence to stipulations. The difference between gross and net value of any kind lies at the very root of all business transactions. It is understood by every commercial man. It enters into the elements of every contract, and confusion can only arise on the subject from unpardonable laxity in the terms either of a contract or of the law under which it is made; or else from the attempts of one of the parties to the contract to take an unfair advantage of the other party. Our Blue Book actually groans under the mass of correspondence as to the question whether the Suez Canal Company were entitled to charge 10 francs per ton on the gross or on the net tonnage of the vessels passing through their canal. The difference involved was stated at the time to be actually as much as that between ten and fifteen francs per ton of actual cargo; and it was only finally settled by the authorisation given to the Khedive by the Sultan to employ military force in order to ensure the passage of ships at the lower rate of charge.

In the present case the amount of the difference in dispute was that between 118s. and 140s. per annum, or a little under 20 per cent. The company claimed the right to assess their rate on the total annual sum paid by the lessee of any premises, including rent, rates, and taxes; extra charge in virtue of the rate levied by themselves. Lord Bramwell, whose clear view of all matters relating to industrial compacts is indisputable, has laid down the rule that the net value, or the letting rent, minus the average cost of repairs, insurance, and other expenses necessary to maintain the house in a state to command that rent, is the sum on which the water companies are allowed to charge. The question is one of the construction of the Act of Parliament. There is no particular reason why a rate should be charged upon net rather than upon gross value, provided that the two parties to the original agreement know which is meant, and act accordingly. A lower charge for the larger value, or a higher charge for the lower value, may come to the same thing. But the gist of the decision now given is, that the company were entitled to a certain rate on the smaller value, and imposed it on the higher. The prohibition of this practice will no doubt, make a considerable difference to the water-consumers of London. It may, perhaps, lead them to take some steps towards what we have ventured to suggest as the true mode of

solving the water-supply question, the appointment of a committee of water-consumers for mutual defence.

THE ROYAL SOCIETY OF PAINTERS IN WATER COLOURS.

This exhibition, which opened this week for its winter season, seems to stand out more than ever conspicuous among the smaller exhibitions for continued and increasing excellence. The present collection is full of fine and interesting work, and we cannot pretend to mention all that is worth looking at. We may allude with regret to the absence of Mr. Alfred Hunt's name from the list of exhibitors, an absence which is understood to arise only from his attention being turned towards other work to be exhibited elsewhere. This serious loss is, however, counterbalanced to some extent by the re-appearance on the walls of Mr. Alma Tadema, who has been an absentee for some years. His one contribution, "A Declaration" (349) represents his usual qualities of technique, but is unusual in the curious contrast between the two figures seated on the semicircular marble seat, of whom the woman is one of the painter's antique maidens, the man seems rather Medieval in general appearance and make-up. A fine piece of classicism in some respects is that by Mr. Henry Wallis, which occupies a corresponding central position on another screen, and is called "Pastorale" (402). This is a small and lovely Titianesque study, representing three female figures in warm glowing evening light, the richness of the general colour being further heightened by the silken draperies introduced; the work is a little poem, a specimen of that abstract and truly imaginative painting, of which we see so little now-a-days. Among the specialities of the exhibition are sundry architectural studies by Professor Ruskin, not, we regret to say, coloured ones, but slight pencil sketches on toned paper; slight, but clear and masterly in execution, as everything of this kind is from the hand of one who is in reality the most gifted architectural sketcher and draughtsman of the day, in all the qualities that go to make really first-class architectural sketching. There is a frame of studies of heads, &c., from casts in the British Museum, which are not so gratifying, and indicate where are the limits of Professor Ruskin's powers as a draughtsman. The architectural subjects include the Façade of Bologna Cathedral, and some early Lombard capitals. There are some landscape sketches by the same hand, which are merely memoranda, and if any one else had exhibited them would have incurred the Professor's critical wrath. Similarly *hors ligne* are Mr. Holman Hunt's eccentric studies of landscapes in wool patterns and primary colours, which are all, we observe, bought by some of those who will buy anything which bears the name of a really remarkable painter, who has all but thrown away wonderful powers through some defect of temperament which prevents his work appealing, without grave allowances, to any well-balanced judgment.

Next to Mr. Hunt in absence of all mannerism and conventionality in his art, comes Mr. A. Goodwin, whose works in this exhibition show remarkable power and versatility of style and feeling. His "Trout Stream" (100) is one of the most broadly treated and yet highly finished works in the room; one of those landscapes which are just a degree removed from realism by the effort to blend all the tones of the various parts into a harmony more complete and rounded than is usually found in Nature. But in "Whitby in Sunset Light" (200), the same artist can give us an intense bit of special effect representing quite another phase of landscape-painting; not would any casual observer take the two works to be by the same hand. Mr. Naftel, whose advance in his art of late years we have before noted, does better than ever in "Gloomy Weather" (155), which is a very powerful mountain scene under a peculiar aspect of light.

The top of the room is occupied in the centre by a large sketch by H.R.H. the Princess Louise, no piece of "royal" work, but a very clever and broadly-treated drawing of Niagara (105), in which the special point is the admirable manner in which the turmoil of the water descending the rapid towards the head of the Fall, and seen in sharp foreshortening, is indicated. The several parts of the scene do not quite coalesce

in execution, but of the ability shown in the handling of this part there can be no question; it is far beyond anything that the Princess has exhibited here before, as far as we remember. Mrs. Allingham has been better represented than in this exhibition; but even admitting so much, her works are among the most charming in the collection; they are nearly all on very small scale, and so remarkably finished on that scale; notice "The Granary steps," with the child and the fowls, and the beautiful finish of the birds; and the little figures in the sea-shore scene, "Wet Sands" (347); the individuality of expression imparted to the faces on this very small scale is surprising. Mr. Pilbury's best work, "Sandhills near Southport" (33), has been hung much too high, perhaps in view of the rather uneventful character of the subject, but it is a masterpiece of tone as affected by sunshine and shadow. Mr. J. D. Watson sends several of those broadly-handled studies of landscapes with figures of which we have seen so many, but which have not ceased to be interesting; the best of this year is perhaps "A Pastoral" (39), which is one of the best, perhaps the best, example in the room of the now often neglected and even despised art of composition in landscape; there is a pleasure in the mere balance of tones and lines and masses in this drawing apart from the sentiment; unless, indeed, it is on that very balance that the sentiment itself in great measure depends: a curious and interesting question in the philosophy of landscape-painting, not to be handled *en passant*, however. "A Stream, Springtime" (225), by the same artist, is another very fine example of the same school of work.

Among realistic drawings of actual scenes none are better than Mr. Gregory's "Rye" (66), a topographical landscape of rare excellence and finish. Mr. Herbert Marshall's London scenes form an interesting contrast to such a work; they are in a sense topographical, but they aim at showing how much of beauty and sentiment can be imparted to a view of an actual scene by treating it under favourable conditions of light and atmosphere, and by a little management of the colour; for in colour Mr. Marshall's scenes are not, it must be confessed, realistic; art has shed a halo over them of her own. In his "Westminster" (88) seen from the opposite bank, Mr. Marshall is at his best this year; his foreground of shipping is admirable, the well-known towers on the other side group finely in the misty atmosphere; the river looks a little too narrow, however. The exhibition, it may be observed, contains a good deal of architectural work; besides several of Mr. Marshall's, there is Mr. Parker's "Mortlake" (85), Miss Montalba's "Old Watch Tower, Amsterdam" (133); Mr. H. P. Riviere's various Roman sketches, of which "The Arch of Septimius Severus" (190) is the best; Mr. Goodwin's "Ponte Vecchio, Florence" (210), a beautiful little drawing; Mr. Hodson's "Abbeville, Afternoon." Mr. North's "Biebrich on the Rhine" (354), an exquisite bit of colour and composition. There are many more interesting works, for the mention of which space and not good-will is wanting.

DWELLINGS FOR THE POOR.

A PROVINCIAL EXPERIENCE.

The following particulars, kindly furnished to us by Mr. Lawrence Booth, F.R.I.B.A. (Manchester), may be of some value and interest to those who in London are now much taken up with the problem of providing dwellings for the poorest classes on a remunerative commercial basis. The matter is from a paper recently read by Mr. Booth in relation to the new tenements erected under the auspices of the Manchester and Salford Workmen's Dwellings Company (Limited).^{*} The main objects of the company are thus summarised:—

The company has been established to try the experiment of philanthropic motive, combined with a determination to deal with the question on business principles, and to show the possibility of a fair return for capital thus expended; and it is intended to be the nucleus, or at all events the pioneer, of one to be conducted on a much more extended basis. In its present dimensions it is merely experimental, but intended to be demonstrative.

In describing the details of the tenements it is desirable in the first place to make it perfectly

clear that the object has been to provide independent household life for the very poor people who now herd together in the slums and low lodging-houses. As the rentals to be charged average only 2s. 6d. per week for one complete tenement, in districts where the price of land is comparatively high, it can hardly be expected that the accommodation should be extensive.

Good sanitary arrangements, privacy, and the possibility of decency in the domestic life of the tenants, are the objects sought to be attained.

The large "flat" system has been avoided, and a plan which may be called that of the "semi-detached cottages" has been adopted.

Blocks, three stories in height, each containing two tenements on the ground-floor, two on the first floor, and two on the top floor, are placed at intervals of about 7 ft. measured along the street frontage.

Between the blocks is an open and uncovered staircase of fireproof construction, giving access right and left to the several dwellings, but preserving at the same time a distinct opening or "cut off" between the several blocks.

The height of the buildings to the "square" or eaves thereof being 28 ft., it is thought that a width of 30 ft. for the front streets is sufficient.

It is intended that such front streets should be used for all necessary vehicular traffic, and that the space usually devoted to back yards, back streets, or back passages, should be utilised for other purposes.

Instead of providing to each house, say 70 superficial feet of back-yard accommodation, duly walled off from a back passage of, say 5 ft. in width, it is intended to give 30 ft. in width between the backs of houses and to leave that space open for playgrounds, drying-grounds, &c.

It is thought that such an arrangement is to be preferred before the ordinary one, because small back-yards attached to dwellings of this kind, and walled off from public observation, obstruct light and air, are seldom kept properly clean, and are a great temptation to the tenant to become dog-fancier, pigeon-keeper, general lumber-storer, or something worse.

Open spaces in the rear thus reserved to the occupants of each group of dwellings will obviate the necessity for children having to play in the public streets.

But combined with the space allowed in the front streets, and the open spaces between the several blocks of tenements, it is intended to provide for such a complete circulation of air around each block as will secure immunity from the spread of fire and even infectious diseases.

Each tenement has its own water-closet and outside coal-bunker, and what is practically its own dust-shoot.

Privacy in these arrangements is thus secured to each family, and tenants will be held individually responsible for their cleanliness in a manner which is impossible when several people have to join in a common use of them.

Wherever the blocks are built on a sufficiently extensive scale, it is intended to utilise the corner sites as small shops and coffee-taverns.

It is not, however, in the opinion of the promoters desirable to build anything like a "colony" of such dwellings in any particular place, but rather to distribute them in smaller groups wherever land can be secured.

The small block system easily adapts itself to any size of plots.

They have fixed the price of one shilling per yard per annum for land as their maximum, and have some difficulty in securing suitable sites at that price.

The internal accommodation provided in each tenement includes a living-room, 12 ft. by 12 ft., and a bedroom, 12 ft. by 10 ft. 6 in. The latter is divided by a wooden partition, about 7 ft. in height, through a portion of its width, thus providing the possibility of a certain degree of privacy in the occupancy of the two beds, &c.

The living-room is fitted with an earthenware stove-sink, with a pantry cupboard over the same, ventilated by the insertion of a grid in the outside wall and small perforations in the cupboard doors, through which fresh air is drawn in and through the cupboard by the action of the kitchen fire.

To economise in cost of construction and to save wall space, the fireplace is set diagonally in one corner of the room. The range provides an oven, a boiler, and open grate, and is constructed with "gills" behind it. These project into a fresh air-chamber formed behind the fire, and thus warm the bedrooms. The air is brought into this chamber directly from the outside in a flue formed in the depth of the floor-joists, and when the warm air is not required in the bedroom it can be shut off by a "hit-and-miss" grid. The cost of a special fireplace for the bedroom is thus saved.

In the opposite corner of the bedroom there is an extraction-flue, carried up through an aperture into it immediately under the ceiling. A constant stream of warmed fresh air can thus flow through the room continuously.

In addition to this, all the window openings are fitted with shades made to open to their fullest extent, and by opening the inside door, through ventilation between the front and back of each dwelling is secured.

^{*} See illustration in present number.

Water is laid on to each slop-sink, and gas provided in every room. Shelves and hook-rails are provided in each living-room, and strong clothes-hooks on each side of the wooden partition in the bedroom.

The floors of the living-rooms are of concrete, carried on iron joists, and the walls are lined to a height of about 5 ft. with salt glazed bricks, so as to be easily washed and kept clean. The other walls are lined with machine-made common bricks, having a tolerably smooth face, and neatly pointed.

None of the walls are plastered, and there are no skirtings. The bedroom floors are of wood, and the ceilings are lathed and plastered.

All walls and ceilings are lime-whitened only, and no papering is permitted.

All waste-pipes discharge themselves in the open air, and no drain has any connexion with the interior of the buildings.

Before proceeding to give results, it is but justice to the promoters to emphasise the fact that not one of them had any personal or direct interest in the project, beyond a desire to show by example what could be done by judicious investment inspired by philanthropy. Their building operations have not hitherto been on a very extensive scale. Land was difficult to obtain, except at prohibitory prices. At length a small plot was secured in Holt Town, Ancoats, at the price of about 7d. per superficial yard per annum, on a long lease. The plot is somewhat irregular in shape, involving the sacrifice of rather more land than would otherwise be appropriated to playground or drying-ground purposes. The character of the substratum, and the comparative levels of the several streets, were such as to involve increased cost of construction. The price of the land was, however, supposed to be reduced to 7d. per yard in consideration of these defects. Twenty-four ordinary tenements have been erected, and also one corner house of a similar area, but occupying the whole height of the three stories; thus being three times the size of an ordinary dwelling. The cost has been about 78l. for each ordinary tenement. This includes architects' commission and every other item of expenditure except that for the paving and flagging of the streets, part of which was already done; the remainder has had to be done at the cost of the company. In their structural and sanitary arrangements the dwellings have fully realised the expectations of the promoters, and they are considered to be well adapted in all respects to their intended purposes. The principal deviation from the original plan has been the substitution, at the request of the Manchester Corporation, of privies, on the "pail system," for the intended water-closets. No gas has been laid on, but in all other respects the buildings have been completed as above described. We have the authority of the architect for saying it may be taken as certain that, with a favourable site, and with the erection of a larger number of tenements included in one building contract, the ascertained cost of 78l. would be reduced to 70l.

The price per tenement and the burden of ground-rent could also be reduced by carrying up the buildings two or three additional stories in height, for which the "plan" is well suited; but Lancashire people were supposed to have a dislike to climbing up steps into their domiciles. "Experience teaches" applies, however, even in practical Manchester. A difference of 3d. per week per tenement for each story was made in the rentals first demanded, under the impression that a ground-floor tenement would be considered more valuable than one at a higher elevation. It soon became apparent that the increased quietude and privacy, the better light and more fresh air in connexion with those at a higher elevation were regarded as equivalent to the more ready means of access to the ground-floor tenements, and as a result the rents were made uniform at the rate of 2s. 6d. per week.

On the all-important question of judicious and remunerative outlay, the company say that with the proviso of continuous occupation by rent-paying tenants, who would not unduly injure the property beyond ordinary wear and tear, thus obviating the necessity for constant, active, and expensive supervision, and divested of the comparatively large cost of registration, advertising, printing, bookkeeping, &c., incidental to such a small undertaking as theirs, under the Limited Liability Companies Act, a similar scheme, but on a much larger scale, would come very near the realisation of a return equal to 44 per cent. on the invested capital. It is, however, a perplexing considera-

tion how, when, and where such a combination of favourable conditions can be obtained.

The results at Manchester have hitherto been disappointing in some respects. The position chosen is in the very heart of a poor district, and is surrounded by industrial works of various kinds, employing hundreds of workpeople at low wages. Instead of an anticipated "rush" to secure the chance of decent household life at a cheap price, the tenements, though so few in number, have never all been properly and fully tenanted at one time. And of those who have occupied them a considerable proportion either could not or would not pay their rents. A continual weeding-out has, therefore, been necessary up to this time, although there are reasonable grounds for expecting an improvement in that respect. When ready for occupation any undue restriction, and, in order not to offend the sensibility of any would-be tenant, all mention of such things as charity and philanthropy was carefully avoided. The only exceptional condition, which was to the effect that every tenant should pay his week's rent in advance, had to be abandoned very soon, upon repeated representations that no such thing had ever been heard of, and that it was simply impossible for very poor working people to meet such an obligation in advance. It is impossible to say whether or not a rigid adherence to the original proviso would have caused the property to remain unoccupied, but it is certain that it would have prevented the incursion of several worthless tenants.

There is in the Manchester district an individual who may be designated the "nomadic householder." He is always on the look-out for newly-built dwellings, and, unless he is practically in collusion with the proprietor, as hereinafter explained, he generally contrives to arrange for a rebate of the first week's rent in consideration of having to clean the new house, &c. Unexpected circumstances prevent his paying the following week's rent, and he goes on till another rent-day before the owner is convinced that his tenant has no intention of paying anything. His scanty collection of household goods is easily removed, and, at or about the end of the fourth week, the landlord is lucky if he gets the key of his own premises, and if the latter be not materially damaged by ill usage or the petty theft of some little movable article such as knobs, taps, latches, hooks, shelving, &c. This type of individual is probably not unknown in other districts, but it is to be feared that he has been very much fostered and encouraged in and around Manchester by speculative builders, in order to enable them to dispose of newly-erected property under apparently favourable conditions of occupancy. Tenements are run up by the score, with no other purpose than that of being sold. The advances from the building society, and the system of credit on which a considerable proportion of the necessary materials and labour have to be provided, combine to strain the financial position at the completion of each building operation, and to make an immediate sale imperative. In order to effect this the houses are painted and papered, or what is, without the slightest appreciation of the grim irony involved, called "beautified," long before they are, or could be, even if properly constructed, in a fit condition; and filled with a goodly array of nomadic householders at apparently most remunerative rentals. Then come the placards and the sale by public auction, at which the unwary investor can buy a well-tenanted property, showing a return of about ten per cent. In the absence of an outside victim, the building society generally exchanges its position of mortgagee for that of owner. Happily such a vicious system is beginning to work its own cure, for notwithstanding the acknowledged want of better housing for the poor there are scores of such "club-built" dwellings in Manchester unoccupied at the present time; and the over-zealous building societies not attempting to "realise" by sale, can only cry "patience, patience" to their disconsolate shareholders.

It is the opinion of men thoroughly acquainted with the circumstances, that the temporary frustration of the well-intentioned efforts of the Manchester and Salford Workmen's Dwellings Company is in no small degree to be attributed to the condition of things we have endeavoured to describe; and that really deserving tenants will, by experience, learn to appreciate the comparative value of that which the company has

provided for them. In the absence of such appreciation, the prospect is instead a dark one for the very poor householders in that district; because nothing but absolute and deliberate charity, which in such a case is only another name for pauper relief, or the inside of the workhouse, can afford them an equal chance of bettering their present lamentable condition of herding together under influences that are a disgrace to our common humanity and to the vaunted civilisation of a Christian country. The company having carried out its own part of its philanthropic purpose amid a great deal of head-shaking, it is tolerably certain that unless those intended to be benefited evince a warmer appreciation of its efforts, no other attempt of a similar character is likely to be made,—at all events, under the difficulties which at present environ the subject.

We may point out how decidedly some of the experience here detailed bears out the scope of our own remarks a few weeks ago,* in regard to some of the probable results of furnishing dwellings for the poorest class, without personal supervision and enforced regularity of payment. The condition of rent in advance seems hard, but it might have been the kinder policy, as well as the more paying one in the long run, to have enforced it.

ANGLO-SAXON ANTIQUITIES.

The following is a résumé of the first three of Professor Hodggett's lectures before referred to, and which are now in progress in the Anglo-Saxon Room at the British Museum, on Wednesdays, up to the 19th inst. — Our own archaeological remains and antiquarian relics are much more calculated to interest our minds, and ought to be much nearer our hearts, than the historic remnants left us by a foreign enemy whose mode of thought was on almost every possible point at variance with our own. And yet to the teachings of that foreign foe are we referred whenever we seek for truth. Not very long ago, English was taught in no public school whatever; it was thought *infra dignitate* to study English, and we were bred as though to become Greeks and Romans, while in the remains around us we have classic ground as yet untrod. We are by the very circumstance of the relics preserved in the British Museum brought, as it were, face to face with those pioneers of our race who won for us this fair island of which we are so justly proud by the grand old weapon, the sword, lying mouldering before us. We see that, like ourselves, it is not Roman, but of a totally different type from the *gladius*. The blade is totally different from that of the Roman warrior, and the word "blade" is not Latin, but refers us at once to Teutonic vocabularies, where we find *Blatt* in German, *Blad* in Icelandic, *Blad* in Swedish, all meaning "a leaf," and more emphatically, perhaps, the leaf of the long sword-like grass which grows so luxuriantly on the banks of the lakes and meres of the North. The *gladius* is referred in the same way to the leaf of the gladiolus, which it resembles, but the small blade of the Greek or Roman warrior could stand no chance against the terrible arm before us. Our blade, then, is, by the side-light of philology, a Scandinavian word; and what of the objects to which that word applies? Let us look about us in Scandinavia, and in the grave-hills of the Vikings we find this blade,—at least, a blade as like it as two blades would be in one regiment.

The inhabitants found in Britain by the Romans adopted Roman arms and armour, Roman habits, and Roman laws, while the manners, thoughts, and customs of the Scandinavians remained perfectly Scandinavian in Romanised Britain just as they do in Anglicised America, New Zealand, or Australia. The Britons were a sort of feeble imitation of the Romans, and what chance had they against Rome's conquerors? As much as the "gladius" against the "blade." Without much book-learning an intelligent observer might deduce the following facts:—First, that a race had existed in Britain which the Roman sword in a metal more easily to work in than iron or steel. Secondly, that this bronze-gladius people were defeated by a big steel-sword-race, who took possession of the land and buried their dead. The bronze-gladius is found in rivers, showing that the

* See leading article, Nov. 3, p. 577, ante.

owners had been driven into the water, where they perished, leaving only the indestructible metal to tell the tale.

Wherever Scandinavians conquered they left big swords, chain armour, and the circular target. The big blade was copied by the Gael as the gladius had been by the Kelt, and in the word claymore (*glave-more*) which only means big blade, we get their version of the "Hring Mæl" or Ring Hewer, because it clove the rings of the mail in twain, or, as some suppose, because it was ornamented with gifts of golden rings.

The shape of this sword remained unaltered all through the "North." It was the blade of the early Viking, and we find it down to the Norman time on all the monuments remaining to us without change. The Normans, unlike the Saxons, had been untrue to ancient Scandinavian tradition, in relinquishing the speech of their fathers and adopting a modification of the Roman tongue, and they modified the ancient sword, lengthening it and giving it a cross-guard, and this, with the Crusaders, bore fully as mysterious a meaning as the old pagan form had done. The point could be stuck in the earth and invoked as a cross. When the Norman spark had glowed its last, we find the sword returning to its pristine form, and Norman French dying out.

There was a shorter sword or knife worn chiefly in a girdle; this was called the *seax*, a term applied to scissors all through Scandinavia now. This *seax* has played its part in English history, and there are some who hold that the name of this curved weapon gave the title to our race in so far as we claim the Saxon part of our addition for our own. This knife was not necessarily a warlike badge, being used, like the dagger in Hudibras, for peace or war. Its chief use in war was to despatch a warrior whose chain-mail armour had been cut through by the ring-hewer, but whose life was not yet sped. Its use in this respect resembles that of the *misericorde* of later times, which was a direct descendant of the more ancient *seax*.

If we regard the sword as it lies in its glass tomb before us, we shall see a form of hilt reminding us immediately of Asiatic types. The ball at the top of the grip is partly to keep the weapon from slipping out of the hand, as is the case in all Indian swords. The hilt is very small and not adapted to save the hand from a gliding blow descending down the blade. These small projections are to prevent the sword from slipping quite through the slit in the Byrnie (the true Saxon English word for coat of mail), in which it was worn naked in war.

The pieces of gold or silver which were added to the blade were made to bear certain signs which are now most unfamiliar to our eyes. They are the ancient runes, or mystic letters of the gods, said to have been invented by Odin, and to partake, like the Devanagari of India, of divine attributes. The names given to their swords by our forefathers were inscribed in runic characters, because it was thought they thereby gained some greater power both in attack and defence. There were forty characters among the Anglo-Saxon runes, and these expressed all the sounds of our language which the meagre Latin alphabet which we have adopted does not. We have five different sounds for which A must stand. O also does duty for the same number.

Our ancient runes had occult meaning besides the literal power for which they stood. Thus the rune Tyr, meant T when in combination with other letters spelling a word. Alone it represented the god Tyr, Ty, Tys, or Tius (evidently a form of Sanskrit *Djyas*, Greek *Geos*, Latin *Deus*), a young warrior, or a javelin. This alone is a strong proof of the highly abstract powers of reasoning possessed by these ancient warriors. The word for spear or javelin is *gár*, but the rune does not stand for G but for T, because the *gár* is the attribute of Tyr, for whom the rune is supposed to stand. This is not the result of savage ingenuity, but of abstract thought.

The proofs existing in various MSS. all through the North show us that the Scandinavians wore chain mail armour, or armour of rings linked together so as to form an iron net. Sir Samuel Meyrick, misled by the sound, has taken the words "Hring Mæl" to mean the armour, whereas it really denotes the weapon, so called in contradistinction from the smaller "*seax*."

The word "sword" (German, *schwert*; Scandinavian, *svärd*) is full of curious hidden

teaching, and is cognate with the verb "to swear," oaths being formally taken on the sword as the most holy thing upon which a vow could be taken. And it brings us into tales and myths of a very far back past indeed,—to the cradle-time of our race in India; for the root "swer" brings us face to face with "shining light," of which the "swerga" is also composed. The root "swar" indicates the meaning sound (as in our "answer"; Swedish, *svär*; German, *antwort*); so that it is either the flash or the ringing song, or both; for who shall say which is the first when a sword leaps from the scabbard, the flash or the sound?

Passing, in the second lecture, from the sword to the shield, Professor Hodgetts first called attention to the boss of the shield, which is nearly all that is preserved to us; but this portion, being of burnished bronze or bright steel, was the object of the warrior's special care, and has come down to us, while the linden wood of the other portion has become the prey of time. Below, at the base of the boss, was a transverse bar by which the shield was held in the left hand, not as the Romans held their shields, by means of two leathern holders fastened on to the back of the shield, through one of which the arm was thrust while the hand grasped the second. The wood used to form the body of this defensive arm was that of the linden-tree, and so identified was the idea of shield with that of the linden that the name of the wood is used all through Scandinavian poetry to denote the shield, which however, is also frequently called the "board." The concentric rings which we find mentioned were probably of gold, but there seem no traces of them in the grave mounds, although the boss is constantly occurring. They may, therefore, have been painted. There can be no doubt that some distinction was marked on the shield by which the warrior could be recognised by his friends. The young untired warriors wore white shields. Tacitus remarks on the immense preponderance of white shields among the Germans over those bearing some colour or other distinctive mark. The colours of the furs of certain animals would naturally afford a ready means of distinguishing the bearer. The white colour was probably due, as in Russia, to the undressed hide of the animal, or rather the under-skin (not the fur side), being stretched over the wood, and either painted white or bleached. The form of the Saxon shield, like that of the Saxon sword, lives yet in the target and claymore of the Gael.

The fact of a white shield denoting an untired warrior, or one who had not earned the badge of special distinction, is itself heraldry, and, whatever the system may in its infancy have been, there was certainly the fact of the identification of the warrior in some way or other with his arms. They were hung up behind his place in the hall in a group, and thus were over his head in sleeping. This is to be seen in the House of Lords in England and the House of Knights at Riga. Some kind of distinction besides the painted or gilt rings was, in all probability, worn; but the custom of putting metals on furs or colours, and not on metals,—a rule observed in modern heraldry,—clearly dates from the ancient Viking shield.

As the place in the hall occupied by the warrior was thus marked by his shield, so on board the Viking ship the buckler held its own, and this in a more emphatic way still, for all round the ship's side the linden-boards were hung so that the gunwale supporting them became known also as the "board." Hence to board a ship is to cross the gunwale. The starboard is that part of the gunwale to which the "styr-rudin" was fixed, always on the right-hand side, and the other part was called the "back-board," i.e. not the front, as it is still called in German and Swedish.

At the great meetings called the *tings* of the North the shield played a very important part. It was the means, with the sword, of expressing assent or applause when any question was ventilated. The warriors stood round their king, who stood upon a grave-mound or doom-stone, his yards and chains forming a ring of nobles round him. Outside this ring came the free land-owners, not nobles, and outside them, again, the peasants. When applause was to be expressed, the sword, worn in the scabbard at such meetings, was drawn and clashed against the shield. Dissent and dislike were expressed by ominous silence.

Notwithstanding the efforts of the Latinists the "scutum" has not driven the shield out of

our language, nor has the tyrant Rome been able to disarm us of our sword, and give us a *gladius* or an *ensis* instead. The word "shield" is still a tower of strength, a "shield-burg" (Icelandic, "skjöldborg"; German, "schutzburg").

The form of the shield has become modified in various ages in England; and the last forms used,—the buckler of Elizabeth's time, and the more recent Highland target,—were returns to the early shape. Besides the circular shield there seems to have been a heavier arm of an oval shape, or else in the form of a parallelogram. This was called the "scild-truma," or troop-shield, and could be used as a rampart to protect the combatants; and these were carried by the thralls or slaves.

The employment of the shield in mythology has given rise to many very beautiful ideas. For example, the sun, although the attribute of the sun-god Baldur, is still regarded as Odin's shield when Wisdom defends Love. The moon is the white shield of the young warrior. The shield meant the sun, the moon, and, finally, such forms of truth as might be assailed but not destroyed by man. Such was the early belief of our own race; but we came to a land of fog where we seldom see the sun, and hardly ever the moon.

From the dislike entertained by our forefathers of fenced cities came much of the destruction of Roman fortification. The Scandinavians admitted no tower of strength, and his only fence was his shield. Our wooden walls have passed away from the ocean; our ships wear armour on the waves, and the light linden shields have given way to immense masses of steel and iron repelling, not the "snowstorm of white-feathered arrows," but a ball of devastating shot of which no Viking ever formed a thought.

Taking up, in his third lecture, the subject of the spear, javelin, and arrow, Professor Hodgetts showed how the javelin had become incorporated into the name of the warrior in the expression "Gár-Dene," i.e., spear-dane, a compound like our horseman, footman, swordsman, and the like. Dane was taken as a generic name for all Scandinavians, and hence included the Angles. It was shown that the term "gár" was originally generic, while the terms "speer," "spit," "spies," "spjót" were applied to specific forms. Subsequently, however, the expression "gár" seems to have been applied to the barbed form of the head, and the word "spear" to the leaf-like shape more familiar to us. As, in the lecture on the sword, the leaf was referred to as affording a clue to name and form, so in the spear it was shown that this name was either derived from the halm of straw, called *speer* in Old High German; or the halm of straw was so called from its resemblance to the weapon. In the same way the word "strål" for arrow was cognate with "stro"; "straw," and from this, again, with the German *strahl*, Swedish *strål*, a sun-beam. The word "beam" was shown to be cognate with the German *bamm*, a tree, and to mean a spear-shaft, inasmuch as this was the noblest use to which a tree could be put. The word "lance" was shown to be a corruption of the Teutonic land, the word for "lance" having been originally the *landes-knechen-spies*, the spear of the servant of his country, corrupted into *landes-spies*, *lans-spies*, and *lans*, in which form it exists in Denmark. The word "lancea" is a foreign word in Latin, introduced (it is said) from Spain in the third century.

Connected with the spear is the beam, the shaft, the wood of the ash-tree, which gave occasion for a very full account of the myth of Odin's tree, the worship of which was celebrated on Wodens-day, thence called Ash Wednesday. The whole myth is much too long for insertion here, we can only notice its interest in that it presents to us in a very powerful manner a very full view of the belief entertained by our fathers of the way in which the Cosmos is represented by a tree, and also by a man. Another myth, that of Baldur's death by the mistletoe arrow, was cited in connexion with the history of English thought in relation to the arrow. The use of the arrow in war was shown from passages in Anglo-Saxon and other Scandinavian sources.

Mr. Hodgetts quoted from a learned Danish work on "Thor og hans hammer," the opinion that the stone weapons found in the grave-hills of our warriors were *simulacra armorum*, meant to typify the power of Thor over the elves and spirits of darkness, and made in stone; first,

because steel had no power over elves, and, secondly, because flint was not liable to rust. He referred to a splendid exhibition of arrow-heads at the British Archaeological Society on the 21st inst., by Mr. Borlase, M.P., the forms of which were precisely similar to those found in Scandinavian graves. In the North the arrow-head, the axe, and the mallet, are all found in stone, and all attributed to Thor.

The lecturer then gave a brief sketch of the history of the bow in England, of the reason for its increase in strength and length, and of its good service in ridding the land of the Normans, the weapon being to the Middle Ages what the rifle is to us.

ROYAL INSTITUTE OF BRITISH ARCHITECTS.

At the third ordinary meeting of this Institute for session 1883-84, held on Monday evening last, Mr. David Brandon, vice-president, in the chair, the Secretary announced that Professor Roger Smith, who was to have opened the discussion on Mr. Robins's paper on "The Fittings of Buildings for Applied Science Construction,"* was unfortunately kept at home by illness. Mr. Robins, therefore, continued his paper, the reading of which, with its appendices, was not completed at the last meeting.

Mr. Robins made a few prefatory remarks as to the death of Sir William Siemens, which occurred on the very evening of their last meeting. By his death the scientific world had sustained a very great loss. It would perhaps be remembered that on the occasion when he (Mr. Robins) read his first paper,† Sir William Siemens was present and took part in the discussion, having also very kindly discussed with the author many of the details which were included in the present paper. Turning to the immediate subject in hand, Mr. Robins gave a brief description of the fittings suited for the mechanical departments of technical colleges, observing that a detailed description was not necessary, nor could it be complete, because the system of instruction was not at present fully developed, and it varied in different colleges. Referring to the special means necessary for the ventilation of laboratories, Mr. Robins said:—

Perhaps, as the extraction of the vitiated air generated in laboratories is so closely allied to my subject of fittings, I may be allowed to say a few words upon it, even if I seem to combat the opinion of Sir Frederick Bramwell that architects as a rule think more of taking out the bad air than of supplying fresh air abundantly, delivered without draught. He knows better of some of us than that, and his approval of my scheme for ventilating the rooms of the Society of Arts, which includes both the admission of fresh air (warm or cold) as well as the extraction of the foul air, both in winter and in summer, by a heated vitiated air-shaft, has been justified by its success, for which I have received a vote of thanks from the Council, of which body the late Sir William Siemens was chairman. In applied science buildings we have not only to deal with close atmosphere arising from the congregation of many persons in one room at one time, and for a long time together, but we have also to contend with the obnoxious smells which are made by the experiments carried on in the various laboratories. The removal of these fumes with the greatest rapidity and certainty is best accomplished where the current of air in the extracting shafts of the ordinary room ventilation is in the same direction as that of the draught-closets on the benches or around the walls. This is so obvious when thus plainly put that it will hardly be credited that in the majority of cases the reverse is the practical fact, thus necessitating the closing of the extract-gratings for the ordinary room ventilation that they may not pull against the extracts from the operating-benches and draught-closets. The velocity at which the extraction of air should take place in the draught-closets is not less than 5 ft. per second. To ensure this draught at a constant velocity it is necessary to be independent of casual winds and changing temperature as a means of motion. This requires the employment of certain apparatus to produce either a propelling or a sucking force, of which the latter is usually either a common

upcast shaft, heated at its base by a furnace or the product of furnaces, attached to engines or heating apparatus. Neither of these, however, can be depended on for constancy, and, therefore, the best agency is a fan, the rotation of which, propelled by a steam, gas, or electric engine, where water-power is not available, steadily exhausts the air from the air channels, and establishes an upward and outward current in the shaft from the point at which it debouches. The position in which this extract-fan is placed in the shaft determines whether the vertical warm-air channels shall have an ascending or descending current established within them before reaching the shaft. If placed below the basement and at the foot of the shaft, the current will be descending; if placed at the roof level, the current will be ascending, to communicate in each case with horizontal channels graduated in size till they reach the spot where the fan is situated. In many cases on the Continent there are fans both above and below, as at Geneva, in others above for the draught-closets only and a furnace below for the room ventilation. This is the case at Munich, for example, with the result I have already mentioned, but I should explain that fresh air is separately admitted to the draught-closets as well as the room, and it was thought that this would overcome the difficulty, but it does not in practice, and we should take warning. Of course it is apparent that the extraction of so much bad air must be replaced by a corresponding amount of fresh air, warmed on its entrance in winter and cold in summer. The only way I know of to prevent cross draughts is to introduce this fresh air with an upward current through vertical shafts, or openings not fixed in the face of the side walls; then, whether you force the air in by fans or leave it to come in as it is drawn, its tendency is to rise before mingling with the air of the room. I am so arranging it at Bristol, and it is so introduced at Dundee. In summer the room openings for the escape of the foul air may be at the top of the opposite wall, but in winter, if they are not also provided at the bottom of the room, so that the upper can be closed, the warm air will be carried away before warming the room; in either case the air will be pure, because it will never have time to get stagnant, but will always be changing as many times in the hour as may be predetermined. The usual temperature required to be maintained in class-rooms is 60° Fahrenheit, when the external temperature is as low as 25°, and 55° in the staircases and corridors. The change of air to be effected by ventilation should be 700 cubic feet per person per hour in the class-rooms, and 3,000 cubic feet for the chemical laboratories. At the University College, Dundee, the air is forced in by five air-pumps, but it is not drawn out by mechanical means, and the air of the laboratory is changed three times in the hour. [It should be added to this that in the course of his paper Mr. Robins referred in detail to arrangements for heating several of these important buildings, the work having been done by Messrs. Bacon & Co., with very great credit to themselves.]

Professor Armstrong, who was invited by the chairman to open the discussion, gave an account of some experiments which had recently been made with the object of testing the proposed arrangements for securing ventilation. They had, in the first instance, an up-cast shaft 3 ft. square and 120 ft. high, with an internal smoke-flue, of iron, 18 in. in diameter and $\frac{1}{2}$ in. thick; and communicating with the laboratory on the second floor was a down-cast shaft 47 ft. deep, which entered the up-cast shaft at the base. All the horizontal or floor flues communicated with the up-cast shaft, and the draught passed down and then up through the outer jacket. It was assumed that the heat given from the furnaces and the boiler would suffice to produce the necessary velocity in these flues, and in order to be able to produce the necessary velocity when the furnaces and boilers were not in action a pilot furnace was constructed in the basement. The experimenting party found, however, that the heat they got into the chimney did not suffice, and in order to give some idea of what they were doing, a somewhat exhaustive series of experiments had lately been made, which were tabulated. Members interested enough in these figures could carefully examine them for themselves afterwards. He would just quote a few of them. A series of experiments was begun on the 21st of the month, when

the wind was very high; there had been no fires for three days before the fan was stopped, and they found that even under these circumstances there was a very considerable velocity at the head of the up-cast of 3 ft. or 4 ft. per second, produced entirely by the wind blowing across the head of the shaft. The wind was blowing on the south face of the building, and opening the windows on that side produced a considerable addition to the velocity, the velocity rising from 4 ft. per second to 6 ft. Opening windows on the north face had no such effect. To test the effect of putting on more heat, the Professor said he introduced a large ring gas burner into the shaft with 118 holes, capable of burning 450 ft. of gas per hour. When this burner was lighted, it was found that there was an increased velocity of 4 ft. per second from burning this gas in the outer shaft. Next day experiments were made to determine the velocity when the fires were lighted in the furnaces, and it was found that the velocity, with the fan running at half speed, never rose above 5 ft. per second. When the gas was lighted in the outer ring it rose to 8½ ft. per second; and again nearly 4 ft. per second was got by burning gas in the outer shaft. Other experiments of a like nature were referred to. A further series of experiments followed, the velocity being worked to 10 ft. per second at the head of the down-cast shaft to determine what velocity could be got at the fine openings on the benches. The result was that when everything was in action as it should be in ordinary work a velocity of barely 1 ft. per second was got at the orifices on or near the benches, so that it was quite clear that with the proposed arrangement for ventilation it was impossible to reach the desired end. Hence it was decided to try the fan experiment. The testing process was somewhat interesting, showing what can be done now-a-days. The laboratory was on the second floor, and all the motive power in the basement. Of course it was not an easy thing to fix a steam engine on the second floor of a building, but one of the electro-motors had been placed at the disposal of the experimenters, and a 2-ft. Blackman fan was fitted at the head of the down-cast shaft. That fan was not fitted until Saturday last, and it was only on Monday morning that the electro-motor was set going. He was glad to say that with the aid of this fan it was proved conclusively that the ideas he and his friends had all along entertained as to the true system of ventilation were really practicable. They found they could get the necessary velocity, and that having got the velocity their former experiments had shown to be indispensable, they reached the desired end. With everything open and the chimneys at work, they got a velocity of barely 1 ft. per second; with the fan running 510 revolutions a minute, they got 3 ft. per second, with the fan running 666 revolutions, 3½ ft., and with 800 revolutions, 4½ ft., whilst when running the fan up to 900 revolutions a minute, it rose to 4.9 ft. per second. This was with a fan of 2 ft. diameter only, and worked by an electro-motor small enough to be easily carried upstairs by one man, the electric current being led up from the basement with a wire of but a ¼ in. in diameter. This was an interesting experiment in the use of electro-motors for such purposes apart from the results obtained.

Mr. W. W. Phipson said the ventilation of the Bute Hall of the Glasgow University was carried out on a principle somewhat like that adopted at the Institution of Civil Engineers. The speaker further described how he had solved the difficult problem of laboratory ventilation at the new Medical Schools at Edinburgh where he got a velocity of as much as 8, 9, and 13 ft. per second. He expressed his conviction that if the draught were less than 6 ft. to 8 ft. in horizontal draught flues, the chemical fumes would not be removed sufficiently for the requirements of the professors.

Professor Perry did not know that he had much to say on the subject of ventilation, but he should like to observe that the velocity with which the air was passing through an orifice, or moved in a certain neighbourhood, really gave us very little information as to the amount of draught in the neighbourhood. Of course, where the orifice through which air was made to pass in given quantities was small the velocity would be greater than when the same quantities of air were forced through larger orifices. He thought that the experiments of that afternoon had shown that a velocity of 3 ft. 6 in. or 4 ft. per second at the orifice was quite sufficient to pro-

* See p. 680, ante.

† "On the Special Buildings for Applied Science and Art Instruction." See *Builder*, vol. xlv., p. 171.

duce a very considerable clearance of the fumes. Professor Ayton about a year ago brought before the Institute some calculations, and asserted that ventilation by the aid of the waste-heat of a furnace could not be anything like as efficient as ventilation by fans, even taking into account the want of efficient steam-engines to drive the fans. Professor Perry said he found it remarked in the paper to which he alluded that his colleague and himself thought the ventilation of the future would be performed by electro-motors driving fans. He hoped Dr. Armstrong's experiments that day, —almost the first, he believed, made in an actual building to test the efficiency of an electro-motor driving a fan,—would force on the attention of architects what had been done at the Finsbury College. With regard to mechanical laboratories, he understood that Mr. Robins expected a few remarks from himself. He would speak of the mechanical laboratory of the future only. That of the past had been a professor's private room, in which he made his own experiments, unassisted, as a rule, even by his one or two senior students, of whom Mr. Robins talked. There the professor worked out his own researches, embodying the results in papers to be read before the Institutions of Civil or Mechanical Engineers. Doubtless valuable information with regard to the strength of materials and their behaviour under different circumstances had thus been harvested. But there could be no question as to the change that had come over, not merely chemistry, but over mechanical science also, during the last twenty or twenty-five years; and architects, like other people, must open their eyes to the facts. An idea was now afloat, was working itself out, and taking definite shape, that laboratory work in mechanical science is a necessity in our schools and colleges, and it was necessary that a mechanical laboratory should be of sufficient size and properly fitted. In conclusion, Professor Perry described a simple means (devised by Professor James Thomson) of hanging large blackboards for mathematical and other demonstrations, so that a large board could be easily moved by a slight touch.

Mr. Hugh McLachlan, Associate, and holder of the Godwin Bursary for the current year, then gave a short description, in response to an invitation made to him, of the fittings of some laboratories he had recently visited while on his recent tour (as holder of the Bursary) in North Germany.

The chairman having made a few observations, Mr. Robins replied, and the meeting adjourned.

DISEASES CAUSED BY SANITARY DEFECTS IN HOUSES.

This was the subject of a lecture delivered at the Parkes Museum on the 29th ult. by Dr. Charles Kelly, Professor of Hygiene in King's College. Professor de Chaumont occupied the chair. The lecturer observed that the examples of defects and of the evils to which they gave rise had been taken from a healthy country district, because the conditions for investigating diseases are much simpler in places which are small and isolated than in large towns, where the difficulty is sometimes very great. This country district, with a population of 100,000, has now a general death-rate of from 14 to 15 per 1,000, and a zymotic death-rate of 1.2 per 1,000, or 120 yearly. The lecturer traced outbreaks of the various zymotic diseases that had occurred during the last few years, and showed that although many of them were due to the milk or water supply, some could undoubtedly be traced to sewer-gas which found its way into houses where the sewers were unventilated; and even in some cases the ventilation of sewers had proved the cause of evil by the sewer gas escaping from the street ventilators, especially where the outfall of the sewer was tide-locked. This was shown by outbreaks occurring directly a new system of ventilated sewers had been laid down, in a place where they had previously been without either regular house-drains or sewers. Diphtheria is a disease which seems to be in some cases due to sewer gas, but there is little doubt that cold and damp are its predisposing causes in many cases if not its origin. Besides the more severe forms of disease traceable, there are other disorders which make little or no impression upon the death-rate, but yet which must affect the general health. Persons exposed to sewer gas in a dilute form are pale and anæmic; they often suffer from headache,

sore throats, and from diarrhoea; the appetite is impaired, and they fall into a feeble state of health. Women and children are more liable than men, because they live more at home and are, therefore, more exposed. To prevent the occurrence of those diseases of which enteric fever may be taken as the type, it is essential:—(1.) That the drinking water shall be pure; (2.) That no sewer gas shall enter the dwelling. It has been shown that water, though delivered pure by a company, may become polluted in various ways after it has entered a dwelling. To prevent such pollution regulations are now laid down by most companies. If the constant system is in use all the drinking-water should be drawn from a tap direct from the main. If the intermittent system is in use there should be a separate cistern for drinking-water, and this should have no connexion with any drains whatever. An overflow or waste pipe should not be attached to any cistern, but, as a precaution against overflowing, a tell-tale or warning-pipe should be fixed so as to discharge in some conspicuous place in the open air. Every closet supplied with water should only be so supplied by means of a cistern by which about two gallons of water can flow at each discharge. The supply-pipe should not be less than 1½ in. in diameter, so that the water may descend as rapidly and in as straight a line as possible. To prevent the entrance of sewer gas into houses, it is useful that all sink and bath pipes shall deliver into the open air outside the dwelling. Their course should be as short as possible, and in many cases the pipe would only have to pass through the wall sink or bath. The contents would then pass into a trap or gully about 1 ft. 6 in. distant from the house wall, so that if any gas happened to be forced through the trap, it would pass into the atmosphere, and not into the house. The soil-pipe should be outside the house, and from its upper end there should be a ventilating-pipe carried up above the eaves of the dwellings. Some recommend that between the house-drain and the main sewer there should be an intercepting trap, so as to prevent the foul air from public sewers from making its way into house-drains. Two untrapped openings are made in the drains, so as to provide for a free circulation of air. In the Model By-laws two methods are given for ventilation of house-drains, but in all cases a trap is placed between the house and the sewer. The lecturer was not sure that this plan is a good one. It makes no provision for the ventilation of the main sewer other than by openings at the street levels, and many complaints arise from this cause. There is no power to erect ventilating-shafts by the side of houses without the leave of the owners, and such leave is not often given. In seaside towns, where the sewer is tide-locked twice a day, or in places where the sewer is laid nearly level, the means of ventilation by openings in the road is not sufficient. In some towns where these ventilators are very offensive, enteric fever has been on the increase during the last two or three years. In many cases the best plan is to let every house-drain be directly connected with the sewer, and to do away with any disconnecting chamber or trap. Every soil-pipe being carried up above the house in its full diameter will then act as a ventilator to the main sewer. In a street half a mile long with houses on each side there might thus be as many as 150 or 200 ventilators instead of only having eight or nine on the road level. Sewer-gas is often less injurious than the air which is met with in the house-drains, if they are not well flushed. All liquid and solid refuse should be conveyed as rapidly as possible from the house to some distant point where it can be dealt with. Any traps or contrivances which hinder this flow are not to be commended. The best way to prevent sewer-gas becoming dangerous is to allow as much circulation of air as possible in the sewer, and this can only be done by making the openings as numerous as possible. When drains and sewers first became known, it seems to have been the practice to hide everything away out of sight, and to bring the drains inside the house at several points. Much of the work in the present day consists in undoing the work of the past. That house can alone be considered fit to live in which, within its four walls or beneath its basement, contains no drains whatever. There are few places more healthy than a coastguard station, at some of which there are no sanitary defects whatever, and where cleanliness is strictly observed. In many a village enteric fever is unknown, unless

it happens to be imported. But in houses where the arrangements are very complex, it is frequently met with. In most places it is far healthier to live in a clean well-built cottage with no drains whatever, than in more pretentious dwellings, where the drains are too often defective. In the simplicity of their dwellings the poor enjoy an immunity often denied to the rich.

In the course of the discussion which followed,

Mr. Hazard strongly condemned the practice now recommended and carried out by sanitary engineers of disconnecting house-drains from the sewers, and carrying up a ventilating-pipe to ventilate only the drains of one house. He contended that every house should be provided with a ventilating-pipe, and that every ventilating-pipe carried up should be made to work for the common good. The present method of procedure was selfish in the extreme. A man who carried up a ventilating-pipe did not care who got the sewer-gas so long as he did not.

Mr. Mark H. Judge thought that the lecturer's remarks as to the utility or harmfulness of disconnection were to be received with very considerable caution. Disconnection of the sewers and house-drains was imperatively necessary so long as sewers were imperfectly constructed and inadequately ventilated. He thought Mr. Hazard's remarks as to community of ventilating-pipes must also be received with caution, for great dangers to the public were conceivable under such a system.

Dr. Poore observed that the remarks of the previous speakers had opened up a very interesting question, viz., the moral responsibility of individuals in respect of sanitary matters. People, in large towns especially, were so apt to rely on the public authorities for the performance of sanitary work that they seldom considered what they might do individually. Individuals might do much useful sanitary work for their own benefit as well as to the public advantage if they would only take the trouble to understand what was required to be done. One of the instances cited by Professor Kelly seemed to show that a system of sewerage was not always and everywhere essential. Every house that had its quarter of an acre of garden-ground could innocently dispose of its own refuse. That being the case, what a scandal it was to see, between Isleworth and Hounslow, an open sewer, charged with the filth from villa residences in the neighbourhood, flowing through thousands of acres of market-gardens, upon the surface of which its contents might be easily and profitably utilised, and a serious nuisance avoided.

Mr. Rogers Field expressed his regret that many people of education and wealth, owning country seats, should get rid of the sewage of their mansions by discharging it into pits or cesspools in porous strata. It was a cheap and speedy method of disposing of their sewage, but ought they to be allowed to resort to it? The sewage disappeared, but where did it go to or what source of water supply might it not be polluting? Clearly their sense of moral responsibility for sanitary work was not very acute.

Dr. Steele proposed and Mr. Ernest Turner seconded a vote of thanks to the lecturer, which, having been put to the meeting, was cordially agreed to, and the lecturer having said a few words in reply, the meeting terminated.

SANITARY INSPECTORS AND THEIR TENURE OF OFFICE.

This was the subject of a paper read by Mr. E. S. May, of Ramsgate, on Saturday evening last before the members of the Association of Public Sanitary Inspectors, who met in the Library of the Social Science Association, Adam-street, Adelphi, Mr. G. B. Jerram in the chair.

Mr. May, in commencing his paper, said it would be unnecessary to refer in detail to the various Acts of Parliament and Orders relating to the appointment of inspectors of nuisances, as their provisions were well known to most officers. He proposed, however, to refer to their tenure of office, and to show in what manner such officers were affected by the General Orders issued by the Local Government Board, dated March 10 and 13, 1880. Article 9 of the Order of March 10 referred to urban inspectors, and provided that—

"Every officer shall continue to hold office for such period as the Sanitary Authority may, with

be approval of the Local Government Board, determine, or until he die or resign, or be removed by such Authority with the assent of the Local Government Board, or by the Local Government Board," &c.

The fourth clause of Article 6 provided that—

"In the case of any officer who holds his office for a specified term, the Sanitary Authority may provide for the continuance of such officer, or appoint his successor within three calendar months next before the expiration of such term."

Thus the Sanitary Authorities might appoint other persons to take the places of existing officers before their term of office expired. This was virtually giving the local authorities the power to do as they liked with their officers, good, bad, or indifferent. The consequence was that an officer after receiving an appointment frequently found himself completely in the power of the Authority, or at least in that of some of its members. The results were seriously detrimental, not only to the officers themselves, but to the public. It was sincerely to be hoped that at no distant date a reformation in the mode of appointment of all sanitary officers would be effected. Registrars of births, deaths, and marriages, relieving officers, school-attendance and inquiry officers, vaccination officers, and many others, all held permanent appointments. Why should a distinction or exception be made in the case of sanitary officers, whose duties were far more onerous and unpleasant than those of any of the officers just named? Why should the sanitary inspector, while endeavouring fearlessly and faithfully to discharge the duties of his office, be worried with anxiety lest, at the expiration of his term of office, he might not be re-appointed? Why should such officers be discouraged by being made to feel that their services were unrecognised,—that no matter how much they gained in experience, no matter how efficient they became for the performance of their duties, they were apt to lose their appointments at the caprice of their employers, to some of whom they might have made themselves offensive by the impartial discharge of their duties? It might be said that a good officer need be under no fear as to his re-appointment at the end of each term. That might apply to some Authorities, who, acting conscientiously, were desirous of retaining the services of a good officer, but there were many exceptions to that state of things, and good officers were often superseded for no just cause. The foregoing observations applied more particularly to provincial Authorities; for, in the metropolis, the officers, with few exceptions, were appointed permanently, and they were consequently more free to discharge their duties fearlessly and independently. In support of the author's proposition that the tenure of office of sanitary inspectors should be placed on a securer basis than at present, he urged the following arguments:—A sanitary officer, in the discharge of his duty, is, unlike the soldier, always in battle. The enemy he is seeking to destroy is unseen, yet it lurks insidiously at every turn. He is consequently continually exposed to far greater dangers than the soldier, while he has no compensating advantages in the shape of foreign travel. The soldier, if he escapes the bullets and bayonets of a military foe, returns home honoured to a life of comparative ease, with a prospect of a pension. The sanitary inspector, if he come scatheless through the insidious germs of zymotic disease which he is always encountering, has no prospect before him but a precarious tenure of office, under which he may be undeservedly dismissed at an age when he may have great difficulty in getting another appointment. The public were, after all, most concerned in the efficiency of the sanitary inspector, and the public would not, if they knew it, allow efficient public servants to be dismissed at the caprice of a few individuals. While the tenure of office of sanitary inspectors was so uncertain, the door was opened to the admittance of men who might not be well qualified for the post,—men who, for the sake of retaining an appointment, might wink at or pass over glaring evils in property belonging to those upon whose support they were dependent for re-election. Not the least of the difficulties which sanitary officers had to encounter was the yearly change in the constitution of members forming the Sanitary Committees with which they had to deal. One year there might be on a committee one or two gentlemen who took great interest in all sanitary matters,

and who, being men of good position, were above the meanness of mixing up with the jealousies and intrigues of small property-owners. At the hands of such gentlemen the sanitary inspector met with considerate treatment, and he was encouraged to be energetic and alive to his duty. Next year, however, the same committee might be very differently composed, and might include a majority of members who knew little and cared less about sanitary requirements, some of them being men who had obtained seats at the board from personal motives,—men who were pledged to oppose the officers in every way they could, and who were ever ready to protect themselves and their own immediate friends, owners of property, or their fellow-tradesmen, against the enforcement of lawful and necessary sanitary requirements. With such a committee to deal with the unfortunate officials were made to feel that to be zealous in the faithful discharge of their duties was to give offence, and too often energy gave way to lethargy, and the health of the district suffered. In conclusion, Mr. May observed that the remedy for the state of things here described was, he believed, in the hands of the sanitary officers themselves. They should combine in urging their views upon the attention of the Local Government Board, and he had no doubt that they would be influentially supported by many well-known gentlemen who had devoted much attention to sanitary matters and to the working of sanitary laws.

In the course of the discussion that followed some of the members strayed very far from the subject before them, and seemed to be at cross purposes with each other until Mr. Rumble, of East Barnet, made some judicious remarks, reminding the meeting that the Association was composed of three different classes of inspectors, viz., the metropolitan inspectors, appointed under the Act of 1866; the urban inspectors, appointed under the Act of 1875; and the rural inspectors, also appointed under the Act of 1875. Most of the speakers who had taken part in the discussion had, as it seemed to him, looked at the matter too much from their own point of view, but they should remember that, while the three classes of members were somewhat differently situate, they had common objects in view, and those common objects were not merely to endeavour to improve the status of sanitary inspectors as a body, but to discuss sanitary questions with the view of arriving at the best modes of procedure under all circumstances. Incidentally, allusion was made by other speakers to the question of housing the poor in London and other large towns, and the opinion was expressed that there was a great deal of exaggeration in much that was being said and written on the subject at the present time. It was generally admitted by the metropolitan sanitary inspectors who spoke that they were left quite free and unfettered in the fearless discharge of their duties, for although occasionally they might incur the ill-will of some interested property-owner, they were generally sustained in their action by the support of a large majority of the members of the vestries and boards whom they served. On the other hand, it was admitted that urban inspectors in small towns, and rural inspectors, were restrained in the active performance of their duties by something very much in the nature of intimidation on the part of those to whom they ought to be able to look for support. One member (a metropolitan inspector) expressed it as his deliberate conviction that the medical officers of health were the great hindrances in the way of efficient sanitary work. "Remove the medical officers of health," said this gentleman, "and give the inspectors 'a rattling good screw,' and the sanitary work of a parish would be better done, and the death-rate would not fall" (*sic*). It is only right to say that this view, with one or two other remarkable propositions laid down by the same speaker, was strongly repudiated by the members present.

There was a large attendance of members at this meeting, and when the society gets in full working order it will, no doubt, do much useful work.

The Victor Emmanuel Monument in Rome.—The latest news is that this monument, by mutual agreement of civil and ecclesiastical authorities, is to be erected in the first chapel to the right on entering the Pantheon, and not in the middle of the building.

ELEVATION OF TERRACE HOUSES, DOVER.

This is a design for a terrace of houses about to be built on an estate in the neighbourhood of Dover. We call attention to it as a good example of the additional interest which may be given to such rather utilitarian architecture by a varied treatment of the separate houses. In this case the gables are all treated differently, though preserving a sufficient general uniformity of size and proportion. There would be much more interest in our street architecture if this kind of partial variety were often adopted in terraces and streets, instead of a mechanical repetition of the same identical design. The architect is Mr. J. Treadway Hanson.

THE CONGREGATIONAL SCHOOL, CATERHAM, FOR THE SONS OF MINISTERS.

The new building (of which we give an illustration) is intended to receive the school long established at Lewisham, which has for some time past outgrown the present building, which is situated in a low part of Lewisham, very difficult of access and prejudicially affected by its close proximity to the railway.

The edifice in course of erection has been designed by Mr. E. Cookworthy Robins, F.S.A., of 14, John-street, Adelphi, who was the architect of Milton Mount College, Gravesend, and of Walthamstow Hall, Sevenoaks, for the daughters of ministers and the daughters of missionaries respectively. Mr. Hobson is the builder, and Mr. Woodley the resident clerk of works.

The design was selected in limited competition, and affords accommodation for 150 resident students in three stories. There are two wings in the rear, 67 ft. by 30 ft. wide, set at right angles with the main front of the building, which is 200 ft. in length, and situated on the eastern slope of the hill overlooking the beautiful Caterham Valley.

The space in the rear between the wings is occupied by the gymnasium, 55 ft. square, and the lavatory and cloak-room, 55 ft. by 13 ft. wide. A corridor extends the whole length of the building from north to south, and is continued beyond the main building to connect it with the existing residence called Withersden, which is retained for the head master's house. In the rear are the kitchen offices, with covered corridor thereto.

The building is designed in the Old English style, with red brick facings and Ham Hill stone dressings. The chief entrance is in the centre of the main front, and is boldly designed, and executed in stone. Above it are two stories of bay windows, with multitudinous casemented. The tiled roofs are effectively broken up by half-timbered gables of varying sizes, upon which the picturesque grouping of the building depends.

The rooms on the ground-floor on the right of the main entrance are entirely devoted to educational purposes, and consist of a series of class-rooms, averaging 21 ft. square, and a large school-room for collective teaching, situated in the southern rear wing, 55 ft. by 27 ft., with a chemical laboratory beyond it.

On the left of the entrance are the reception-rooms, master's room and library, with a noble dining-room in the northern rear wing, 65 ft. long by 27 ft. wide, at the eastern end of which is the hatch communicating with the kitchen.

At the northern and southern ends of the main corridor respectively are the two stone staircases which give access to the upper stories, containing five large dormitories of thirty beds in each; a separate lavatory adjoining each dormitory, fitted with sixteen basins, and overlooked from the master's bedrooms.

Over the southernmost class-room and south of the staircase are the wardrobe-keeper's work-room and bed-rooms, over which is the bath-room for ten baths.

The laundry, the swimming-bath, the infirmary and the lodge are not included in the present contract, which is under 17,000.

The grounds have been arranged for their future erection, and a winter playground and cricket-field provided for.

The site is exceptionally beautiful, and is 13 acres in extent. The building is to be opened in July next.

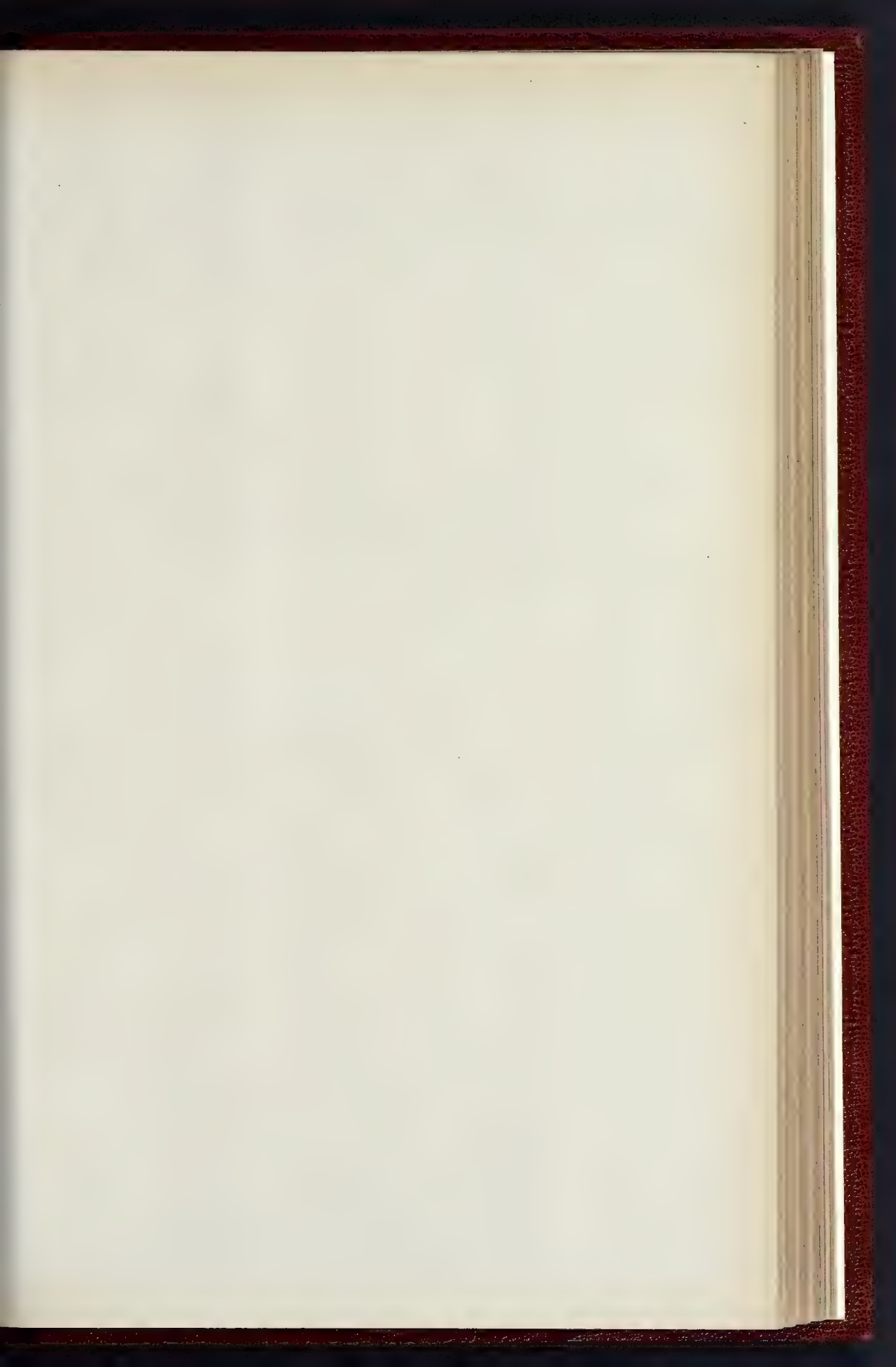


Congressional School Caterham.

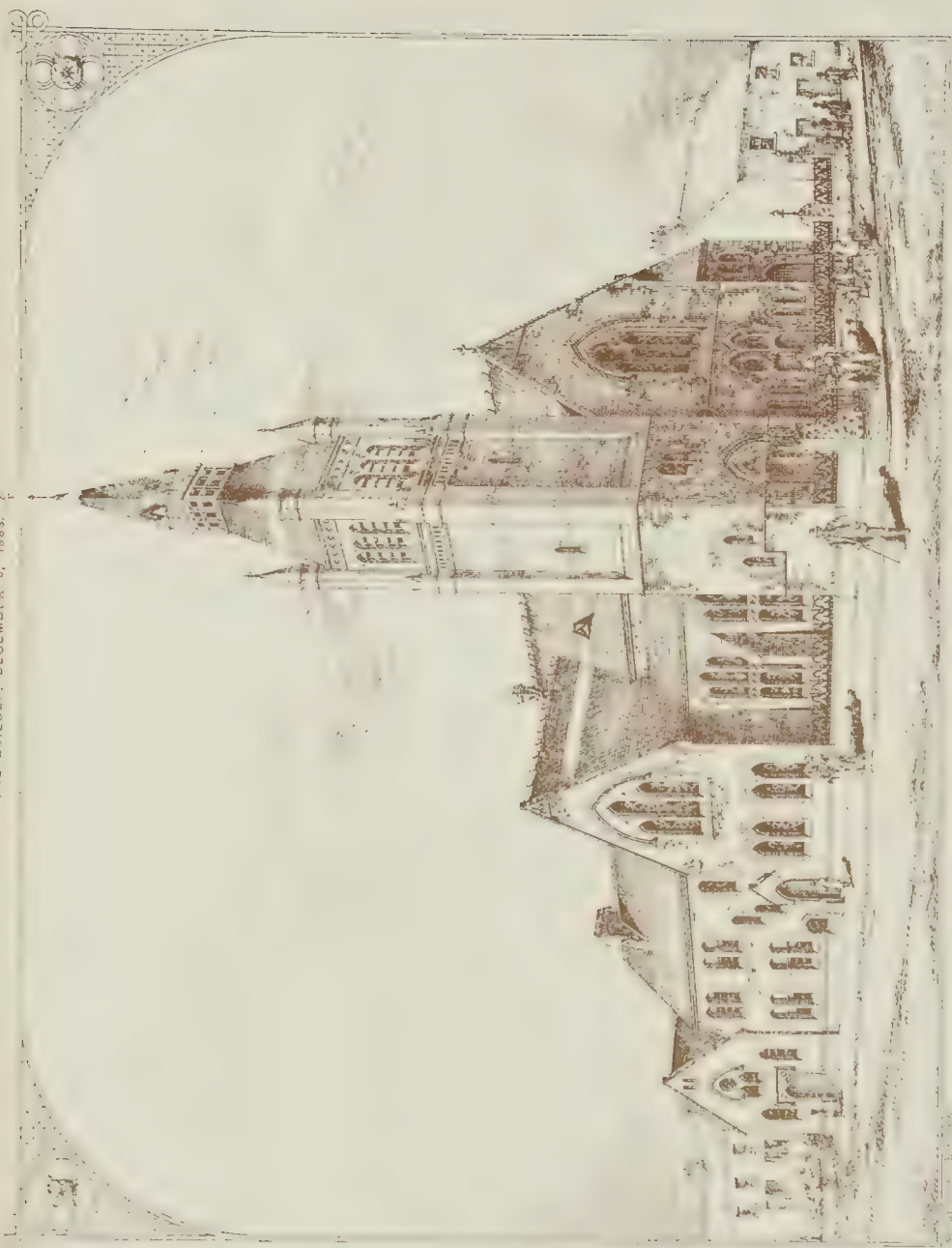
Wm. J. Appleton & Co.



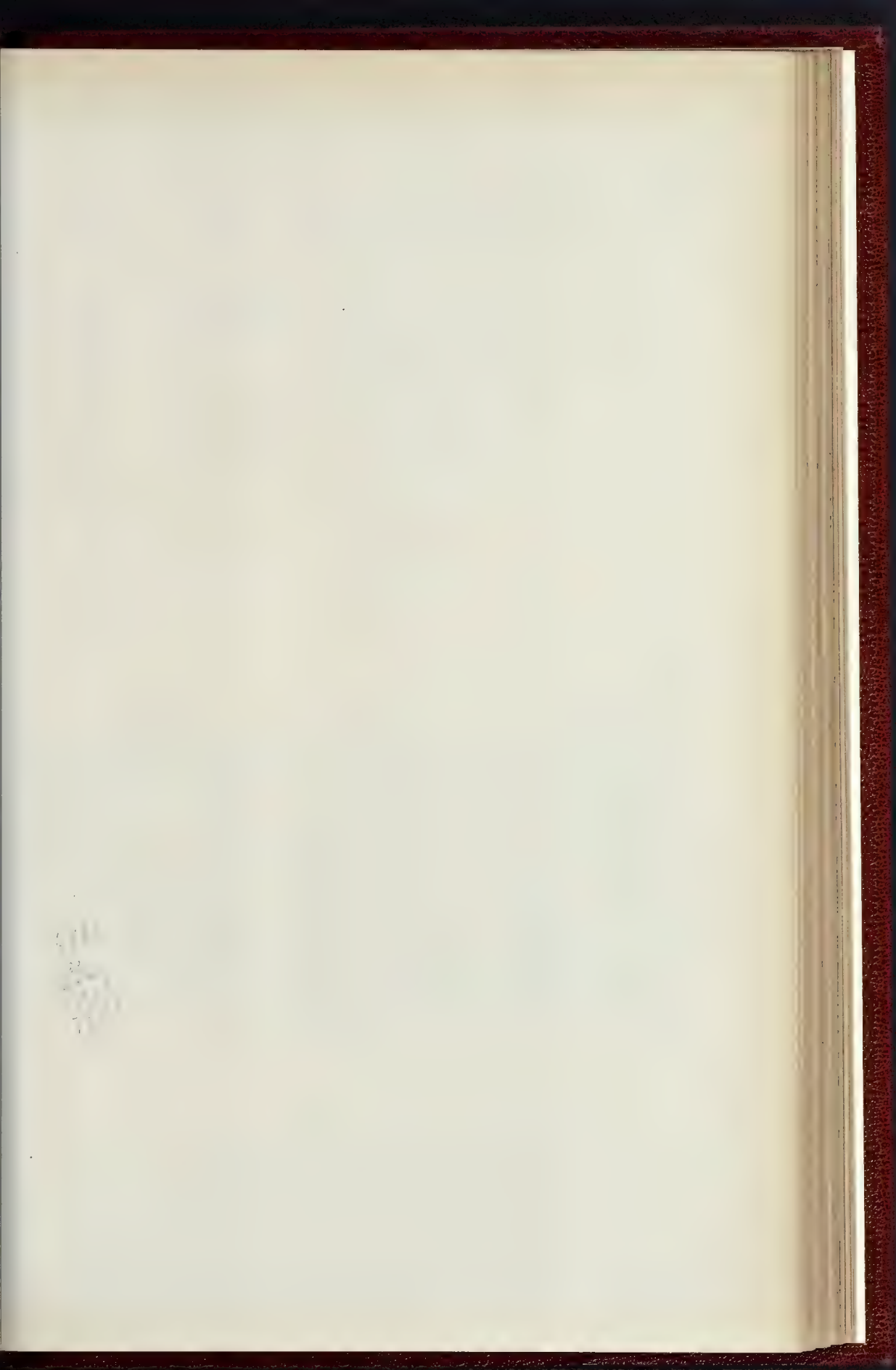
EDW. C. ROBINS FSA
ARCHT. ADELPHI W.C.

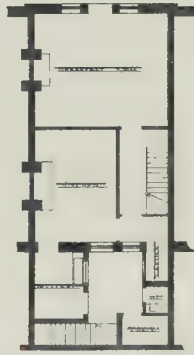


THE BUILDING, DECEMBER 3, 1883.

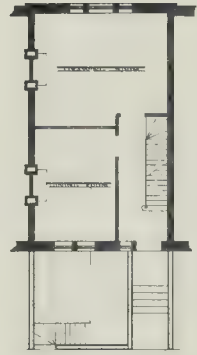


NEW WESLEYAN CHURCH, GOSFORTH.—MR. J. J. LISH, ARCHITECT.

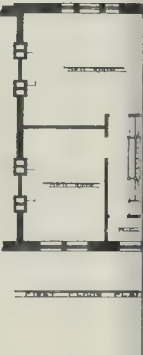




BASEMENT PLAN



GROUND PLAN



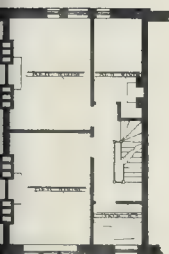
FIRST FLOOR PLAN



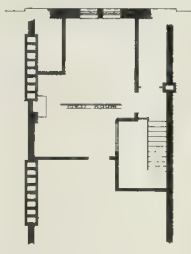
A. C. WILSON

Wyman & Sons Photo Litho

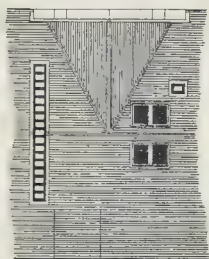
HOUSES ABOUT TO BE ERECTED AT



SECOND FLOOR PLAN.



FIRST FLOOR.



ROOF PLAN.



J. TREASWAY HANSON, F.R.I.B.A.

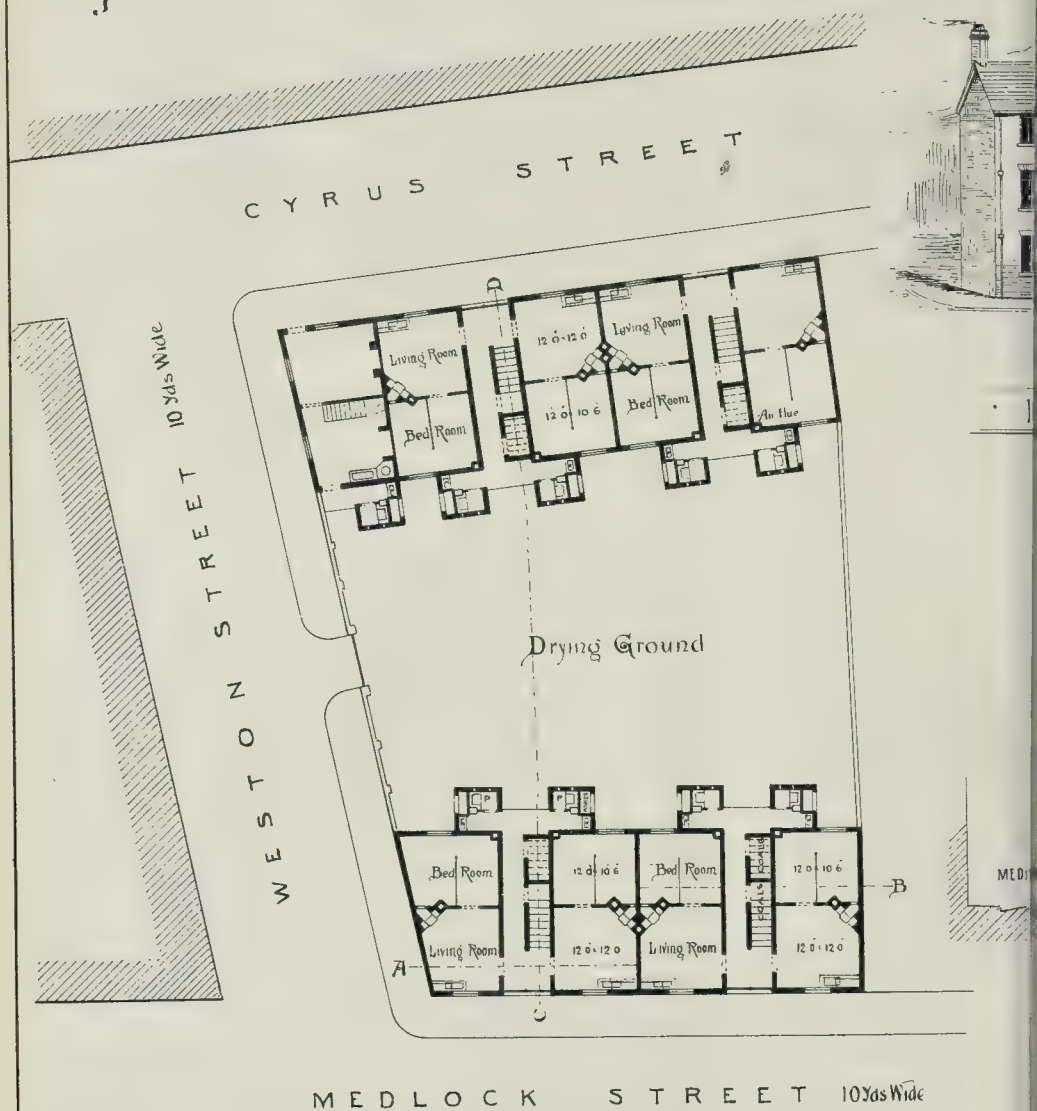
Scale of Feet

20 Queen St London, W.C.

T.—GARDEN ELEVATION FACING SEAWARDS.

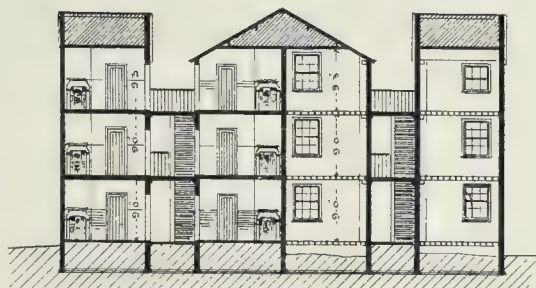


MANCHESTER AND SALFORD V



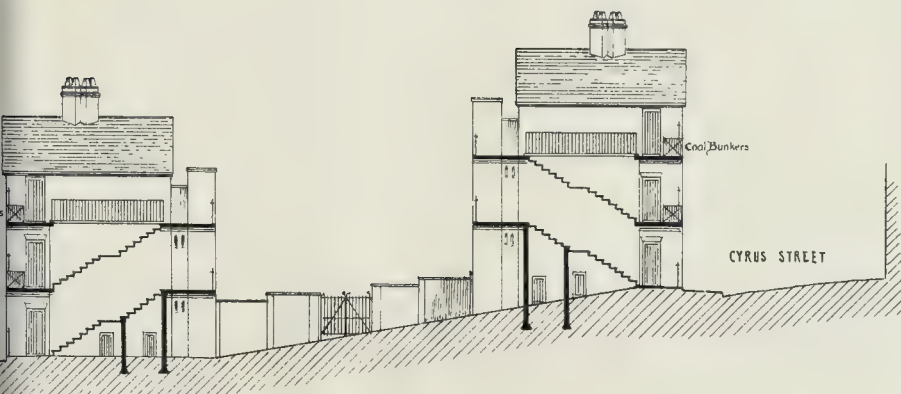
• GROUND PLAN • of Dwelling

WORKMENS DWELLINGS CO. LD.



TO MEDLOCK ST.

SECTION THRO' A.B.



SECTION THRO' C.D.

Scale of 10 20 30 40 50 60 70 80 90 feet

ed at Holt Tottan Manchester

LAWRENCE BOOTH F.R.I.B.A.
Architect. 88 King St. Manchester.

OLD LANCASHIRE INNS.

THE OLD BOARS' HEAD.
MIDDLETON.



THE SEVEN STARS.
MANCHESTER.



Walter Aston.
June 1883.



Widened Glass Portals 30 ft. high.

EDW. C. ROBINSON, F.S.A. ARCHT.
14 JOHN ST. W.C.

Congregational Schools · Caterham · Valley.

GOSFORTH WESLEYAN CHURCH.

This church is situate in a growing suburb of Newcastle, and is planned to seat 750 persons. A large schoolroom, four class-rooms, a minister's vestry, and a caretaker's house, &c., are placed in the rear.

The church is divided into nave, aisles, and transepts, with a large apical chamber for organ; a good local freestone being used for the buildings. Hot water is to be employed throughout for heating, and the ventilation has been very carefully considered.

Mr. Thomas Humble, Gosforth, is the contractor for the works, which are estimated to cost in all about 4,500l. Mr. J. J. Lish, Newcastle-upon-Tyne, is the architect.

OLD LANCASHIRE INNS.

The Old Bear's Head, Middleton.—This inn is on the high road between Manchester and Rochdale. The present building dates from the middle of the seventeenth century; the foundations, however, are said to be older, and it is supposed that these are the remains of the old vicarage. The fine parish church, of Norman foundation, is on a hill just above. Within the last few years, the old sign was still swinging across the road, but no doubt it was far too picturesque to be left alone.

The Seven Stars, Manchester.—This is said to have been a licensed inn since 1356. The record of this is kept in Lancaster Castle. There is a tradition that when the workmen were building the collegiate church, now the cathedral, and were then receiving a penny a day, they had their meals here. There is a very old chimney-piece in one of the rooms. The building must, however, have been almost entirely rebuilt since the fourteenth century, and in some places old casements have been removed and sash-windows have taken their place. Not many years ago there were numbers of old half-timbered houses in Manchester, and now there are only about half a dozen left.

INTERNATIONAL HEALTH EXHIBITION.

It is proposed to hold, during the year 1884, an International Health Exhibition, which shall also illustrate certain branches of education, and which will occupy the buildings at South Kensington erected for the International Fisheries Exhibition.

The object of the Exhibition will be to illustrate, as vividly and in as practical a manner as possible, Food, Dress, the Dwelling, the School, and the Workshop, as affecting the conditions of healthful life, and also to bring into public notice the most recent appliances for elementary school teaching and instruction in applied science, art, and handicraft. The influence of modern sanitary knowledge and intellectual progress upon the welfare of the people of all classes and all nations will thus be practically demonstrated, and an attempt will be made to display the most valuable and recent advances which have been attained in these important subjects.

The Exhibition will be divided into two main sections, Division I., Health; Division II., Education; and will be further subdivided into six principal groups.

In the first group, it is intended specially to illustrate the food resources of the world, and the best and most economical methods of utilising them. For the sake of comparison, not only will specimens of food from all countries be exhibited, but the various methods of preparing, cooking, and serving food will be practically shown. The numerous processes of manufacture connected with the preparation of articles of food and drink will thus be exemplified; and, so far as the perishable nature of the articles will admit, full illustrations will be given of the various descriptions of food themselves.

In the second group, dress, chiefly in its relation to health, will be displayed. Illustrations of the clothing of the principal peoples of the world may be expected; and a part of this exhibition, which, it is anticipated, will be held in the galleries of the Royal Albert Hall, will be devoted to the history of costume.

In the third, fourth, and fifth groups will be comprised all that pertains to the healthful construction and fitting of the dwelling, the school, and the workshop; not only as respects

the needful arrangements for sanitation, but also the fittings and furniture generally in their effect on the health of the inmates. The most improved methods of school construction will be shown, and the modes of combating and preventing the evils of unhealthy trades, occupations, and processes of manufacture will form portions of the exhibition.

The sixth group will comprise all that relates to primary, technical, and art education, and will include designs and models for school buildings; apparatus and appliances for teaching; diagrams, text-books, &c. Special attention will be directed to technical and art education, to the results of industrial teaching, and to the introduction of manual and handicraft work into schools.

The following is a general classification of the six groups:—

DIVISION I.—HEALTH.

Group I.—*Food and Drink.*—Selected foods and preserved food products; the supply and economic distribution of wholesome and nourishing food and drink; the conveyance of fresh provisions; the detection of adulteration and impurities; food analyses and food constituents; cooking and practical dietetics, including varieties of diets consumed by different nations; new descriptions of food; food for the young and for invalids; army and navy rations; prison and workhouse diet; domestic economy.

Group II.—*Dress for all Climates for both Sexes and for various Purposes.*—Examples of national costume of all classes,—retrospective and modern collections; new and improved wearing apparel, and designs and materials for the same; specimens of improvements in the design, material, and the making of clothing and cheap dresses; dress for exercise and sport; uniforms; life-saving and fireproof dress.

Group III.—*Dwellings for all Classes: their Sanitary Construction, Fittings, and Appliances.*—Improved materials for external and internal construction; damp-courses; non-conductors for walls and roofs; wall linings and cements; non-poisonous paints and paperhangings; solid floors; washable materials for construction and decoration; ventilation of houses and apartments; air-cooling, heating, and purifying apparatus; apparatus for heating and for the abatement of smoke; heating by open grates and stoves; hot-air, steam, and gas apparatus; improved kitcheners and gas cooking-stoves; lighting by gas and electricity, fittings and apparatus for the same; fire prevention,—extinctors, hydrants, escapes, preservative solutions; water supply, and improved sanitary fittings connected therewith,—meters, cisterns, filters, softening apparatus, baths and lavatory apparatus and fittings; house-drains, their construction and ventilation; closets; sewer disconnection, sinks, traps, gullies; the disposal and utilisation of house refuse.

Group IV.—*Schools.*—Buildings for town and country schools; yards and playgrounds for schools; fittings for school latrines and lavatories; heating, lighting, and ventilation of schools; apparatus for physical training, gymnasia; school kitchens; storing of hats, cloaks, &c.; drying ditto in wet weather; isolation of diseases in schools; school infirmaries.

Group V.—*Workshops and Factories.*—Models and designs for improved workshops, especially those in which unhealthy, noxious, or dangerous trades and processes are carried on. Improved apparatus and plant for the same. Guards, screens, special dresses, and objects for personal wear to avoid or prevent injury from manufacturing processes. Illustrations of special diseases and deformities caused by unwholesome trades and occupations. Means of guarding against the same. New inventions or improvements for the better carrying on of dangerous or unhealthy processes of manufacture; models, diagrams, &c.

DIVISION II.—EDUCATION.

Group VI.—*Educational Works and Appliances.* Apparatus and fittings for crèches and infant schools; appliances for teaching; Kindergarten models, and examples and results of instruction; primary school fittings and apparatus; examples and models for teaching practical manual work to girls, and various handicrafts to boys; apparatus and models for science teaching; apparatus and models for art teaching; designs and fittings for apprenticeship and industrial schools; apparatus for instruction in such schools; specimens of work done in these schools; schools for the blind and for the deaf and dumb; apparatus and results of teaching in such schools.

* It is proposed to arrange collective exhibits in connexion with some of the above classes, illustrating, among other subjects, the dwellings of the poor, the care in the dwelling for the welfare of the children and of the sick, model nurseries, sleeping-apartments, completely-fitted kitchens, fully-equipped gymnasia for adults and the young, model laboratories and collections for health-teaching, model schools, workshops, &c., and also collections having reference to special trades.

It is also proposed to hold an International

Congress in June or July next, on each of the main sections of the Exhibition,—Health and Education.

Lectures will be given, and conferences will be held on the various subjects illustrated in or cognate with the Exhibition; they will be explained, by practical demonstrations and experiments, and Reports on each group will be issued.

Processes will be shown in actual operation, and practical tests will, from time to time, be made of the inventions submitted to the juries.

Mr. E. Cunliffe Owen is the secretary.

ST. MARY'S HOSPITAL, PADDINGTON.

On Saturday afternoon last a party of members of the Clerks of Works' Association paid a visit to the new buildings at St. Mary's Hospital, Paddington, where they were received by Mr. R. Wheeler, the clerk of the works in charge.

The new wing (which has been built as the result of a bequest of 25,000l. made by Mr. J. F. Stanford, of St. John's Wood, for that express purpose) includes a dry and well-lighted basement, ground floor, and four floors above. The basement contains a students' club-room, library, refreshment-room, kitchen, &c. On the ground-floor is a large and well-lighted ward, 100 ft. by 24 ft., with bath-room and w.c. at one end, and scullery, w.c., and slop-sink at the other end, well-ventilated lobbies intervening between the ward and the closets. This ward has a dado of coloured glazed bricks, the upper portion of the walls being faced with Parian cement. The bath-room, scullery, lavatory, and w.c.'s are also lined with glazed bricks, supplied by Messrs. Cliff & Sons. On the first floor is the new chapel, 46 ft. by 24 ft., provided with a small room at the end for the use of the chaplain. Polished oak seats are provided for the choir. For the congregation the seats from the old chapel have been altered and adapted. The windows are filled with tinted cathedral glass, except two, which are reserved for stained glass, one of them being, indeed, already filled as a memorial of one of the "Sisters" of the hospital, who died this year. On the same floor is a ward, 46 ft. by 24 ft., with scullery, lavatory, w.c., slop-sink, &c., all lined with glazed bricks, and cut off by a lobby. Approached from and on a level with this floor is a pleasant balcony for the use of the patients. This balcony is 110 ft. long and 7 ft. wide, with an enclosed space in the centre for use in bad weather and for shielding the more delicate patients from rough winds, though at the same time enabling them to breathe fresh air. The balcony is supported on iron columns, and has an open-work iron front, the ironwork having been executed by Messrs. Cottam & Co., of Winsley-street, Oxford-street.

On the same floor is a room for the use of the Sisters. The second floor contains two wards, 46 ft. by 24 ft. each, provided with similar conveniences to those in the wards already named. Another room for the Sisters is provided on this floor, which is also provided with a balcony similar to the one on the level of the first floor. The third floor, which is for the use of the Sisters and nurses, contains ten bedrooms, one sitting-room, two bath-rooms, and a water-closet. The corridor from the corresponding floor of the existing building is continued into the wing, returning round both ends. A balcony the same as those below is provided for the nurses. The fourth floor contains special wards for the isolation of contagious cases that may develop themselves after admission into the general wards. One of these wards is 28 ft. by 20 ft., with a glazed brick dado. There are two smaller wards, each 20 ft. by 11 ft., the walls of which are lined with bricks in four colours from floor to ceiling. On the same floor are three nurses' rooms, with other conveniences. On top there is a lead flat, 100 ft. by 24 ft. 6 in. Between the old hospital building and the new wing there is a stone staircase leading from the basement to the lead flat; the well-hole of this staircase is fitted with a hydraulic lift, which, together with two new boilers in the old part of the hospital, has been fixed by Messrs. Easton & Anderson. Above the staircase is a tank holding 7,000 gallons of water, fixed inside the tower, the top of which is 120 ft. above the ground level. The wards, chapel, library, and students' club, &c., have gas laid on, with star lights hung from the ceiling. The gasfitting has all been done by Mr. Verity, of High-road, Knightsbridge. The windows to the wards and sculleries are opened and closed by means of Adams's patent gearing. All the chimney-

pieces for the wards and nurses' rooms were made and fixed by Messrs. Belcher & Co., of Gloucester. The outside facing of the new wing is in wire-out red bricks from Mr. Lawrence's brickyard at Bracknell. The architect is Mr. Stephen Salter, Mr. R. Wheeler being the clerk of works. Messrs. Higgs & Hill are the contractors, Mr. J. Steward being their foreman.

Besides the new wing, a new out-patients' department has been provided, and the premises for the use of the medical school have been enlarged. The new out-patient department contains consulting-rooms, large general waiting-room, dispensary and dispensary waiting-room, registrar's enclosure, &c. Arrangements are made whereby the patients are attended to in the order in which they arrive, passing out by a different door to that at which they entered. The medical school buildings contain a museum, committee-room, room for special classes, curator's room, chemical theatre, anatomical theatre, physiological room, anatomical classroom, and dissecting-room,—the latter lined with coloured glazed bricks from floor to ceiling.

Afterwards the visitors were very kindly conducted by the Secretary to the Hospital (Mr. Pietro J. Micheli) through certain of the wards and other portions of the old building.

We shall be excused for commending this hospital (which is without endowment) to the support of those of our readers who may be able to help it. The old building was commenced in June, 1845, the first stone being laid by H.R.H. Prince Albert. It was opened for fifty beds on the 13th of June, 1851, and for 150 in June, 1852. On the 23rd of May, 1865, the first stone of a wing to the hospital was laid by H.R.H. the Prince of Wales, and was opened in May, 1867. This addition enabled the hospital to receive from 180 to 200 in-patients. From 1867 to the present time, or for sixteen years, the accommodation afforded by the Hospital has remained the same, although the population dependent upon it has greatly increased. The cost of keeping up this new wing will add upwards of 2,000, to the yearly expenditure. The income of the Hospital barely suffices to meet its present expenses; and, unless additional funds are forthcoming, the new building cannot be opened, or only to a very limited extent. Meanwhile the need of the further accommodation thus being provided is most pressing. The wards of the present building are over-crowded, and only the most serious cases can be admitted.

THE FLORIDA SHIP CANAL.

GENERAL STONE, the chief engineer of the ship canal across the peninsula of Florida, has made a report to the directors, in which he states that the length of the proposed cutting will be 139½ English miles. It will be wide enough to admit of two steamers of the largest size passing through it abreast, and he estimates the entire cost of the work at 46,000,000 dollars. When the canal is completed, it will lessen the distance between New Orleans and Liverpool or New York by 412 miles. General Stone and his assistants have finished the preliminary survey. The question the company has to settle is whether the traffic, in prospect, promises to be sufficiently remunerative to justify the large necessary outlay in the execution of the scheme. The chief engineer, in support of his opinion that the scheme will be a commercial success, points out that, in addition to lessening the distance between the chief ports on the Gulf of Mexico and Europe and the Atlantic seaports, the canal will effect a saving of from three to seven days in time. In the case of large ocean steamers this will be equivalent to a reduction of expense amounting to 500 dollars in wages, food, and so forth, in addition to from 300 to 500 dollars a day for fuel. Moreover, the Straits of Florida are among the most dangerous through which a vessel can pass, and the annual loss by shipwreck there is very large. The saving in insurance on vessels and cargoes will amount to from 1 to 1½ per cent. when the canal is finished. Further, a large increase of shipping engaged in the conveyance of cattle from Texas, and maize and cotton from the States on the Lower Mississippi, would be certain to follow. General Stone states that the highest point through which the canal would have to be cut is considerably lower than the loftiest point through which the Suez Canal was carried.

The realisation of the scheme might, perhaps, slightly injure New York for a time, but the advantages are so great that, in the opinion of competent Americans, it is sure to be carried out sooner or later.

EFFECTS OF UNHEALTHY OCCUPATIONS.

This was the subject of a lecture (forming one of a series) delivered in the Free Assembly Hall, Edinburgh, a few evenings back, by Dr. Andrew Smart, under the auspices of the Edinburgh Health Society.

Dr. Smart, at the outset, said his subject did not include the professions, but he indicated that, as a rule, the clergy were the longest lived among the people; the legal profession came second; while the average life of medical men fell considerably short of either. Nearly all trades and manufacturing processes are attended by the evolution of dust, or of volatile particles, more or less considerable and more or less hurtful. Persons habitually breathing a dust-laden atmosphere of this kind acquire a liability to diseases of various sorts; but as the inhaled dust is necessarily, in every instance, brought into contact with the lungs, it is accordingly the pulmonary organs that chiefly suffer in the end. Speaking in the first place, of the effects of metallic dust, Dr. Smart instanced the steel-workers of Sheffield. Were you to enter one of the busy workshops of Sheffield, and, for a time, amid the turmoil of machinery, attempt to breathe its stifling atmosphere charged with minutely-pulverised dust, emitted by hundreds of wheels, you would have a practical experience of the cause why few, if even one, of all the workers there, will ever reach their fortieth year. The average duration of life among the dry-grinders of forks is twenty-nine years; of razor-grinders, thirty-one years; edge-tool-grinders, thirty-two years; spring-knife and file grinders, thirty-five years; and saw and sickle grinders, thirty-eight years. The cause of this excessive mortality is apparent. In every hundred sick among the needle-makers, seventy are consumptive; and among the file-makers, sixty-two in the hundred are consumptive; and, taking the steel-grinders all round, rather over forty in the hundred are consumptive. In the same way, Dr. Smart pointed out the effects of their occupation on workers in copper and white lead. Consumption among them is the predominant disease; and in every 100 sick lithographers, for instance,—workers in copper,—one-half nearly (48/0) are consumptive. In pointing out the effects of mineral dust, Dr. Smart said that notoriously overtopping all the other dusty occupations in their effects upon life and health were those of the grindstone-makers, flint-cutters, and glass-polishers. The condition under which their work is carried on is in the highest degree favourable to the production of pulmonary disease. They work in an atmosphere loaded with sharp spicules, which lacerate the lungs, and quickly induce consumptive disease. Every grindstone-maker is cut down with it at, or soon after, the age of twenty-four. Hardly one escapes. The flint-cutter and glass-polisher have each eighty deaths per hundred sick of consumption, and their average life is under thirty years. Again, the stone-cutters or stone-masons (not builders) terminate their average life at the age of thirty-six years,—thirty-six in every hundred sick being consumptive. It is stated on the best authority that three-fifths of the flax mill workers of Belfast,—the chief centre of that textile manufacture,—are consumptive. In other words, sixty in every hundred die of that disease. The average life of the weavers of this restricted class is forty-four years, whilst that of weavers in general is about fifty-seven. Carpenters, joiners, and cabinet-makers are affected by their dusty occupations,—each group having fourteen consumptive cases in every hundred. After describing the asthmatical and bronchial affections induced by inhaled gases of an irritant character, Dr. Smart proceeded to speak of the effects of constrained bodily position, restricting attention to three well-known classes,—needlewomen of every class, tailors, and shoemakers. They suffer from consumption in a nearly equal degree. The tailors and needle-women have each nineteen deaths from consumption per hundred sick. The shoemakers fall short of that number only by a fraction, being 18·7. Speaking next on the effects from

poisonous metals, Dr. Smart illustrated the subject by exhibiting a favourite and much used arsenical wall paper, which, in an ordinary-sized room, would contain 20,000 grains of arsenic, which was easily detached, and diffused through the room as dust. Hair restorers and face-enamelling were liable to similar objections. On this point he suggested legislation, such as that recently adopted in Germany, for the restriction of the manufacture of those poisonous colours and pigments. Carefully scanning the various employments embraced by the entire industrial class, he reckoned that a proportion of one-tenth of their number suffers,—that is, 850,000 are thus exposed to the injurious effects of their occupations. The first and immediate effect of this is that every member of this 850,000 has his life reduced to an average of forty-five years. Taking sixty years as a fair average standard to which each ought to attain in favourable surroundings, we observe that each of these workmen loses fifteen years of his working life. It therefore follows, as three times fifteen complete the average life of forty-five, that every fourth man of the number above stated annually drops out of account as completely as if he had not existed. The practical result of this mode of computation is that 212,500,—a number nearly equal to the inhabitants of Edinburgh,—are annually struck out of the roll of life, and absolutely lost to the State during the whole period of their lives. In the face of an evil of such increasing magnitude there could not be any remedy short of its prevention. Proceeding to discuss the means of preventing the effects of unhealthy occupations, Dr. Smart said the problem to be solved was this,—How to environ each worker in the prosecution of his work with a pure atmosphere? It was not for him to undertake the solution of this problem, because he held that to be a matter for which the responsibility rests upon the Legislature. He was, nevertheless, free to express his confident conviction that this result appeared to be only a question of certain simple, practical, mechanical adjustments, requiring no effort of genius, or even outlay, where there is so much already existing machinery. The Legislature having, by means of the Factory Acts and otherwise, assumed the responsibility of regulating much in connexion with our great industries, it would seem that we must necessarily fall back upon Government regulation and control as the only available remedies for these evils. Previously to the passing of the Factory Acts the ill effects of their work upon the health of the workmen were so notorious that, in response to the wish of the country, a Commission was appointed in 1833 to inquire into their causes. The Factory Acts were, at that time, undoubtedly a great boon to the people; but it is evident that they are not now fitted to accomplish the object for which they were intended in the sanitary regulation of our industries. The facts eliminated prove this, and also that an inquiry is urgently necessary. The vast increase in the country's industrial resources and population since 1833, together with corresponding improvements in machinery and in chemical appliances, have altered the entire complexion of our industrial occupations, and have led to insanitary conditions which demand a remedy as much as did those for the removal of which the Factory Acts were originally passed. It was his contention that our great operative industrial classes were entitled to be cared for and protected, as to their health, in the pursuit of their vocations. They were the backbone and sinews of the nation's strength. He estimated that nearly a quarter of a million of these men were annually lost to the State. For a moment, consider the effects of the loss from a merely economical point of view. Taking the figures, as he had already given them, to be 212,500, and reckoning each man's wages at 1*l.* a week, there is thus a yearly loss in wages to the industrial wage class amounting to 21,250,000*l.* If we now add to this the loss of capitalised labour, there results the grand total of 27,120,500*l.*, the whole of which is annually lost to the country. In point of fact, that sum would, in twenty-nine years, more than clear off the whole of the National Debt. So much for the money aspect of the question. But what of the needless waste of life and its attendant sickness; of the consequent impoverishment, pauperism, and demoralisation; and the increasing legacy of hereditary disease? Could Adam Smith reappear, he would be looking back, and gathering up the lessons

of the past, place a prefatory note to his "Wealth of Nations," somewhat in these terms—There are two primary and fundamental considerations upon which national stability and permanency rest. The first regards the health of the people,—the other its education. Any system of government, without full provision being made for these, will be incomplete; and, in regard to the former, the best guarantee of a nation's security will be wanting. Therefore, above all things, let no government, in its administrative capacity, be without its health department, presided over by a wise and energetic Health Minister, whose supreme duty it shall be to create and to vigilantly administer laws, the aim of which shall be to protect the health of every subject, and especially to surround that of the dependent industrial population with every possible safeguard. Then, addressing his own countrymen, might we not suppose the philosopher, with increased emphasis, to add,—A nation such as ours of thirty-four millions, with a vast manufacturing industry, a most busy and flourishing commerce, an Indian Empire to govern and maintain, colonies to attract the most vigorous and enterprising of our people, great resources to man and defend, cannot afford to waste the lives of its citizens, any more than those whom it has chosen and trained to fight its battles? Are not labour and capital the two pillars upon which a free commonwealth rests? Disease paralyses labour and wastes capital. It ought, then, to be the primary object of an enlightened State to prevent disease, preserve health, and prolong life; and to maintain the whole people in the highest efficiency, alike for the labours of peace or the struggles of war.

LATEST BUILDING REGULATIONS IN PARIS.

1. RIDGES of all roofs in future buildings in Paris must be provided with a horizontal pathway, at least 70 centimetres (2 ft. 3½ in.) wide, for the use of workmen, firemen, and inhabitants in case of fire. This pathway to be bordered on one side by railings 30 centimetres (1 ft.) high, on the other by a handrail, at least 80 centimetres (2 ft. 8 in.) high, with sufficient network to prevent accidents. The network may be made ornamental, but the handrail must remain smooth.

2. All partition-walls and others perpendicular to façades must be provided behind with iron ladders and handrails fixed on to the masonry, and entirely independent of roofing timber.

3. Double staircases in upper stories especially, for easier flight in case of fire.

Why are not any such useful regulations enforced with us? C. H. C.

PROGRESS IN ELECTRIC LIGHTING.

WE have lately had an opportunity of seeing one or two modes of applying the electric light which, if their utility and economy are not yet fully proved, at any rate serve to show that the problem of lighting by electricity with the minimum of inconvenience in the shape of plant is engaging the attention of active minds.

The most important "installation" to which we have now to refer is that of the system of Messrs. Gaulard & Gibbs, which "The National Company for the Distribution of Electricity by Secondary Generators (Limited)" have, by permission of the Metropolitan Railway Company, applied to the lighting of several stations on that line. The inventors claim to be able to distribute electrical energy at a number (practically unlimited) of points on a single circuit of small diameter. "The great difficulty hitherto experienced in electrical transmission" (says M. Gaulard) "has been that of supplying a current which shall satisfy simultaneously the various requirements of different consumers. In other words, the currents to be utilised, whether for lighting or mechanical purposes, should be of a 'potential' variable at the will of the consumer. As, also, it is necessary to increase the tension as the distance increases, it follows that beyond a certain distance it is impossible to employ receivers which cannot support currents of considerable potential; it is thus that the lighting of incandescent lamps cannot be accomplished beyond a distance of 500 yards from the dynamo machine, and then only by

using conductors of very large diameter. Further, it has long become evident that, notwithstanding its numerous advantages, the electric light can only be popularly applied when the consumer is relieved of the necessity of having on his premises such cumbersome material as dynamo-machines and steam-engines, and when also he can himself manipulate electrical energy with the same facility as he now does gas and water, so as to transform it into electric currents of different natures, and, consequently, applicable to various purposes, such as incandescent and arc lighting, motive power, electro-chemical processes, &c." The method by which the inventors arrive at a solution of the problem is shown in the installation on the Metropolitan Railway, where they now have a single circuit fifteen miles long, composed of a cable 4 millimetres (8 B.W.G.) in diameter, connecting the stations of Notting Hill-gate, Edgware-road, Gower-street, King's-cross, and Aldgate. This primary circuit is metallically closed with the generating dynamo, and, whatever the electro-motive force traversing it, may, we are assured, be touched at any point without danger, and without even perceptible "derivation." A force of 30-horse-power, produced at Edgware-road Station, and transformed by means of a Siemens's alternating dynamo machine into a current of 2,000 volts and 10 amperes, is distributed by the secondary generators at the stations mentioned; currents of various potential, suitable for both arc and incandescent lamps, being produced at each station. To explain the working of this system as briefly as possible, it might be said that the primary circuit passes through each of the secondary generators, which are, so to speak, "fed" by it, and distribute the currents required for lighting or other purposes in their locality. It will be observed that while there are five stations, the primary generating apparatus is located at one point only, viz., the Edgware-road.

Another means of electric illumination which we have seen in action is the primary battery of Messrs. Holmes & Burke, which was recently exhibited at No. 31, Lombard-street, by Colonel J. D. Shakespear. The foreign patents not being quite completed, the detailed construction of the batteries cannot yet be described. It may, however, be stated that carbon and zinc are employed, and that the patent consists in the mechanical arrangement of the battery and the nature of the chemicals used in oxidising the zinc. It is stated that a sixteen-cell battery is equal to the supply of eighteen incandescent lamps of five-candle power each. A number of Swan lamps of this power were arranged in a room at the above address, and produced a very good effect, the light being brilliant and steady. The lamps were supplied from a battery placed in an adjoining apartment. A lamp for lighting railway-carriages was also shown, and gave an excellent light. Some little time ago one of these batteries was fitted in one of the carriages of the 5.40 p.m. Great Northern express train (King's Cross to Leeds). With regard to duration of lighting, it is stated that the batteries will remain active for twenty-four hours in full work without being touched, and that the light can be produced at an average cost of 1s. per light per hour.

While on the subject, we may mention that, after extensive alterations and redecoration, Messrs. Gatti's Adelaide Restaurant, Strand, is now lighted by means of about 330 Edison incandescent lamps, and with very excellent effect. A special feature in connexion with the lighting is the duplication of the generating plant. There are two "Field" boilers, two Armstrong engines, and four Edison dynamos. The steam-piping is so arranged that either engine can be run from either boiler, and the shafting so that any two of the dynamos can be driven by either engine. If one boiler should fail the other would supply sufficient steam to drive one engine; if one engine stopped the other would still run two dynamos, which in turn could sustain the entire number of lamps.

We append some further particulars of the electric light plant erected at the First Avenue Hotel, Holborn (recently described by us), by the Hammond Electric Light and Power Supply Company, Limited. The number of lamps throughout the building is 1,200. The lamps are placed in all the public rooms, including halls, corridors, drawing-rooms, dining-rooms, offices, bedrooms, &c. The fittings are by Messrs. B. Verity & Son; the leads by Messrs.

Pateron & Cooper. The current is generated by a Ferranti dynamo-machine, capable by its internal construction of feeding the whole of the lamps or any lesser number without its speed being altered. In order to completely guard against breakdown, the whole of the plant is in duplicate, each set consisting of 1,000-light "Ferranti" dynamo, one Gwynne's 120-h.p. engine, and one Adamson's boiler. It is claimed that every light can, night or day, be turned out or on separately by a switch as easily as a gas-tap, and by the use of the "Ferranti" machine any number of lights can be turned out at once, without any communication with the engine-room. It is stated that the cost works out almost exactly the same as gas, but the hotel has the advantage of its decorations, &c., being preserved intact.

THE BENTINCK DOCK, KING'S LYNN.

THE last stone of this dock was recently laid by His Grace the Duke of Portland. The work constitutes an extension of the Alexandra Dock, opened by the Prince and Princess of Wales in 1869. The new dock is described as capable of easily accommodating 1,000,000 tons of miscellaneous shipping per annum. The basin (in the formation of which about 500,000 cubic yards of earth were excavated) is 1,000 ft. long by 400 ft. wide, and 32 ft. deep. The depth of water at ordinary spring tides will be 27 ft. 6 in. The side walls are formed entirely of concrete, and have consumed close upon 10,000 tons of Portland cement; the wing walls are faced with blue Staffordshire bricks. At the northern end, to allow of future extension at an easy cost, instead of having an upright quay wall, there is a slope, at an inclination of 1 to 1, faced with concrete in blocks 21 in. thick. There are twenty-four cast-iron bollards or mooring-posts, built into the walls at convenient distances; and there is also to be a coal-dock, for which, however, the machinery is not yet ordered, but which, when complete, will transfer coal from railway trucks direct into ships at a trifling cost. The area of the basin is 94 acres, and the area of the quays, which are all level with the coping, is 40 acres. The construction of the lock, or rather channel, which connects the old and the new docks, formed, perhaps, the most difficult part of the undertaking. At the place where it was to join the basin of the Alexandra dock a coffer-dam had to be formed, and it necessitated the employment of divers for several months in cutting away the concrete slopes to enable the piles to be driven into the ground. This dam has had to stand a pressure of water varying from 20 ft. to 30 ft. deep, and notwithstanding the high tide of March last, when many of the low-lying districts of Lynn were inundated, the dam stood the enormous pressure which it had to bear. The lock is about 300 ft. long by 50 ft. wide, and has one pair of gates, made of greenheart and pitch-pine. Its concrete walls are faced with blue brickwork, of which also the masonry of the invert entirely consists. Bramley Fall stone has been used in the quoins of the caisson grooves and in the skewbacks, and Cornish granite for the hollow quoins, pointing-cill, roller-paths, and coping. The stones used are of the same massive character as the other portions of the work, some of them weighing as much as 18 tons. Two swing plate-girder bridges cross the lock, each being sufficiently wide to accommodate at the same time any amount of ordinary traffic, whether by rail or road. Hydraulic power is being supplied to various parts of the old and new docks, and will be used for swinging the bridges over the new lock, opening and closing the gates, working the capstans and the penstocks, &c.

Two years ago the site on which the dock has been constructed was occupied by agricultural land, reclaimed from the old bed of the river Ouse, the level of which was something like 5 ft. below high-water mark of an ordinary spring tide. The lock has been built across the bed of the old fisher fleet, the harbour for many years of the fishing-craft of Lynn, and the locality altogether has undergone such entire transformation that very few of its original features remain. To a large extent the work of excavation has been effected by the use of two of Ruston & Dunbar's steam navvies, one of Priestman's excavators, four locomotives, and an endless variety of other plant. The ground, on being first opened out, seemed likely to cause endless difficulty in its removal.

It consisted of raw silt, full of water; but, by degrees, incessant pumping told its tale, and the ground became firm and dry. At the level of the dock-floor the blue boulder clay was reached, and upon this foundation the whole of the superstructure has been reared.

The engineers are Messrs. J. S. & F. Valentine, of Queen Anne's Gate, Westminster, of whom the latter has been resident engineer, assisted by Mr. Henry Stockman. The contractors are Messrs. S. Pearson & Son, Mr. C. A. F. Gregson being their engineer. The swing-bridges have been made by the Cleveland Bridge and Engineering Company, Darlington. The Portland cement was supplied by Messrs. Francis & Co. and Messrs. Burge & Barron, both of London. Messrs. Abbott & Co., of Gateshead-on-Tyne, are the contractors for the hydraulic work, and Mr. C. Dennis, of Lynn, has been clerk of the works.

THE CONNEXION BETWEEN THE ARTS.

This was the subject of a lecture delivered on the 2nd inst., in the Victoria Hall, Glasgow (under the auspices of the Glasgow Sunday Society), by Mr. Ford Madox Brown.

The lecturer said that in choosing such a subject he did not wish to go into the matter philosophically, but rather to call attention to the undeniable evidence which they saw around them as lovers of art, as patrons of art, and in a sense as masters of art, of the importance of considering the arts in their various aspects generally, rather than investigating, as was more usual, one particular point. The fine arts were usually limited to four,—Poetry, Music, Painting, and Architecture. The French Academy, it was true, admitted a fifth,—Dancing; but that evening he would omit the consideration of the latter branch. In its place, however, he would substitute another, which was more indigenous to us,—Decorative Art. For the purposes of illustration, he must widen the definition of poetry so as to include all imaginative literature; for poetry, whether got up in "feet," or verse, or stanzas, or merely uttered with the subtle cadence which they found in Carlyle's "French Revolution" or Walt Whitman's "Drum Taps," was still poetry, whatever its mere form. Science asked,— "Why not join hands? You shall be as ourselves." They could not join hands, however, but say with the French, "Art for itself." Art was a reflection of the universe. Whatever was beautiful in the universe, whatever was terrible, whatever was sad, found its expression in art. But in saying that art had hitherto stood alone, he did not wish in this age of science to be understood too literally. Art was to a certain extent indebted to science in connexion with the study of anatomy in sculpture, harmony in music, and chemistry and perspective in painting and architecture; but still art would continue to flourish in the absence of all these. Speaking of the aids to the study and interpretation of the arts, he mentioned that he had lately visited Paris for the purpose of purchasing a set of the best-known casts of ancient sculpture for the Manchester Museum, and as the set only cost 500*l.*, he thought that no important city ought to be without one. The art student in England had many opportunities for study afforded him in the national collections, and the autotype process brought within his reach examples of Continental treasures showing most truthfully the touches of the great masters themselves. In music much progress had been made within recent years in this country, and Mr. Mackenzie's "Colomba" was an admirable example of the new school. Musical festivals in all the large centres were now given, at which the works of the greatest composers were performed to perfection. While in Amsterdam lately he was surprised to hear Wagner's music played on a street organ,—a great improvement upon what was usually discoursed in this country upon these instruments, and even by such means any one might be struck with the beauty of a composition, and led to seek to know it better. He then alluded at some length to what translators had done to admit of the classics, and the works of the most noted authors of all countries, being studied in English. While in olden times every school of art had its distinctive features, in modern times all the poets and painters agreed in rendering the ideal in a scrupulously truthful manner. In music there were precisely identical ideas, and, in short,

there was no divergence now between the arts of any country. The leading poets of England, France, and Germany, and the greatest painters and sculptors seemed, without exception, to have identical aims, only varying in degrees of power to carry them out.

The Chairman (Professor Nichol), in proposing a vote of thanks to the lecturer, said he did not think that 500*l.* could be better spent than in purchasing and arranging in some great public hall in Glasgow the magnificent set of antique casts to which reference had been made.

TRADE UNIONISTS IN FRANCE.

THE report of the deputation appointed by the Parliamentary Committee of the English Trade Union Congress to attend the International Workmen's Conference held in Paris in October has just been issued. It is signed by Messrs. Bailey, Burnett, and Broadhurst, M.P., and contains some passages of interest. After describing the constitution and proceedings of the conference, the writers say:—

"Our time was too much occupied with meetings to admit of much investigation into the number, the extent, and strength of the Paris trade unions, but so far as we could gather, it appeared that the composers, the engineers, the smiths, and the carpenters possessed the best unions. Even these cannot be compared with the British unions in stability or discipline.

The difficulty appears to be to get them to pay contributions of more than twopenny a week. Even this sum is only paid by a comparatively small number of the men. The masons' delegates state that out of some thousands of masons who accepted the principles of their society only about sixty men were regular subscribers. From this statement, and from other things which came under our observation, it would appear that the numerical strength of an association is reckoned upon the basis of the number of the men who are ready who approve of the objects of the union, and not upon the number of those who contribute to the funds, such as they are. It was upon this loose condition of things that the English delegates made their strongest attack, by stating the condition of membership in Great Britain and appealed to the members to exert themselves in making the societies more solid and numerous.

From what came under our notice, we are of opinion that the condition of the workpeople (*i.e.*, the mechanics) in Paris is not so good as that of corresponding trades in Great Britain. We met an English mason in Paris, who is engaged by an English firm of contractors as the erection of a Protestant church. He informed us that he was receiving London wages (*viz.*, 9*d.* an hour), out of which he paid 18 francs a week (15*s.*) for a furnished room, gring, and the use of a kitchen, the latter shared among three families. A shoemaker, who was a delegate at the Conference, said that men in his trade were working fourteen hours a day for 3*l.* 10*s.* (2*s.* 1*d.*).

These, and similar statements made by other delegates, in reference to some of the provinces of France, would seem to prove that the condition of other French workpeople in the large centres and at large works is anything but an enviable one.

With the exception of a wish to rely upon the State for things they may do for themselves, we did not object to the general views of the French delegates on social questions.

The speeches of the French delegates contained constant reference to and condemnation of the *bourgeoisie*,—*i.e.*, the middle classes. It would appear that there is little or no intercourse between the workmen and the middle classes in France, and the former, therefore, look upon the latter as their natural enemies; but we are bound to say that the want of intimacy is not only obvious in the cases referred to, but it is also true, to a lamentable extent, between the various groups of workmen themselves. We are painfully alive to the difference between workmen in our own country, and to its deterrent effect upon our thought and progress, but, happily, it does not exist here to such a degree as it does in France."

Dilapidations.—The official referee has just made his award in the case of Galpin v. Husey, the plaintiff being the enterprising publisher and the defendant, Mr. Husey, of the firm of Law, Husey, & Hulbert, solicitors. The claim was for 87*l.* 6*s.* 8*d.*, but it was stated that this was less than should have been claimed. The surveyors called for the plaintiff were Mr. Christopher and Mr. James Edmeston: for the defendant, Mr. K. D. Young and Mr. Banister Fletcher. The award gave 15*l.* 13*s.* 2*d.* being the amount of the valuation of defendant's surveyor, the plaintiff to pay all the defendant's costs of the reference. This case illustrates the wide margin of possible difference which seems too often to exist between plaintiffs' and defendants' surveyors.

BUILDING PATENT RECORD.*

APPLICATIONS FOR LETTERS PATENT.

5,493. F. Leslie, London. Chimney-cowls and ventilators. Nov. 23, 1883.
5,513. R. Evans, London. Flues, &c., for high buildings. Nov. 24, 1883.
5,526. H. Hancock, London. Fastenings for doors and windows, &c. Nov. 26, 1883.
5,527. J. H. Reynolds, Troy, U.S.A. Ventilators and chimney-cowls. (Com. by A. Robinson, Boston, U.S.A.) Nov. 26, 1883.
5,576. T. H. Feilding and A. N. Jonson, Sydney. Covering buildings to afford protection from heat, &c. Nov. 29, 1883.

NOTICES TO PROCEED

have been given by the following applicants on the dates named:—

Nov. 27, 1883.

3,775. T. W. Webber, Kellyville, Athy. Construction of roofs. Aug. 1, 1883.
4,109. J. C. Kent, Bedford. Supplying disinfectants to water-closets, urinals, and drains. Aug. 24, 1883.

Nov. 30, 1883.

3,647. A. Mechan, Glasgow. Ventilator cowls, &c. July 25, 1883.
3,648. F. W. E. Braid, London. Fire-resisting doors, &c. July 25, 1883.
3,656. W. B. G. Bennett, Portsmouth. Automatic flushing-apparatus. July 25, 1883.
3,675. R. Martinez, New York, U.S.A. Mats or floor-coverings. July 27, 1883.
3,761. T. Griffith, Manchester. Stair pads. Aug. 1, 1883.

ABRIDGMENTS OF SPECIFICATIONS,

Published during the week ending December 1, 1883.

1,757. F. Ramsay, London. Manufacture of wall-papers. April 7, 1883. Price 2*d.*

To imitate marble on the paper a tracing is taken of the veins, &c., in the marble, and from this tracing is cut out a perforated sheet. The paper first has a coating of "albumine," and the colours required are then roughly put on in water-colour. The perforated sheet is then placed over it, and the colour under the perforations is washed off. (*Pro. Pro.*)

1,762. R. H. Reeves and S. Reeve, London. Construction of flues, chimneys, and grates, for smoke-consuming and ventilating purposes. April 7, 1883. Price 6*d.*

Instead of a flue from the fireplace to the top of the building an air-shaft is made leading from the basement to the top, both ends of which are open to the external air. This forms a hollow chamber behind the fireplace in which the fire is heated. The smoke, &c., passes from the fire through perforations in the back into this chamber, where it is consumed, the heated air being checked in its upward passage by plates or perforated fire-lumps above the chamber. A pipe opens into the upper part of the room, and is led down into the hot chamber, where it terminates in a coil, and the vacuum formed therein by the hot blast draws the vitiated air down out of the room.

1,773. C. E. Osborn, London. Construction of glass roofing for greenhouses, &c. April 9, 1883. Price 2*d.*

The upper edges of the top sheets of glass are inserted in a groove cut in the bar, and the lower edges rest on the first pulvin, being kept in position by nails or screws. The next row of glass sheets is inserted in a groove cut in the side of this first pulvin, and the lower edges rest on the second pulvin, and so on. (*Pro. Pro.*)

1,782. H. A. Walker, London. Window-blind rollers, and parts connected therewith. April 9, 1883. Price 6*d.*

The blind-cord passes through an eye in one end of a lever pivoted on the bracket, on the other end of which is fitted a friction pad or roller. When the cord is pulled the pad is lifted, and the blind-roller is free to revolve, but when the cord is released the pad falls by its own weight on the flange of the blind-roller, and prevents its revolving.

1,821. T. J. Baker, Newark. Chimney-tops and ventilators. April 10, 1883. Price 6*d.*

This is an improvement on Patent No. 3,416, of 1882, in making the tops, &c., of clay or terra-cotta, and in various alterations in their shapes.

1,843. R. Oakley, London. Combined deflecting and injecting exhaust roof ventilator and chimney-cowl. April 12, 1883. Price 8*d.*

A head is formed with four or more compartments open to the wind in different directions, the sides of all which meet in a common centre. Below is a tube divided lengthwise into corresponding compartments, these being severally in connexion with the compartments in the head. The tube is contained in the main shaft, and is closed at the bottom, but two nozzles project upward into the shaft, from the bottom of each compartment. Thus, any air driven down the head, passes into the main shaft in an upward direction, and induces an upward draught. The main shaft terminates a little below the head, and rounds this open space are a series of circular deflectors, which prevent any air from entering.

1,845. R. Oakley, London. Ventilating-stoves. April 12, 1883. Price 4*d.*

Between two horizontal plates are fitted a number of vertical pipes open at both ends. Just above the lower

* Compiled by Hart & Co., Patent Agents, 166, Fleet street.

are gas-burners, which heat the pipes, and air, therefore, passes through them and is heated. The pipes are surrounded by a casing between the plates, whence the products of combustion are carried off by a flue.

1846. R. Oakley, London. Appliances for ventilating churches, schools, &c. April 12, 1883. Price 6d.

A head is made somewhat similar to that above-described by Patent No. 1,548, of 1883, and the central tube leading therefrom, opens into a horizontal tube, across each end of which is a larger horizontal tube passing right through the roof, and opening to the external air at each end. From these depend the vertical tubes up which the air is exhausted from the building.

ROYAL INSTITUTE OF BRITISH ARCHITECTS.

SIR,—In last week's issue of the *Builder* the name of Mr. Alfred Smith, of the firm of Jessurs, Smith & Arnold, architects, of Queen's-street, Auckland, New Zealand, twice occurs with the affix "F.R.I.B.A." Permit me to inform you that there is no one of that name in the list of members of the Royal Institute of British Architects. A Mr. Alfred Smith, of No. 27, Southampton-buildings, Chancery-lane, London, was admitted a Fellow in 1851, and retired in 1859.

WILLIAM H. WHITE, Secretary.

No. 9, Conduit-street, Dec. 5.

* * * It rests with Mr. Smith to explain how he came to send us his name with the affix of membership to it.

DWELLINGS FOR THE POOR.

SIR,—Last week we suggested, in a circular letter, the formation of a powerful philanthropic society, having for its object the erection of cheap houses for the poor, and showed that this can be done, if money is forthcoming, at about 4 per cent., without descending to charity *per se*; Lord Shaftesbury suggests something of the same kind in the *Tenanted Century* for December; and this morning we are favoured with the information, from the Lord Mayor, that he will hold a conference on the subject at the Mansion House on the 11th December.

The subject, it would thus appear, is about to assume a practical shape, and leaving the question money to the committee which is likely to be formed at the Conference, the various schemes may now be stripped of a great deal of extraneous matter which has hovered around them. For the present we may dismiss all Government and Municipal schemes, and questions of ground-rents and short leases, and the reduction of taxes and local rates, &c., to the poor, and in the meantime open up existing circumstances and surroundings, and so set ourselves to the problem, how the poor are to be best housed at rents within their means, and without the violation of economic principle, or with as little violation of them as possible.

The subject being so far cleared, it appears to us that it resolves itself into two schemes. The first is a well-tried scheme, for which we have precedent in abundance, particularly in Scotland, and which has been adopted, in some measure, by the Peabody and Artisan Buildings; but to bring this scheme within the reach of the poor we must not follow in the wake of the Peabody or Artisan model, but adopt more rigidly the Scottish type, which has been eminently successful for generations, and which we shall be happy to explain to any gentleman interested in the subject, we having had large experience in that class of property.

The second scheme is what may be termed the unfurnished hotel scheme, which consists of one large building with hundreds of rooms, let out as occasion requires. This plan is better adapted for a higher class of property; but we have no doubt it will suit the requirements of many of the poor, and has been recommended by Miss Octavia Hill, a lady who is not ignorant of the requirements of the lower orders of society. In both schemes the rents can be as low as from 1s. to 1s. 6d. per room per week, including all rates and taxes, and yet yield a profit of about four per cent. net.

GRAHAM & STEVENS, Architects.
5, Air-street, Finsbury,
Nov. 28, 1883.

* * * We print Messrs. Graham & Stevens' letter, at the same time expressing our conviction that all so-called philanthropic schemes will merely magnify the existing evil, which arises mainly from the recklessness of several generations of the poor themselves. It seems to be proposed to find cheap housing out of the pockets of philanthropists (for 4 per cent. is not really remunerative, even if it can be obtained from the rents indicated, which we more than doubt), for these reckless and improvident classes further to multiply. The idea of doing any permanent good in that way is an illusion. The evil which is now attracting attention is the work of some generations, and those who think that any patent philanthropic receipt

will work an immediate improvement must be totally unable to understand the real facts and bearings of the case. An instructive suggestion as to the use that may be made of such cheap dwellings will be found in the communication from Manchester, in another column, in regard to the doings of the "nomadic householder." The ultimate cure is to be looked for in higher education and the development of thrift and self-respect among "the masses"; the only immediate weapon is the more strict enforcement of the legal duties of landlords. Beyond this, "supply and demand" must settle it.

CHAPEL BELL, LINCOLN'S INN.

SIR,—Seeing that you state in the *Builder*, Nov. 24 ("A Respite for Old London"), that the bell which hangs here was brought from Cadiz by the Earl of Essex, I beg to send you a copy of the inscription upon it (in raised letters), which I have been up and taken. Thos. Hitchcock was Treasurer in 1615.

T
H
+ ANTHONY BOND MADE
MEE
1615

* * * Thomas Lane, a former Steward of Lincoln's Inn, published in 1823 a "Student's Guide through Lincoln's Inn" in which he states under head "Chapel,"—"The bell was brought from Cadiz in the year 1596 by the young Earl of Essex, the favourite of Queen Elizabeth, and formed part of the spoils acquired by the English under that gallant nobleman and Lord Effingham in the capture of Cadiz." Spilsbury, in his account of Lincoln's Inn (1850), gives the same story with more detail; he was a former librarian.

The most probable explanation is that the bell was re-cast in 1615, but the old tradition still kept on record. We and the public are indebted to Mr. Doe for taking the trouble to look at the present inscription on the bell, but the old story may be quite true nevertheless.

IRON AND CONCRETE.

SIR,—I am obliged by Mr. Emerson's and Sir Thwaite's letters [see p. 704, ante], and am encouraged to adhere to my original intention of embedding a few iron rods near the bottom of the beam; gas-pipes would be stiffer against lateral thrust if the air enclosed in them would not lead to oxydisation. In either case, screw collars over the ends of the rods would connect one beam on to the next.

A beam 15 ft. long can be tested by Mr. Kirkcaldy for 10*l.*, and, if the result be successful, a great economy will be apparent; for the cost of such a beam, made in a neighbourhood where suitable materials are at hand, should not exceed 5*l.*, and a column, consisting of an iron stanchion embedded in a fire-resisting case, such as Mr. Christian has used in the Economic Life Insurance Buildings in Blackfriars, would be worth about 15*l.*

There would, therefore, be an enormous saving in cost:—1, of material, as compared with the corresponding material contained in stone columns, at least 1 ft. 6 in. diameter, and in arches and spandrels 2 ft. 3 in. thick, reaching to a height of 19 ft. to the top of and including the usual stone string-course; and 2, of labour, which would consist merely in raising columns, 18 ft. high, into position, and then lifting the beams on to them and securing the ends together.

Besides this, if an arched clearstory be adopted to bring the weight on to the columns, there is no need for centring even here, for the brick walls raised upon the beams would answer the purpose; so that the entire saving effected by this method of construction would be considerable.

Our clients, the clergy, usually shrink from any innovation in the architecture of their churches, which is a pity; for if they would dictate the exact arrangements of plan that they require, and leave us to carry out those arrangements with duly tested modern appliances, our architecture would again reflect its own period and no other.

Every past style was modern at the time it prevailed, though no style arose suddenly.

Our civil and domestic architecture is now settling down into a recognisable style, and it is to be hoped that it will not be convulsed by any more "revivals."

Concrete is already much employed in slabs and lintels, and it would be but a short step to its use in the form I have suggested.

The Jaina construction of covering in buildings with slabs is also possible with concrete, and we may become less and less dependent upon arches, which, however beautiful, "never sleep."

EDWARD J. TARVER.

ENGLISH ENGINEERING IN GERMANY.

SIR,—Under the above heading you have, in your issue of the 1st of December, reproduced the introductory remarks of an article from the *Sanitary Record*, on the sewerage of Frankfurt and the proposals now under consideration by the municipality for dealing with the sewage at the outfall works, which I shall feel obliged if you will allow me to correct, so far as it sets forth the name of Mr. Lindley only in connexion with the original works commenced so far back as 1866.

The full description referred to in your editorial note as having appeared about a year ago at pp. 388, 444, 474, shows, of course, that I was associated with Mr. Lindley in carrying out the original works; but in a matter affecting my professional career, and in reference to works on which I spent seven years and a half of time, I am sure you will see that it is only right that published descriptions of them should not appear without my name being associated with that of Mr. Lindley, sen., in connexion with the original works.

Mr. Lindley, sen., was not domiciled in Germany at the commencement nor during the progress of the works, as stated in the article, but I took up my residence in Frankfurt to carry them out.

Mr. Lindley's sons have, for some years back, been resident in Frankfurt, and the works are now in charge of the eldest son.

J. GORDON, M. Inst. C.E.,
Borough Surveyor of Leicester.

THE SEXTON.

SIR,—The casual reference to the word "Sexton" which occurs at p. 707 of the *Builder*, is most interesting; and there are other points in the short account of Chester-le-Street Parish that call for remark.

1. As to the sexton. The extremely archaic form *Seggerstone* is valuable, being clearly a survival and very near approach to "sacriston," the primitive form; for, indeed, the simple sexton is only the more dignified sacristan somewhat fallen in life. The form "seggerstone" gives all three syllables due emphasis.

2. One would like to hear more about the stranger archbishop; but it is venturesome to hazard a conjecture in the absence of all date. I should have fancied he was a foreigner, say a Greek or Armenian dignitary, unless, indeed, it goes back to Catholic times; and that seems possible with a date so early as 1812.

3. The seats for wedding parties seem to indicate a period when the flooring was all open, i.e., before the introduction of pews; no doubt, if the congregation had to kneel or stand, without even a *prie dieu*, a fixed seat for infirm and invalid females would be desirable, and such accommodation be accorded to wedding parties who would desire to keep together.

Nov. 30, 1883.

A. H.

"QUANTITIES."

SIR,—I find it difficult to see exactly what your correspondent "E" is driving at in his letter to you in your last number [p. 738], but perhaps I should reply, as he makes the text of his letter my speech at the Builders' Benevolent Institution dinner. What I endeavoured to point out to the builders assembled at this dinner was that they should avoid architects who worked upon the principle that quantity surveys were unnecessary. This advice to them I would still give, and still adhere to as strongly as ever, and I consider it the duty of all builders to refrain from tendering in competition for work unless quantities are supplied by a properly-qualified surveyor. There is no disagreement between most architects and myself in this matter: it is acknowledged by all capable of forming an unbiased judgment that this course is the only fair one to adopt, and I trust the trade generally will be more and more firm in carrying it out.

J. HOWARD COLLIS.

* * * What our correspondent meant evidently was that the quantities were a matter for the builder's consideration, not for the architect's; in which, as a matter of principle, we agree with him.

Dublin Library and Museum Competition.—Mr. F. Hornblower writes from Liverpool that the design named as that of Mr. F. Holme, chosen among the first five, was sent in by himself in conjunction with Mr. Holme and under their joint names.

ELM-WOOD BLOCKS.

SIR,—Mr. White's answer on this subject (p. 738 ante) is valuable. We all owe a good deal to him in the matter of block floors, as well as in many other ways. May I ask, however, what is exactly intended by the words "but they [the elm blocks at Merfield used fifteen years ago] were 2½ in. thick"? Does Mr. White consider that they would probably have behaved differently if they had been thinner, say 1½ in. thick? Should 2½ in. (to put the question in another way) be considered the least thickness for elm blocks, if they are to be free from any risk of warping? P.

COMPETITIONS.

High School, Dunfermline.—A meeting of the promoters of the new High School and Dunfermline Burgh Board School has been held for the purpose of hearing a report by the committee as to the plans submitted in competition for the building. The Earl of Elgin, who occupied the chair, said that in the report it was recommended that the school should be built according to plans submitted by Mr. Mercer, in conjunction with Messrs. F. and G. Holme, architects, Liverpool, and in making that selection the committee thought that the idea of opening the school without debt would be accomplished. While they had the best authority for believing that the selected design would not cost over the stipulated sum (£4,700.), they had been assured by men of educational experience as to its suitability for a high school. The internal arrangements were good, while the building would be finished externally so as to make it an ornament to the town. The Rev. Dr. Mitchell moved the adoption of the Committee's recommendation. Ex-Bailie Walker seconded, and stated that he had been favourably impressed with some of Messrs. Holme and Mercer's work in Liverpool.

Stables, Buckminster Hall.—A correspondent says,—In the *Builder* for the 30th June last, there appeared an advertisement offering a premium of 50l. for the best design, and 30l. for the second best set of plans for proposed coach-houses, stables, &c., at Buckminster Hall, Grantham, Lincolnshire, for the Right Hon. the Earl of Dysart, the cost of the stables, &c., not to exceed 6,000l., and the style of architecture to be in conformity with Buckminster Hall, which is of the Grecian Order of the "Georgium Sidus" period. In reply to this advertisement eighty-one architects sent in drawings! The first prize has been awarded to Mr. F. Eggar, of Wardrobe-chambers, Queen Victoria-street, London, and the second prize to Mr. R. C. Murray, 1, Racquet-court, Fleet-street.

Board School, Carlisle.—The *Carlisle Journal* states the circumstances under which the plans of Mr. G. Dale Oliver for the new Board School in Lowther-street were finally selected by the School Board, as already briefly mentioned in our columns. Mr. Paley, architect, of Lancaster, was called in to advise the Board upon the plans sent in for competition, but with the understanding that the Board would not necessarily be bound to consider his decision final. In the event, however, they did act upon his advice. He recommended the Board to adopt the plans bearing a Welsh motto if the whole of the schools,—boys', girls', and infants',—were to be built together; but if the Board should come to the conclusion that the schools had better be built separate then he recommended them to award the first prize to "Dux." The Board having decided that the schools should be built separate they followed Mr. Paley's advice and awarded the first prize to "Dux" (Mr. G. D. Oliver), and the plans bearing the Welsh motto (Mr. Scott's) were placed second.

The Vacant Land at the City End of the Embankment.—At the last meeting of the Court of Common Council, Mr. Mannors moved the approval of a report from the City Lands Committee, stating that the Committee had accepted the offer of the Ground Rents Company (Limited) for a building lease of the vacant land on the Victoria Embankment, for a term of ninety-nine years from Christmas next, at a peppercorn rent for the first year, 5,000l. for the second year, for the first year, 5,000l. for the second year, 10,000l. for the third year, per annum for the remainder of the term, with details of the arrangement by which the contractors agree to deposit the sum of 10,000l. as a security for the due execution of the contract; and recommending that the contract should be sealed accordingly. The report was adopted.

CHURCH-BUILDING NEWS.

Farnham (Surrey).—The Bishop of Winchester reopened the parish church of Churt, near Farnham, on the 22nd ult. The present nave is only some forty years old; but it was re-roofed, and a new chancel, vestry, and porch added, sixteen years ago. The nave has now been re-seated with pitch-pine open benches, and floored with deal blocks below the seats; and oak ones in the passages, having glazed encaustic tile bordering. One of Porritt's hot-air apparatus has been supplied. North and south transepts have been built, with White's patent hygienic rock composition, to keep the wet from penetrating as it had done through both nave and chancel walls. A new oak entrance-door, with wrought-iron work by Brawn, of Birmingham, in a stone frame, has been supplied. A double western bell-gablet has been erected with three-light tracery window below it, and new windows placed in the nave to correspond, the stonework being supplied by Messrs. Pictor & Sons from their Westwood Quarry, the whole being glazed with cathedral rolled glass in varied delicate tints, with darker borders. The positions of font, lectern, and pulpit have been improved for the better, and a western gallery has been pulled down. The accommodation, however, has altogether been raised from 161 to 218. The work was commenced by Messrs. Goddard & Sons, of Farnham and Dorking, last July, and has been completed a week before the contract time. The total cost has been rather over 1,000l., towards which both the Incorporated Church Building and the Surrey Diocesan Societies have subscribed liberally. The architect from whose plans and under whose superintendence the works have been carried out was Mr. E. H. Lingen-Barker, of Hereford.

Plymouth.—On Sunday last the new church built for the use of the officials and convalescent patients of the Royal Naval Hospital, Stonehouse, was opened for worship. The church is Gothic in style, and has been erected by Mr. S. Clarke, builder, of Plymouth, from the designs of the late Mr. Brighton, of the Director of Works' office, London. It is built of local limestone, with Portland stone dressings, and is elaborately ornamented with a great deal of carved stonework. The site is a slight eminence, to the east of the square block forming the ward buildings. The general entrance is at the western end, and is through a large porch of Portland stone, very elaborately carved, whilst at the other end are two smaller entrances, one leading to the vestry and the other for the officers. The chancel is apsidal. The clear-story has dormer windows. The chancel windows are of stained glass, and have been supplied by Hall & Sons, of Bristol. Round each of the windows is a great deal of elaborately-carved Portland stone. At the south-western extremity of the building is a bell-turret, surmounted by a spirelet, constructed chiefly of Portland stone, elaborately carved. The whole of the carving has been done by the convicts at Portland. The church is seated with pitch-pine benches, which have been made by the convicts at Portland. The gas organ has been supplied and fitted by Mr. Pile, of Stoke. The seating and other internal arrangements have been carried out by Mr. J. Berry, builder, of Plymouth. The font, which is placed under the bell-turret, is of Plymouth marble, and, together with the columns which support the chancel arch, and which are of the same material, is the work of the Portland convicts. The building will seat about 300 persons. It has been seven years under construction, and has been erected at a cost of about 4,000l. The work was commenced under the superintendence of Mr. Haite, superintendent engineer of the Devonport Yard, and since his transference from the Director of Works' office to that department, Mr. Richardson has carried out the duties of clerk of works. The church is provided with an organ, built by Messrs. Hele & Co.

Liverpool.—The foundation-stone of the Gustaf Adolfs Kyrka, a new Scandinavian church for Liverpool, was laid on Saturday, the 1st inst., by Mr. Samuel Smith, M.P. The building, of which Mr. W. D. Caroe, M.A., of London, is the architect, comprises a church to seat 550 adults, a large reading-room and lecture-hall in the basement, and adjoining is a residence for an assistant pastor. The architect will, we are told, be a new departure from the types com-

monly seen in this country. The various simple characteristics of the early architecture of Scandinavia in its different developments in Denmark, Sweden, and Norway have been freely employed and united to form an at once harmonious, picturesque, and very inexpensive pile. Mr. John Shillitoe, of Upper Norwood, London, is the builder. The site is at the corner of Park-lane and Cornhill. The greater part of the funds have been contributed by the king and people of Sweden and Norway.

Sopham (Lancashire).—The re-building of the parish church is now completed, and the part just finished comprises the nave and south porch. The chancel, organ-chamber, and vestry were commenced some two years since. The old foundations of the nave and tower have been adhered to throughout, the addition to the former comprising one bay at the east end. Accommodation is provided for 311 persons. Externally the church is faced with Yorkshire parpinto and Longridge ashlar masonry, and internally with Stourton stone. The roofs are in one span, with open-framed principals, the ceilings being boarded. The chancel windows and several of those of the nave are filled with stained glass. The re-building throughout has involved an outlay of about 4,000l., under the superintendence of the architect, Mr. John Lowe, Mansfield-chambers, St. Ann's-square, Manchester.

Miscellaneous.

Proposed Canal from the Tyne to the Solway.—Plans for a canal from the Tyne to the Solway were submitted by Mr. A. Leslie to M. de Lesseps during his recent visit to the North. A few months ago a project was brought before the Newcastle City Council; and a committee was appointed to consider the feasibility of the scheme. That committee has not yet reported, and in the meantime Mr. A. Leslie has, with a view to testing the practicability of a Solway and Tyne Ship Canal privately drawn out three plans. Mr. Leslie is convinced that the canal is an actual necessity; and that its accomplishment is only a question of time. During six months of the year vessels cannot pass safely around by the north, and by the south there are many serious dangers, all tending to make the insurance fall very heavily on the shipowner, and, as a consequence, hamper trade. From the Tyne to Liverpool occupies no less than eighty hours with a good steamer, and it is calculated that by a canal the latter port would be reached in a considerably less time. The canal, if made, would be about sixty miles in length, and the run through it would occupy from twelve to twenty hours. Mr. Leslie, as has been said, has drawn three plans, the first showing a canal with an open cutting from sea to sea; the second, a canal with locks; and the third, a canal with two tunnels, one for easterly traffic and the other for westerly traffic, so as to prevent collisions. The tunnels would be situated near Greenhead, the most mountainous and most difficult part of the route from an engineering point of view. M. de Lesseps was strongly in favour of an open cutting from sea to sea.

Glasgow Architectural Association.—A lecture was delivered on the 30th ult. in the Room of the Association, St. Vincent-street, by Mr. John Honeyman, on the subject of "Air Currents as they are affected by the Form of Rooms." The president, Mr. Leiper, occupied the chair. Among the points urged was that if fresh cold air is admitted to a room at the floor level it will most surely be drawn off by the fireplace without any change being effected in the upper and warmer strata, while, moreover, the inmates will be subject to most disagreeable and unhealthy draughts. If admitted, however, at the ceiling, where the air is most vitiated, thorough ventilation is secured. It followed, therefore (according to the lecturer), that any height of ceiling greater than allows headroom clear of such current is wholly superfluous. We hope to print the substance of the paper next week.

Drayton Parslow.—The east window of the parish church has just been filled with glass by Messrs. Mayer & Co., of Munich, the subject represented being the Angel of the Resurrection appearing to the Women at the Sepulchre. The window has been presented by Mrs. Spurrell in memory of her husband, who was for twenty-eight years rector of the parish.

A New Method of Sinking Shafts through Quicksands is described and illustrated in the *Engineer*. It is the invention of Herr Poetsch, mining engineer, Aschersleben. It consists in actually freezing the quicksand or running ground to a hard solid mass, through which the shaft can then be sunk in the ordinary way without pumping, the external circular wall of ice left outside the excavation giving sufficient protection against influx of water, sand, or gravel, until the permanent masonry or iron lining is got into position. To accomplish this, after the shaft has been brought down to the level of the quicksand, a number of bore-holes are carried down to the solid ground by means of a sand-pump. These holes are spaced about a yard apart, and are placed in circles, the outer one approaching as nearly as possible to the circumferential line of the shaft when finished. The bore-holes are then lined with iron tubes closed at the bottom, within each of which is a smaller concentric tube of copper open at the bottom and connected at top to a main-pipe communicating with all the other copper tubes and extending to the top of the shaft. The upper ends of the outer iron tubes are also connected to another main-pipe, which, like the other, extends to the surface of the ground. Through these pipes, brine, consisting of a solution of the chlorides of calcium and magnesium in water,—which has a freezing-point of about 36° below zero Fahr., is caused to circulate by a small force-pump driven by an engine, its course being down one of the mains and the internal copper pipes, and back through the surrounding annular spaces and the other main to the top of the shaft. At the surface is placed a cooling apparatus, preferably of the ammonia type, the refrigerator being inserted between the two sets of mains, so that the brine in its flow is continuously cooled to a temperature of about 15° below zero Fahr., before its passage down the shaft into the bore-holes. In this manner heat is rapidly abstracted from the quicksand or other running ground, which is thereby frozen into a hard mass, through which the excavation is continued as through solid ground, as before described.

Insanitary Property in Liverpool.—At the meeting of the Liverpool City Council on Wednesday, a lengthy discussion took place on the subject of the demolition of insanitary property, with the view to the improvement of the health of the low neighbourhoods and ameliorating the condition of the labouring classes and the poor. The Insanitary Property Committee submitted a resolution for applying to the Local Government Board for a provisional order for increasing the borrowing powers of the corporation by 200,000*l.* in view of an extensive demolition of insanitary property which is in prospect. Mr. A. B. Forwood moved the adoption of the recommendation. An amendment was moved by Mr. J. B. Smith for reducing the amount to 50,000*l.*, which it was contended was sufficient, in view of the fact that there was still a sum of 97,000*l.* available for the purposes in contemplation. In the course of the discussion Dr. Commis, M.P., said the cry of "Outcast London" and "Squalid Liverpool" was hollow and unreal, and the agitation that had been got up was most ridiculous. Because newspaper correspondents, who came from goodness knew where, happened to go into low districts of the city, and found an amount of drunkenness and squalor more than was accounted for by the police returns, it was thought that this was an extraordinary state of things and required extraordinary remedies. He asked why the existing local laws were not enforced? On a vote being taken the recommendation of the committee was carried by 34 to 5.

British Shipowners and the Suez Canal. It is announced that the Committee of British Shipowners and M. Charles de Lesseps have come to an agreement whereby the interests of British shipowners in the Suez Canal will be more adequately maintained than hitherto. The first article of the convention is as follows:—

"That to prevent delays in the transit between the Mediterranean and the Red Sea, and *vice versa*, and also to provide for the expansion of trade, the company shall either sufficiently enlarge the present canal, or construct a second channel, as may be hereafter determined; and that in order to arrive at a proper decision as to the course which should be pursued in this respect, a commission of engineers and shipowners shall be appointed to examine the question, of which no fewer than one half shall consist of English engineers and shipowners."

An Enthusiast on Cremation.—It appears that the late Captain Hanham, who is stated to have been the "pioneer of cremation" in this country, has, to put it in an Irish form, lived to be cremated, and that the occasion has been one of intense interest to his friends,—so, at least, we judge from a letter which one of them writes to Thursday's *Times*, in which the contemplation of the consumption of the body by the new method seems to have stirred the writer (Dr. Comyns Leach) to a pitch of enthusiasm which it is quite refreshing to meet with in connexion with what is usually supposed to be a sad and solemn rite in any form. The contemplation of the "pure and sacred rite," the interest with which the remains and their gradual decomposition under the action of the "all-consuming and purifying fire" (for due note of which the furnace-door appears to have been occasionally opened) seem to have been regarded, the gathering up of the "snowy bones" afterwards, and the in-urning them with a couplet of Homer as a burial service,—all this is described, as our neighbours say, "with effusion"; and we may expect presently that cards will be issued for cremations. To our thinking the subject is an important but painful one, about which the less "gush" is written the better.

The Old University Buildings, Glasgow. The scheme for removing the ancient decorative stonework of these buildings to the principal entrance of the grounds of the new University, as advocated by Mr. Alexander George Thomson, I.A. (and referred to in our last number), has advanced with unexpected rapidity. The Senatus of the University having had before them Mr. Thomson's letter and design, resolved to remove the ancient gateway, under which so many generations of students have passed, to University Avenue, the estimated cost of the re-erection and of a suitable lodge attached being about 2,500*l.* These circumstances having come to the knowledge of Mr. William Pearce, the eminent shipbuilder, that gentleman, in the handsomest manner, at once offered to contribute the whole expense of re-erecting the gateway, and also of erecting the lodge to be connected with it. It is hoped that the projected operations may be carried out in the course of the ensuing summer.

The Housing of the Poor.—It is stated that the Local Government Board is about to address a circular to the metropolitan vestries drawing their attention to the powers that can be exercised by them under the Sanitary Act of 1866 in reference to houses let in lodging or occupied by members of more than one family. The circular will be accompanied by some model regulations dealing with the following matters:—The fixing of the number of persons who may occupy a house let in lodgings, the registration and inspection of such houses and the keeping the same in a cleanly and wholesome state, the enforcement of the provisions of accommodation and other appliances and means of cleanliness in proportion to the number of lodgings and occupiers, the cleansing and ventilation of the common passages and staircases, and the cleansing and lime-washing at stated times of such premises.

Roman Villa at Frilford, Berks.—A paragraph, which has gone the round of some of the daily papers, attributing to Mr. Parker the excavation of some remains of a Roman villa at the above-mentioned place, is not, it appears, altogether correct. Mr. Parker described it at a recent meeting of the Berkshire Archaeological Society. The remains are said to indicate a villa of eight or ten rooms. Scarcely any vestige of the walls remains. A good many tesserae have been found, indications of a concrete-lined bath, and the remains of a hypocaust.

Iron versus Stone.—Messrs. Messers Bros. & Co. send us, along with a memorandum of sections of their constructive ironwork, a photograph taken from the buildings in Cheapside after the great fire there, showing that the ironwork has stood its ground remarkably well, in this case at all events, many of the girders being *in situ* and nearly as straight as in their normal condition. One must know exactly the duration of time of the girders being exposed to great heat, however, before comparing this with other cases.

Tuam Cathedral.—Messrs. J. L. Bacon & Co., of Upper Gloucester-place, London, have been entrusted with the heating of the Roman Catholic Cathedral, Tuam.

Electric Lighting in the City.—The Streets Committee of the Commissioners of Sewers have resolved to recommend that the City be divided into five districts, comprehending the leading thoroughfares, for the purpose of electric lighting, and tenders are to be invited from various companies to carry out the work, which is to be done with as much promptitude as possible. This is in addition to one district for which a company has already permissive power.—*City Press*.

Old Putney.—Mr. Arthur Lucas sends us three etchings, by Mr. Evershed, of Putney Bridge and Church, and Fulham Church, subjects which are of some interest just now, when the old bridge is doomed, and other alterations in the neighbourhood are probably impending. Mr. Evershed, as an etcher, is thoroughly at home with old buildings, and not less so than usual here. We do not like his handling of trees so much, but the etchings have both artistic and topographical value.

Royal Academy.—The Gold Medal Students' Supper will be held at Willis's Rooms, on Wednesday, December 12th, at ten p.m. Mr. Edmund Woodthorpe, of 8, Beaumont-street, Portland-place, is acting as Hon. Secretary in the matter. It is expected that Messrs. George Grossmith, Edward Terry, Beerbohm Tree, and others, will lend their aid towards the evening's entertainment.

A Winter Garden and Lounge has been added by Baron Huddleston to his residence at Ascot, connected to the dwelling-house by a corridor. The work has been carried out by Messrs. Messenger & Co., horticultural builders, of Loughborough. The interior is fitted with rock-work and fountain by Messrs. Nieman & Cornish, of Orchard-street, London.

Backworth.—St. Edmunds (E.C.) Church, Backworth, near Newcastle-on-Tyne, has been opened. The building, which will seat 400 persons, is of corrugated galvanised iron, and has been built by Messrs. J. C. Humphreys, Albert Gate, Hyde Park, London. Its cost has been 300*l.*

Hospital Ventilation.—Amongst the buildings upon which Mr. Buchan's roof ventilators are at present being applied are the Epidemic Hospital in Edinburgh, and the Hospital for Incurables at Morningfield. An extra large ventilator, 5 ft. in diameter, is also being made by Mr. Buchan for a public hall at St. Andrew's.

Lincrosta-Walton.—In our account of the First Avenue Hotel we should have stated that this material has been largely employed in the decorative work of many parts of the building, notably in the reception and drawing rooms, and for nearly the whole of the corridors, and in the vestibule.

TENDERS.

For the remainder works to be done in the restoration of Gunton Hall, the seat of Lord Salford, K.C.B. Mr. E. R. Robson, F.S.A., architect. Mr. W. H. Barber, quantity surveyor:—

	No. 1.	No. 2.
Thompson, Peterborough.....	£13,881	£13,891
Brass, London.....	14,894	13,960
Higgs & Hill, London.....	14,680	13,894
Bentley, Waltham.....	14,361	13,876
Mortier, Stratford.....	14,160	12,775
Boyes, London.....	13,978	12,660
Cornish & Gaymer, North Walsham.....	12,827	11,610
Foster & Dicksee, Rugby.....	11,888	11,178
Tomlinson & Sons, Sheffield.....	11,295	10,506

For building house and stabling, Herries-street, Kilburn-lane, for Mr. G. H. Cartwright. Mr. J. H. Taylor, architect. Quantities by Messrs. New & Son:—

F. Mark.....	£454 0 0
Varden & Son.....	433 0 0
Thomas & Butland.....	419 0 0
Facer.....	409 0 0
Dadds.....	395 0 0
Blades.....	370 0 0

For alterations and additions to stables, for formation of fire station, &c., for the Beckenham Local Board.

Mr. Geo. B. Carlson, O.E., Surrey to the Board:—	
J. Hollingsworth, Fenge.....	£223 0 0
D. D. & A. Brown, Camberwell.....	227 0 0
T. W. Jones, Beckenham.....	204 0 0
J. Barwell, Shortlands.....	212 0 0
J. G. B. Marshall, Brighton.....	210 0 0
T. Wootton, Fenge.....	775 0 0
Bowdidge & Burley, Millwall.....	564 0 0

Accepted for erecting four shops at Blackheath, for Mr. Chas. J. Bond:—

Kennard Bros., Lewisham.....	£2,850 0 0
------------------------------	------------

For alterations and additions to the New Forest Hotel, Lyndhurst-road Railway Station, for Messrs. Hine Bros.

Mr. W. H. Mitchell, architect, Southampton:—	
Chas. Fike, Totton.....	£248 0 0
H. J. Sanders, Southampton.....	241 0 0
Brinton & Bone, Southampton.....	210 0 0
J. W. Rowland, Southampton.....	275 0 0
Stevens & Sons, Southampton.....	261 0 0
J. Crook, Southampton (accepted) ...	537 0 0

For the erection of eight houses on the Cedars Estate, Walthamstow, for Messrs. Houghton. Mr. S. S. Walters, architect:—

Thompson & Tweed	£4,800 0 0
J. A. Taylor	3,800 0 0
Scott	3,784 0 0
Robson	3,672 0 0
Sampson	3,552 0 0
Barton	3,460 0 0
Goldsmith & Co.	3,400 0 0

For rebuilding St. George's Tavern, Coleman-road, Camberwell, for Mr. Haslar. Mr. Thos. W. W. Willes, architect:—

T. Boyce	£2,350 0 0
Williams	2,774 0 0
Colls & Son	2,768 0 0
Patrick & Sons	2,743 0 0
Payne	2,670 0 0
King & Son	2,400 0 0
J. A. Taylor (accepted) ..	2,289 0 0

For twelve small houses at Parkstone. Messrs. Whitmore & Reeves, architects and surveyors, 14, Devonshire-square, Bishopsgate:—

J. Harper, Hackney	£2,186 0 0
H. W. W. Gossett	1,925 0 0
J. Gunn, Putney	1,900 0 0
Everett & Son, Colchester ..	1,799 0 0
Went & Bowen, Wimbledon ..	1,753 0 0
Sanders & Son, Dedham	1,748 0 0
G. King, Fackham	1,706 0 0
W. Wood, Chelmsford	1,694 0 0
W. Upson, Upper Dovercourt ..	1,650 0 0
J. T. Widdow, Dovercourt	1,609 0 0
W. List, Finsbury Park	1,600 0 0
A. Dias, Colchester	1,488 0 0
W. Betts, Clacton-on-Sea	1,464 0 0
J. Ayres, Woodford	1,380 0 0
T. Beckett, Dovercourt	1,355 0 0

For the erection of five blocks of artisans' dwellings, Petticoat square, for the Corporation of London:—
M. Henry, Stratford (accepted) ... £65,500 0 0
(For list see *Builder*, pp. 708, 744).

For warming and ventilating by their improved hydraulic system, the second block at Greenwich Hospital schools:—
J. Weeks & Co., Chelsea (accepted).

For building a new warehouse in Bloomsbury-street, for Messrs. G. Pearce & Co. Messrs. Spalding & Auld, architects:—

Patman & Fotheringham	£3,373 0 0
Donne	3,300 0 0
Deve Bros.	3,275 0 0
Ansell	3,243 0 0
Marin Wells & Co.	3,220 0 0
Outwaite	3,139 0 0
Ashby	3,101 0 0
Roberts	3,093 0 0
Woodward	3,083 0 0
Grover (accepted)	3,088 0 0

For a Mission-hall in Denning-road, Hampstead. Messrs. Spalding & Auld, architects:—

Staines & Son	£782 0 0
Gould & Brand	733 0 0
J. Grover	697 0 0
J. P. Donne	682 0 0
T. Sabey	680 0 0
Burford & Son	675 0 0

For rebuilding No. 8, Portland-mews. Messrs. Spalding & Auld, architects:—

J. P. Donne	£1,340 0 0
Outwaite & Son	1,325 0 0
Staines & Son	1,322 0 0
Higgs & Hill	1,310 0 0
W. A. Rhodes	1,310 0 0
Marin Wells & Co.	1,294 0 0
Steed Bros.	1,247 0 0
Howard & Dorrell	1,235 0 0
Patman & Fotheringham ..	1,195 0 0
Ansell	1,184 0 0
J. Grover (accepted)	1,134 0 0

For additions to St. Margaret's, Streatham. Messrs. Spalding & Auld, architects:—
W. Mason (accepted) ... £1,471 11 6

For building three houses at Highworth, near Swindon, Wilts, for Mr. Ambrose Willis. Mr. William Drew, architect, Swindon:—
H. Looker, Stratton, St. Margaret* ... £287 10 0
*Accepted.

For making up roadway of Cromwell-place, Highgate. Mr. T. de Courcy Meade, engineer and surveyor:—
McKenzie, Williams, & Co., Finsbury .. £133 0 0
Danmore, Crouch End 170 0 0 || Pizzey, Hornsey | 169 15 0 |
| Jackson & Sons, Finsbury Park .. | 157 12 6 |

*Accepted.

For new Model Dwellings, George-square, Hexton, for Mr. J. W. More. Mr. H. Goodwin Bailey, architect:—
Quantities by Mr. J. T. Carew:—

Price	£4,180 0 0
Bulford	2,880 0 0
Parks & Roberts	2,850 0 0
Williams & Sons	2,733 0 0
Robson	2,473 0 0

For building a residence at Shipbro, Billingshurst, Sussex, for Mr. H. Mitchell. Mr. William Buck, architect, Horsham:—

Sharp, Horsham	£2,127 0 0
Pannett Bros., Horsham	1,950 0 0
Newell, Bognor	1,963 0 0
Eberidge Bros., Horsham	1,905 15 0
Taylor, Brighton	1,743 0 0
Terry, Storrington	1,687 0 0
Brown, Burgess Hill	1,667 7 8
Longley, Crawley (accepted) ..	1,659 0 0
Woolgar & Sons, Horsham	1,633 0 0
Morris, East Grinstead	1,552 0 0
Charlwood Bros., East Grinstead ..	1,324 0 0

For alterations and repairs to Nos. 33, 35, & 37, South-west Bridge-road. Mr. Fred M. Putley, architect:—
T. Rider & Son (accepted) ... £1,538 0 0

To Contributors and Correspondents.

ALL LETTERS and COMMUNICATIONS referring to LITERARY and ARTISTIC MATTERS must be addressed—

"To the Editor of THE BUILDER,
46, Catherine-street,
Covent Garden, W.C."

And not to any individual by name.

*G.R.-A. J. B. & Co. (too late for this week).—C. H. C. Paris (please send name and address).—G. P. B. Chicago (shall be sent).—Messrs. E. & C. (below our mark).—R. G. (next week) correspondents should address the Editor, and not the Publisher except in cases of tenders.

All statements of facts, lists of tenders, &c. must be accompanied by the name and address of the sender, not necessarily for publication. We are compelled to decline pointing out books and giving addresses.

Note. The responsibility of signed articles, and papers read at public meetings, rests, of course, with the authors.

NOTICE TO ADVERTISERS.

Persons advertising in the *Builder* may have REPLIES ADDRESSED TO THE OFFICE, 46, Catherine-street, Covent-garden, W.C., FREE OF CHARGE. Letters will be forwarded if addressed envelopes are sent, together with sufficient stamps to cover the postage.

CHARGES FOR ADVERTISEMENTS.

SITUATIONS VACANT, FELLOWSHIPS, APPRENTICESHIPS, TRADE, AND GENERAL ADVERTISEMENTS. Six lines (about fifty words) or under 6s. 6d. || Each additional line (about ten words) | 3s. 6d. |

Terms for Series of Trade Advertisements, also for Special Advertisements on front page, Competitions, Contracts, Sales by Auction, &c. may be obtained on application to the Publisher.

SITUATIONS WANTED. Four lines (about ten words) or under 2s. 6d. || Each additional line (about ten words) | 6s. 6d. |

*PREPAYMENT IS ABSOLUTELY NECESSARY. *Stamps must not be sent, but all small sums should be remitted by Cash in Registered Letter or by Money Order, payable at the Post-office, Covent-garden, W.C. to DOUGLAS FOUDRINER, Publisher.

Addressed to No. 46, Catherine-street, W.C. Advertisements for the current week's issue must reach the Office before THREE o'clock p.m. on THURSDAY.

The Publisher cannot be responsible for DRAWINGS, TESTIMONIALS, &c. left at the Office in reply to Advertisements, and strongly recommends that of the latter COPIES ONLY should be sent.

TERMS OF SUBSCRIPTION.

"THE BUILDER" is supplied direct from the Office to residents in any part of the United Kingdom at the rate of 18s. per annum, *Postpaid*. Remittances payable to DOUGLAS FOUDRINER, Publisher, 46, Catherine-street, W.C.

Best Bath Stone.

WESTWOOD GROUND,
Box Ground, Combe Down,
Corsham Down,
And Farleigh Down.
RANDELL, SAUNDERS, & CO., Limited,
Corsham, Wilts. [Advt.]

SUMMER-DRIED

Corsham Down Stone

For Winter Use.

PICTOR & SONS, BOX, WILTS. [Advt.]

Douling Freestone and Ham Hill Stone of best quality, in blocks, or prepared ready for fixing. An inspection of the Douling Quarries is respectfully solicited; and Architects and others are CAUTIONED against inferior stone. Prices, delivered to any part of the United Kingdom, given on application to CHARLES TRASK, Norton-sub-Hamdon, Ilminster, Somerset.—Agent, Mr. E. WILLIAMS, 73, Charlotte-street, Portland-place, W. [Advt.]

Douling Freestone, Of best quality, supplied from their own Quarries and Kilns by STAVEL & HAWK, Stoke, Ilminster. Agent, Mr. H. MITCHELL, 5, Augustus-road, Hamersmith, London, W. [Advt.]

Asphalts.
Seyssel, Patent Metallic Lava, and White Asphalts.
M. STODART & CO.
Office:
No. 90, Cannon-street, E.C. [Advt.]

Asphalts.—The Seyssel and Metallic Lava Asphaltic Company (Mr. H. Glenn), Office, 38, Poultry, E.C.—The best and cheapest materials for damp courses, railway arches, warehouse floors, flat roofs, stables, cow-sheds and milk-rooms, granaries, tun-rooms, and terraces. [Advt.]

Immense quantities of
DRY WAINSCOT,
DRY MAHOGANY,
DRY WALNUT,
in all thicknesses.

B. J. HUDSON & SONS,
Whitfield-st., W., and Great Peter-st., S.W.
London. [Advt.]

J. L. BACON & CO.,
MANUFACTURERS OF IMPROVED
STEAM AND HOT-WATER
APPARATUS,
FOR WARMING AND VENTILATING
Private Houses, Churches, Schools, Hospitals,
Manufactories, Greenhouses, &c.
OFFICES AND SHOW-ROOMS:—
No. 34, UPPER GLOUCESTER PLACE,
DORSET SQUARE, LONDON, N.W.
And at DUBLIN, BELFAST, GLASGOW, and
NEWCASTLE.
Illustrated Pamphlet on "Heating" post free.

CHAPPUIS' PATENTS FOR REFLECTING LIGHT.

DAYLIGHT REFLECTORS OF EVERY DESCRIPTION,

ALSO

ARTIFICIAL LIGHT REFLECTORS.

WHY BURN GAS!—CHAPPUIS' REFLECTORS DIFFUSE DAYLIGHT.—They are exclusively adopted by and fitted at Buckingham Palace, all H.M. Government Offices, Houses of Parliament, H.M. First Commissioner of Works, the Metropolitan Board of Works, British Museum, South Kensington Museum, Royal Institution, Guildhall Museum, on board H.M. Ships, also Railway Companies' Offices, Hospitals, Institutions, Banks, Insurance Offices, Manufactories, Private Houses and generally from Noblemen's Mansions to Artisans' Work-shops. 30,000 in use in London alone. Patronised by leading Architects, Engineers, Contractors, &c., &c.

N.B.—For Prospectuses and Diagrams, address Stamped Envelope to

P. E. CHAPPUIS, Patentee and Manufacturer, 69, FLEET-STREET, LONDON.

NOTICE.—The POLYGONAL REFLECTOR (Latest Patent) FOR ARTISTIC and PICTURE GALLERIES. Its construction allows of the angle of light being readily altered so as to reflect in any desirable direction.

The Builder.

Vol. XLV. No. 2122

SATURDAY, DECEMBER 15, 1883.

ILLUSTRATIONS.

New Offices and Warehouse, New-street, Bishopsgate-street Without.—Mr. Charles Bell, Architect	789
Palace now being Built for the Maharaja Holkar of Indore (Central India).—Mr. John Campbell, Architect	792
The Indian Court, South Kensington (Double-page Photo-Lithograph)	791, 795
Cottage Hospital, Surbiton, Second Premised Design (Plans, p. 789)	799
St. Bede's Church, Liverpool (N.E. View).—Messrs. J. B. E. Catts and Mackmurdo, Architects	81

CONTENTS.

"The Tale of Troy Divine"	777	New Premises, New-street, Bishopsgate street	786	The "Parson's Umbrella"	817
Circulars	778	Design for a Cottage Hospital	789	Roman Remains at Priford, Abingdon	815
The Architecture of English Fretwork	790	Palace for the Maharaja Holkar of Indore, Central India	792	Dilapidations: Galpin v. Hussey	810
The City Guide, the Apprenticeship System, and Technical Education	781	The Indian Court, South Kensington	791	Hospital Sanitation	815
The Suez Canal Intolerable: A Solution	782	St. Bede's Church, Liverpool	795	Sewers and House Drains	805
Architectural Association: "Papers"	792	Open Spaces and Recreational Grounds	803	Liability for Damage caused by Hoardings: Wilson v. Clarke	805
Egyptian Character and Egyptian Art	793	Machinery at the Sunfield Crib Show	813	Provincial News	806
The Royal Academy: Students' Designs	794	Conference on the Dwellings of the London Poor	813	Church Building News	806
Exhibition of Decorative Art	794	Schools of Art	813	Books, Papworth's Renaissance and Italian Styles of Architecture (Batesford); Rev. H. H. Bishop's Pictorial Architecture of the British Isles; Proceedings of the Association of Municipal and Sanitary Engineers and Surveyors (Spence)	805
Two New City Thoroughfares	794	Building Patent Record	813	Varietorum	807
Discovery of Roman Antiquities	795	Drainage and Water Supply	814	Miscellaneous	808
Embarcadero in Rome	795	Iron and Concrete	814		
The Uncovering of the Facade of the Cathedral of Florence	795	"Quintiles"	814		
		The Law Business of Architects	815		



"The Tale of Troy Divine."*

R. SCHLIEMANN has done so much to present to the European world of the nineteenth century a picture of prehistoric civilisation, that to any new work from his pen, or from his spade, his former publications must present the most formidable rivals. Especially is this the case with reference to his present work, "Troja," as compared to its predecessor, "Ilios." For in that fascinating volume not only has the great explorer brought before us a description of the successive cities reared on the Mound of Hisarlik, but he has further presented us with an autobiographical sketch, rich with a romance like that of

the well-spun fictions of De Foe. It would be difficult to cite from any literature, whether of fiction or of biography, a more bewitching story than that of the poor German boy who, with his imagination kindled by the noblest of epic poems, came to the conclusion "Troja fuit, and, if so, its remains must exist." It might have occurred to many an imaginative child that this was the case, but to form on this basis the resolution to seek for the traces of the great centre of ancient strife, to fight the world single-handed till he had won the means for travel and for exploration, and then to travel, to explore, and to discover,—all this betokens a perseverance worthy the name of genius, and the record has somewhat of the charm of a fairy tale.

But with all the admiration that we have felt, and expressed for "Ilios" and its predecessors, must be blended the remembrance that the point of view taken by Dr. Schliemann is hardly that which we conceive will be permanently occupied by men of the highest culture; and even that the great importance which he, not unnaturally, ascribes to every fresh detail of discovery is slightly out of scale. Much that is new, and much that is interesting, is to be found in the pages of "Troja." But, after all, it is little

more than a supplementary chapter to "Ilios"; and the substitution of a Latin for a Greek name, giving the idea of a substantially new work, is hardly to be commended. Again, while we sympathise far more closely with Dr. Schliemann than with some of the assailants with whom he does sturdy battle in the pages of "Troja," we think that he could well have afforded to let them alone. And in some points, as in the reiterated arguments as to *διπλὰς ἀμφοτεπαιλλων*, the subject becomes wearisome, and the general truth of Schliemann's theories is rather obscured than otherwise by the endeavour to push them too much into detail.

In fact, we do not ourselves hold that Schliemann has altogether done himself justice, or risen to the full height of the great argument which he has done so much to open. The naïf view of the imaginative German child appears to be still held by the great German explorer. Homer to him was an ancient poet, who described a city and a war, brave men, and the fairest of mortal women, as they once existed, and lived, and moved; and it was to verify the historic accuracy of the mighty epic that the explorer took his pick-axe in his hand. We cannot ourselves hold that the account when reduced to questions of feet and inches, of dates and measurements, of stone, of brick, or of bronze, is much less fanciful, not to say fantastic, than that search for the four rivers of Paradise which is said to have detained a great African traveller so long among the pestilent morasses of the Nile. What Schliemann has really done is of a higher order than he himself conceives. The true outcome of his work appeals more profoundly to the imagination than to the reason, at the same time that it sheds a bright ray of light into the gloom of the past. Schliemann has discovered, past all doubt or cavil, the site of a centre of human art and worship, and rule and war, that was old before Rome was founded, and that appears to have been more repeatedly the seat of empire than even the Eternal City itself. That amid the periods of triumph and of disaster that rolled over pre-historic Hisarlik occurred a siege and an overthrow which early Greece took as a motive for the Epos, Schliemann has, we think, unquestionably shown. But when he tries to tie Homer down to the details now revealed by the spade, we think he as much misses the conception of that in which the truth of poetry consists, as would the critic who should attempt to prove the truth of Macbeth by an enumeration of the number of trees in Birnam Wood, or by a careful measurement of the distance from that spot to "Great Dunstan."*

In the preface to "Troja," Professor Sayce has, to a certain extent, adopted this view. He has referred to the destructive criticism of Niebuhr and his school, a criticism which affects the poetic truth of the Iliad no more than a flight of arrows would affect an ironclad. But Mr. Sayce has considered that this "work of

destruction necessarily precedes the work of construction." Whether that be so or not, we must agree that Schliemann "has introduced a new era into the study of classical antiquity, has revolutionised our conception of the past, has given the impulse to that research with the spade which is producing such marvellous results." Mr. Sayce, by the way, does himself great injustice by his eccentric spelling, which has the effect of disposing the reader to close the book. The attempt, led by men of less learning than the Professor, to displace the classical English spelling of words brought into our language from a Latin source, by a very imperfect Greek transliteration, has been gracefully touched by the satire of Bulwer. Spelling reform, as it is called, has its chief advocates among the writers of the "Fonetik Nuss"; and we must allow to each person the plea that there is no absolute tribunal in matters of taste. But to print on the same page Myia and Thraké, Troy and Hektör, Peisistratos, Orkhenomos, Iliad, and Odyssey, is to perplex the reader by an unmeaning jumble of letters for which there can be no excuse.

"The present volume," says Mr. Sayce, "may be considered as the supplement and completion of 'Ilios.' Both Hisarlik and the rest of the Troad have now been systematically and thoroughly excavated in a way in which no similarly large district has ever been excavated before." Dr. Schliemann has explored every ancient site in the Troad, besides completing the study of Hisarlik itself. Only two other sites bearing evidences of prehistoric habitation have been found on the Trojan plain. These are the mounds of Hanal and of Besika. But the pottery of Hisarlik has a stamp that is special to itself. It is unlike that found in any other part of the Troad; although on the European side of the Hellespont, on the site of what has been called the tumulus of Proteislaus, pottery and stone relics have been found which closely resemble those in the lowest stratum, or first city, of Hisarlik. Hence is deduced a confirmation of the old Greek traditions to the effect that the founders of Troy were of Thracian descent.

The researches detailed in "Troja" have led Dr. Schliemann to the conclusion that the most stately and famous of the successive cities reared on this secular mound, which we may well allow the discoverer to call the City of Priam, was not the third, but the second settlement on the site. Two distinct periods, however, he tells us, can be traced in the life and history of this second city; an older period, when its walls and edifices were first erected, and a later one, when they were enlarged and practically rebuilt. And the subject is somewhat complicated by the discovery that evidence appears to exist of two effects of fire on the ancient structures, of a totally different character,—the one constructive, and the other destructive. On the 3rd of February last—

* "Troja: Results of the Latest Researches and Discoveries on the Site of Homer's Troy, and in the heroic Tumuli and other Sites, made in the year 1882; and a Narrative of a Journey in the Troad in 1881. By Dr. Henry Schliemann. Illustrated. London: John Murray, 1884.

(*Builder*, vol. xlv., p. 133), in referring to a letter from Dr. Schliemann, printed in a morning journal, we called attention to the suggestion, then first made by him, "that the walls of at least one of the buried cities were built of unburned bricks, and that on the completion of the wall its face was baked, or vitrified, by means of enormous fires kindled at the foot." We then cited, as closely pertinent to the question, the existence of vitrified earthen towers in Scotland, and the marks of vitrification of the seven-staged temple called the Birs Nimrud. Dr. Schliemann has now gone further into this question, and has shown that holes were left in the walls of unbaked brick, at distances of about 4 metres apart, which he conceives to have been intended as flues to assist in the process of vitrification *in situ*. We refer to the work itself for the details, and also for those of what the explorer regards (p. 86) as results of the destructive conflagration of the city. Our own remarks as to whole-burned walls have been repeated, or independently made,—by Professor Sayce (p. 180), who refers to the Birs Nimrud, and also to Craig Phadrig, near Inverness, as instances of walls fused into a compact mass after they were built. And Mr. J. D. Butler, President of the State Historical Society of Wisconsin, cites a spot called Aztulan, fifty miles to the east of Madison, where a ruin exists which he concludes to bear evidence of a similar mode of treatment.

Copper nails or bolts, some of large size, bronze lance-heads and knives or daggers, bronze pins (which Dr. Schliemann persistently calls brooches), objects in ivory, chiefly of ornamental character, sling bullets of hematite, axes or hammers of diorite and of jade, and pottery of various kinds, are figured among the hundred and forty illustrations of "Troja." One point deserves attention as new. The use of round-bottomed vases, cenoche and others, which could not stand on a table, appears to have endured for a long period. Connected with this form of vase is to be noted the existence, in some objects, of ears or projections perforated with vertical holes, the object of which apparently was to allow of the suspension, from pegs or beams, of vessels containing food or drink. This mode of suspension may be thought to have been a necessity among people who were unprovided with tables or shelves; and is illustrated at the present day by some of the habits of the Ainos or hairy people of Japan, whom Miss Bird describes as the survivors of an Aryan race. On page 183 of "Troja" is figured a clay ring, which Dr. Schliemann considers to have been used as a stand for vases with a convex bottom. This, if so, looks like a transition form. It occurred in the third city. But in the first city, together with round-bottomed vases, are found vessels with feet, and also vessels with stands, from which it may be argued that the introduction of tables had occurred in or before the earliest period illustrated by the remains. Thus such cups and jugs as are figured on pp. 34, 35, while rude in form, and but slightly baked and heavy, yet show that the potter's wheel was in use, and also indicate the use of tables as a domestic convenience. We feel some confidence that the evidence of the introduction of tables which is furnished by the existence of vessels fitted to stand on a table, will hereafter be regarded as a mark of date in the prehistoric past. Tables, of course, were known to Homer, and it is not surprising that we should have this secondary evidence of their use by the inhabitants of the pre-Homeric city.

Dr. Schliemann must be allowed to speak for himself as to the results of his explorations in 1883. "To recapitulate the results of my five months' Trojan Campaign of 1882," he says (p. 277), "I have proved that in a remote antiquity there was in the Plain of Troy a large city, destroyed of old by a fearful catastrophe, which had on the hill of Hisarlik only its Acropolis, with its temples and a few other large edifices, whilst its lower city extended in an easterly, southerly, and westerly direction, on the site of the later Ilium, and that consequently this city answers perfectly to the Homeric description of the site of sacred Ilios. I have further once more brought to nought the pretensions of the small city on the Bali Dag, behind Bonnarbashi, to be the site of Troy, inasmuch as I have shown that it belongs to a much later time, and that it cannot be separated from the strongly-fortified city on Eski Hisarlik, which, at a distance of only a few hundred

yards from it, crowns a lofty hill on the opposite bank of the Scamander, having been built simultaneously with it, and having been, together with it, the key to the road which leads through the valley of the Scamander into Asia Minor.* I have further proved that the accumulation of ancient ruins and debris, which exceeds 16 metres in depth on the hill of Hisarlik, is quite insignificant on the Bali Dag, as well as on Eski Hisarlik and on Mount Fulu Dag, and amounts to almost nothing in the only two places on the Troad where the most ancient human settlements ought to have existed, and where the archaeologist might confidently expect to find a rich abundance of most ancient pre-historic ruins, namely, Kurshunlu Tepesh (Dardanié and Palaeosepis) and the Chali Dag (Gebreñé). I have proved that the most ancient remains on all these sites, scanty as they are, belong most probably to the period between the ninth and the fifth centuries B.C., and that there is no trace among them of pre-historic pottery."

Dr. Schliemann proceeds to say that his excavations show that the tumuli known by the names of Achilles and of Patroclus cannot claim a higher antiquity than the ninth century B.C., which he regards as the Homeric age. On the other hand, he ascribes to the tumulus called the tomb of Proteus a date coeval with that of the second city of Hisarlik, "which perished in a direful calamity." He considers that his excavations prove that the earlier inhabitants of Ilium came from Europe, and not from Asia; and he repeats the remarks as to the vitrification of the walls *in situ*, and as to the wooden ante or parastades, as to which we refer the reader either to the pages of "Troja," or to our own previously cited article of the 3rd of February, 1883, entitled "Earthen Monoliths."

Keeping in mind the distinction which we have already attempted to indicate between poetic truth and minute determination of details, we must concede to Dr. Schliemann the title that he most covets, that of the discoverer, or recoverer, of Troy,—the Troy of Homer, of the Epos, and of the days when the gods came down on the slopes of Ida. Is not that a wreath of laurel green enough to content him? For ten years he has been at work on the subject; a period, he says, "which has a faded connexion with the legend of the city." So be it,—that golden legend, which can only be vulgarised by any attempt to give to it the exactitude of a builder's specification. Let Dr. Schliemann act on these, his own words, and his assailants are nowhere. A long-enduring city, of which the walls and edifices, while covering the site of a yet more ancient town, had undergone enlargement and restoration; an acropolis that overlooked the plain, crowned with temples and other large buildings; massive walls interspersed by towers; treasures of golden wealth; a final destruction by fire,—these were the main features of the Hisarlik city,—the second, so far as can now be made out, reared on the commanding site. What more does the student of Homer require to know, in order to agree with Professor Sayce, when he says "it is difficult to resist the conclusion that Dr. Schliemann has indeed discovered Ilium?"

In insisting on the essential difference between such an identification as we have before suggested as applicable to Dunsinane, to Elsinore, to the Cave of Bellarion, or to any of the imperishable scenes around the shadowy names of which the genius of our greatest poet has thrown an undying halo, and the true archaeological value of the work of Dr. Schliemann, we are convinced that we rightly divide what is due to poetry, and what to history,—to pre-written history, or history which, unlike that of Egypt or of Babylonia, has left unfortunately no written memorial. The very foundation of precise history,—dates,—here fails us. "The date," says Mr. Sayce (p. xxi.), "fixed for the destruction of Troy by Eratosthenes,—though on evidence, it is true, which we cannot accept, would agree wonderfully well with the archaeological indications with which Dr. Schliemann's excavations have furnished us, as well as with the testimony of the Egyptian record." And how long before that approximate date of 1183 B.C. was the

city founded? Roman relics within our own shores, and observations elsewhere, concur in indicating a rise of a foot in a century as giving a rough approximation to the age of an ancient site. Rough it must be, because it takes no account, on the one hand, of the depth of the debris piled up by one great overthrow, and, on the other hand, of long periods, perhaps, of desolation. But taking it at the roughest, we should have a period of nearly 5,000 years,—reaching back to more than 3,000 years before the Christian era,—for the early settlers on Hisarlik. At that date two contemporary dynasties were reigning in Egypt,—the eighth at Memphis, and the ninth at Heracleopolis. The first long dynasty of Chaldean kings was reigning at Babylon. Agriculture, the use of seed corn, and monarchical rule had been introduced into China. There is nothing inherently improbable in supposing the first settlement in Hisarlik to have been as early as 3,000 B.C. What would, in our opinion, throw more light than anything else on the subject in its present stage, would be the construction of an accurate set of sections, showing the natural soil of the hill, and the superposition of the different strata. Graphic representations of that nature have a great value to the student. If made with due care they confirm or correct one another; and if sufficiently extensive would enable us to distinguish between the general depth of the debris of each particular period, and the maximum depth of the same stratum in low-lying points, or under the site of some special overthrow. No calculation of time from depth of ruins can be worth much without such sections as we suggest.

"Troja" contains a contour plan of the site of the lower city, as regarded by Dr. Schliemann, which shows how small a space relatively was occupied by the Acropolis. There is also a plan of the Acropolis itself, on a scale of about 18 metres to the inch, indicating, by different colours, the walls of the first, second, and third cities. This plan would have much more value if, instead of showing broad and regular lines of wall, it had indicated with exactitude what had actually been uncarved, using dotted lines, or some similar method, to distinguish the theoretical restorations from the actually existing ruins. There are no contour lines on this plan, and it is not fully intelligible in the absence of a section, or any means of determining the depths. A "map of Troas," from the survey of Graves and Spratt, in 1840, is described as revised and completed by Dr. Schliemann. The representations of the pottery and other objects are apparently engraved from photographs, and are very good. As much cannot be said of No. 15, a "View of the great Substruction Wall of the Acropolis," in which the representation of masonry on a vertical face, below the figure with a pick-axe, is to us unintelligible. Either photographs, diagrams, or really artistic sketches have value of their own, but No. 15 is a failure. These are minor defects, but it would be unjust to Dr. Schliemann himself, as well as to the reader, not to mention cases where the absence of competent editorial supervision detracts from the great value of the work.

CIRCULARS.

For a ten minutes' dip, the "Post-office London Directory" is probably the most entertaining compilation which the painstaking of book-manufacturers has ever produced. Nothing makes one see so clearly the energy with which circulars are hurled forth than a careful glance at a certain page, where the names of over a dozen circular addressers,—otherwise called envelope addressers,—are to be found. Hints are given there in a modest way with reference to capacity, staff, and scientific methods of going into and getting through work. Certain of them make their boast of knowing the names of all the tradespeople and professional people in the United Kingdom,—and of all the other people upon whom they think paper, ink, and postage may possibly not be wasted. Investors are known apparently by some special instinct by these able servants of the public, and very properly regarded with special reverence. Foreign lovers of their kind seem also to cultivate sedulously that worthy class of our countrymen,—if we may judge by the liberality with which the circulars of foreign lotteries reach us and our friends.

Modern Quaker bankers,—possessed of some

* It should be observed that the name Eski Hisarlik occurs twice on the map; once on the spot here referred to, which is about seven miles from Hisarlik, and again in the Thracian Chersonesus, on the European side of the Hellespont, near the tumulus of Proteuslaus.

sense of humour, and of the requirements of their own time,—place their addresses and “Esteemed Friend,” in lithography, at the head of their note-paper, and write the remainder of their valued communications, probably with a stylographic pen,—the heading is constant, but the matter varies. This presents an odd contrast with the old fashion of circular letters, specially addressed and specially begun and concluded, but the body the same in all. These are the circular letters to which our Post-office accords the privilege of being carried for a halfpenny each, or if they are of ample dimensions, a halfpenny for each two ounces. The official description makes them “letters in identical terms, intended for transmission to several persons, and the whole or greater part produced by means of ordinary type, engravings, lithography, or other mechanical process.” Circular letters have, in the gradual retrenchment of ceremony, frequently ceased to be letters at all, and the word circular by itself has to meet the case.

Precisions,—hurt by observing the unsteady walk of words which they have struggled to keep straight,—feel, it is said, alternately a sublime and gentle pity, and a desire to gag the whole human race. Most of us seem to worship the precisians; but have, in our secret hearts, a preference for the agreeable ease which brings some words into common use and honour, sends some into retirement more or less complete, and slowly modifies the sense of others. The word “circular” at the present moment is used of anything multiplied by type, engraving, lithography, or other mechanical process, which is delivered by post or by hand in considerable numbers, and has a natural affinity for a waste-paper basket. The circular, which calls attention to a new stone or stone quarry, a patent plaster, stove, paint, boiler, trap, valve, lock, sash-fastener, or coat-hook, is far too often treated as an impertinent intruder. The dissembler who receives it gives a mere glance,—makes it, if possible, into a very inferior ball,—and gets rid of it rapidly. Mr. Walter Shandy’s “pish!” would be the expression looked for as in harmony with the action,—the relief appropriate to so strong a sense of burden, injury, and indignation. The ingenious reader may fairly be left to make, if he chooses, any further analysis. Let it be agreed that in well-regulated minds there is a hearty dislike of useless lumber; that Charles Lamb’s mockery of the saving, by other people, of old match-boxes and similar trumpery may be relished with grim satisfaction and without remorse, as also the Sartor’s desires ancient old clothes, and the things of which they may stand as types.

A free indulgence in expansions and digressions might, however, lead to the way of treating trade catalogues and their congeners indulgently, and keeping them ready for reference, being comprised in a single paragraph; and we wish to put on record a longish list in the hope that it will be referred to frequently. The plan has been in use for a dozen years or more in the office of a well-known London architect, who happened to state to apprehending ears that the office-boy could lay hands on a special paper (the description of a patent system of glazing), in less than a minute, and was induced to explain, and afterwards to give permission to make use of the explanation. Binding, or sticking into blank books of guards (without leaves) are both very good, but the papers vary very much in size; some soon grow out of date, and a set of volumes of that sort require clever indexing, or the needle is too well hidden in hay. Besides, carrying about a comely quarto or folio book is a different thing from getting the right pamphlet, engraving, or memorandum, and carrying it away in your neat brief-bag. With large pigeon-holes and a rough system of classification such as must be resorted to in practice, many papers are found to possess a vagrant temper, and three pigeon-holes at least must always be searched in order to discover a single wanderer.

Mr. J. Douglass Matthews has classified boldly in the *Architects’ and Contractors’ Handbook*,* of which the first number has been published recently. He has taken all the circulars sent

out by manufacturers and others who make things to be used in and about buildings, epitomised them, placed the epitomes under headings, and then grouped them under one or another of the dozen building trades. Special sections are also devoted to sanitary manufactures, &c.; stoves and warming-apparatus; gas lighting and warming; electric lighting; water-closets and supplies, and ventilation. Some querulous persons may, on noticing that sanitary work occupies about a quarter of the book, and warming and ventilation almost another quarter, be more hopeful of these matters receiving in time disproportionate attention. The handbook, which is to be issued annually, is intended, says the preface, to be always the most modern guide,—“to the immense variety of materials and appliances for the construction and adornment of buildings, and the convenience and health of the inmates, which the facilities afforded for the transit of materials in the raw and manufactured state, and the rapid strides made by science in recent years, have placed within reach of the architect and builder.” The novel idea may be commended, and a useful annual publication looked for, we hope, from the skilled and trustworthy editor for many a year. It may, perhaps, be worth while to hint that information as to prices might be encouraged either in the abridgment or in the advertisements. The prices need not occupy much space nor be put in the same type as the statements; but if such considerations are to be kept rigidly out of sight, the touch of the solid earth seems wanting. Abstinence from any bias or expression on the part of the editor, a sort of attitude of seeing all fair to everybody, may also be too rigidly adhered to. Improvements are promised, that is willingness to make them when required is mentioned. The editor earnestly begs architects, surveyors, contractors, and others, especially those resident out of the metropolis, to kindly furnish him with any information as to materials and manufactures that are not now included,—which seems a fair request, and one that should meet with plenty of response.

It was the classification, however, which brought the book under notice at this point. In it the very proper desire to keep down the number of the trade headings leads to odd results. Concrete building, for instance, appears under “bricklayer”; and fireproof construction (such as the Dennett vault) is placed under the heading of “ironfounder and smith.” Many things of this sort are easy and proper when you have condensation, pagination, indexes, and binding. In dealing with the circulars themselves the right plan is to take care that every paper, of any value, shall reach some place prepared for it within, at most, a month of its arrival. It must be marked in such a way that, if it is removed, it may be replaced at the cost of next to no thought, as part of the putting away which should recur at the end of every well-spent day. After receipt and examination the circulars should be collected, say in a deed-box. Every month an intelligent assistant should mark each paper in pencil with a letter and a number, and an office-boy should stencil them in Indian ink in a corner. The stencilled letters should be bold,—not less than $\frac{1}{4}$ -in. high. A good way of keeping the papers is to wrap up a convenient number of them in a piece of holland,—about 2 ft. 6 in. square proves a good size. Each wrapper should have a couple of strong tapes about 1 ft. 6 in. long, sewed to opposite ends. The wrappers having been duly labelled on the outside, the bundles may be arranged on end on a couple of shelves labelled along their edges.

The only real difficulty is in settling the right destination of any paper in which two specialties, at least, are dealt with,—the best rule is to place it by the best known speciality. The thinning out of superseded papers,—some for destruction and some into a bundle of “superseded and duplicates,”—should be done about once a year, and circulars issued by the same manufacturer on allied subjects may, with advantage, be fastened together. The creation of new sections to meet fresh breakings out will, happily for us all, also be required. The compilers of directories steadily call attention to the additions made every year to meet the requirements of fashion, science, or necessity. There are quaint illustrations of manners in the fact that dado manufacturers, drain-cleansing machine manufacturers, and artificial human milk manufacturers, among others, were

recently admitted under these special headings to the London Directory for the first time.

The following is a list of Trade circulars, showing the way we suggest for grouping, marking, and keeping them, so that they may be readily referred to:—

A1. *Machinery*.—Steam boilers and engines. Boiler sheathing,—non-conducting compositions. Hot air, gas, and wind engines. Bellows and forges.

A2. *Building Plant*.—Cranes, crabs, pulley-blocks. Elevators. Lifts,—hydraulic, steam, and hand. Hydraulic presses.

A3. *Nortair Mills*.—Stone working and tunnelling machines, excavators; stone-breaking machines; explosives for blasting.

A4. *Woodworking Machinery*.—Workmen’s tools generally.

B1. *Bricks*.—Common building, slag, blue, chinker, facing, glazed, moulded, ornamented, beaded for garden walls.

B2. *Tiles for Paving*.—Ordinary ware, Staffordshire, encaustic; kiln bricks for drying mat.

B3. *Tiles for Wall Linings*.—Glazed tiles, majolica tiles, Neapolitan, &c.; porcelain; Doulton’s ceramic decoration.

B4. *Tiles for roofing*.

B5. *Fireclay Goods*.—Flue-pipes (and terra-cotta ditto).

B6. *Stoneware*.—Drain-pipes (also cast-iron drain-pipes); patent joints; gully-traps; stoneware damp-courses, &c. Also drain-cleaning rods; ventilation of drains; testing of drains.

B7. *Terra Cotta*.—Chimney-pots (in all wares); pavings; ornamental work.

C. *Asphalte, Metallic Lava, &c.*—Paving, roofing, damp-courses. Tar-paving.

D1. *Limes, Mortars, Cements*.—Plaster of Paris. Ornamental plastering, sgraffito, patent laminae, papier-mâché, Carion-pierre. Also silicate cotton (slag wool) for pugging.

D2. *Concrete*.—Concrete and other similar construction (Dennett vaults, Brannon’s patents); artificial stone; concrete paving; concrete slab walls.

D3. *Stones, Marbles* (and Imitation Marbles). Granites; onyx; serpentine; mosaics, &c.; stone preserving and insulating processes.

E1. *Slates*,—roofing, enamelled. Tiles for hollow walls (and iron ditto).

E2. *Slate billiard tables*; other billiard materials.

F1. *Iron*,—bond, girders, joists, rods. Corrugated, galvanised, and enamelled iron. Bolts, coach-screws, &c.

F2. The use of iron in fire-resisting construction.

F3. General lists of iron goods. Household requisites (and in other materials). Iron wine-bins.

F4. *Gratings*.—Glazed gratings, &c. Coal-lates, Step protectors (also Hawksley’s patent, Lindsay’s, &c.).

F5. *Iron Windows* (also copper, gun-metal, &c.).

F6. *Iron fences*.

F7. *Portable structures in iron*, &c. Iron churches, &c.

F8. *Ornamental Metalwork*,—gold, silver, brass, bronze, iron, nickel, &c.

G1. *Zinc*,—roofing and manufactured.

G2. *Copper*,—also all lightning conductors.

G3. *Patenters’ Work*.—Public-house fittings, &c.

H1. *Timber*.—Ordinary and rare woods, not wrought. Wood fencing. Wood block floors.

H2. *Machine-made and foreign joinery*; steam-struct machines, &c.

H3. *Parquetry, marquetry, &c.* Wood chimney-pieces, and other wood fittings. School and church furniture. General furniture. Furniture warehousing.

J1. *Hinges*. Locks. Latches. Door furniture. Springs.

J2. *Safes*. Strong-rooms.

J3. *Sash and casement fasteners*. Fanlight openers, &c. Cilt-bars. Sash-pulleys, &c.

K1. *Shutters*,—revolving, and all others in wood and iron. Revolving partitions. Shutter-bars, &c.

K2. *Shop-fronts*. Show-cases.

K3. *Blinds*,—sun, wire, Holland, Venetian, helioscopes, &c. Fittings for curtains.

L4. *Improved ash-windows*. *Sash lines*,—flax, leather, jute, ribbons, chains. Sash-line holders.

L. *Stable fittings and requirements*. Cow-house fittings, &c.

M1. *Warming Apparatus*.—Hot air, hot water, &c.

M2. *Stoves* (except gas stoves, which are in N2); ranges, cooking apparatus, &c. Kitchen boiler explosions, safety valves, &c.

M3. *Laundry Fittings*.—Washing, mangling, drying, &c.

M4. *Horticultural Buildings*.—Horticultural decorations. Nurserymen; also lawn-mowers, garden-engines, and gardening generally. Summer-houses. Rustic work. Cork, &c.

M5. *Smoke doctors*. Smoke-curing machines. Chimney-sweeping.

M6. *Fire-engines*. Fire-escapes. Fire annihilators, &c. Fire-signals.

M7. *Ventilators and ventilating apparatus*.

N1. *Gas manufacture*. Gas apparatus,—fittings, regulators, Spence’s metal.

N2. *Gas stoves*.—Cooking by gas. Gas-baths. Patent gasoliers, &c.

N3. *Petroleum*, &c., stoves. Oil-lamps; oil for lighting.

* The Architects’ and Contractors’ Handbook, and Illustrated Catalogue of Materials and Manufactures. Edited by J. Douglass Matthews, Architect, F.R.E.B.A., District Surveyor for Stoke Newington, &c. Published annually. London: Batsford. Liverpool: Harrison & Co. 1883.

- N4. Electric lighting.
 O1. Domestic, &c., bells; wires and cranks, electric, pneumatic.
 O2. Speaking-tubes. Telephones.
 O3. Church and school bells. Chimes. Clocks. Sun-dials.
 P1. Water and earth closets; trough closets; urinals. Metal traps.
 P2. *Water Supply.*—Pipes (and pipe-joints, &c.), valves, water-meters. Regulations of water companies. Water-waste preventers. Flushing-cisterns. Pumps. Hydraulic rams. Hydrants.
 P3. Filters. Softening water, &c. Refrigerators.
 P4. Penstocks. Sewage meters, &c.
 P5. Disinfectants. Vermin destruction, &c.
 Q1. *Fella*, for roofing, &c. (also for damp-courses). Floor-coverings,—carpets, oil-cloth, linoleum, kamptulicon, cork carpet, &c.
 Q2. Tents. Hammocks. India-rubber goods. Garden-seats.
 R1. Plain glass goods, glass tariffs, &c. Silvered glass. Daylight reflectors.
 R2. Patent systems of glazing.
 R3. *Ornamental Glass*, stained, etched, &c. Sand-blast process.
 S1. Paints, dyes, stains, distemper. Varnishes. Polishing. Copper coating for metal, &c.
 S2. Imitations of woods and marbles. Decorative painting. Sign-board writing.
 S3. Solutions for damp walls. Tin-foil. Laminated lead, &c.
 S4. Decorative wall-papers; also Lincrusta-Walton, &c.

There need be no law against a man's own memoranda on special subjects being put with other people's. The bundles of circulars may be looked upon as a large, somewhat shapeless, and very miscellaneous common-place book. Everybody is, by custom, allowed his own fads as to poking fires and keeping papers; and each man among us is permitted to consider his own fads the most perfect in the universe. Still, however skilful himself, he will sometimes be disposed to feel a little respect for any bridge which has carried some one safely for a respectable time.

THE ARCHITECTURE OF ENGLISH FICTION.

"The romances of the Middle Ages are a mine from which the painful student may extract much valuable information."—SCOTT.

WE propose to consider in a few discursive essays the treatment of English architecture by the great masters of English fiction. The fiction of one age becomes in a sense the fact of the next, and it is mainly in works of the imagination that all real history lies. Writers are never so trustworthy as when unconscious of the truths they convey, and those incidents of their time which flow without effort or comment from their pens, and pass off as mere matters of course, are those as to whose veracity we need have no misgivings. We shall, therefore, accept with due reserve those passages in our authors' writings which are deliberately architectural in intention, and be ever on the alert for those in which the facts as to the architecture of each writer's own day escape him, as it were, unconsciously and by accident.

Speaking broadly, the literature of our country may be divided into three great classes. The romantic literature of the Middle Ages, the dramatic literature of the Tudor and Stuart sovereigns, and that combination of fiction and real life which we call the novel. The latter form of English literary composition cannot be said to date further back than the days of Queen Anne, for De Poe, the first English novelist, though born in the middle of the preceding century, did not publish the great work on which his fame rests until the good queen was in her grave. Leaving aside, for the present, the dramatic division of our subject, we propose, in the first place, to address ourselves shortly to the earliest form of our native literature which falls within our present design, and we wish to observe at the outset that we have never till now appreciated the subtle accuracy of Sir Walter Scott's fiction as shown in the motto we have chosen for this essay. The romance of the Middle Ages, if a mine, is one in which the metal bears a small proportion to the bulk, and its separation is only effected by labour. The architectural student who should rummage the miscellaneous stores which this portion of our literature affords will find his toil but scantily rewarded. Amongst a multitude of references and allusions to the social life and customs of the times the light thrown upon their architecture is, at best, but dim and fitful. This may be owing to the fact that architecture was exclusively in the hands of the ecclesiastics, while the composers

of the romances were laymen. The early metrical romances were inspired by and nurtured on the institution of chivalry, and date from the early part of the thirteenth century. They are one and all singularly destitute of the art of discriminating character. The machinery is nearly the same in all, and the *dramatic persona* of one work bear a remarkable resemblance to those of another. There are knights and squires, ladies and dwarfs, an intriguing and unjust steward who meets in the sequel with exemplary punishment, a priceless steed, a faithful hound, an enchanter, and they can seldom get on without

"A dragon great and grim,
 Full of fire and also venom."

But they are each to each, for the most part, as like as peas. The knights are all handsome and valiant. The ladies are all of peerless beauty, and sometimes progenies of learning and leechcraft. The dwarf, who has a monopoly of wit, is always ugly and generally malignant. There is little to distinguish one knight from another but his shield and the longer or shorter catalogue of his bravery and brutalities. And the ladies are so entirely cast in the same mould that one cannot understand the enthusiasm any single one amongst them could inspire in the breasts of those who were ready to do and dare so much for their favours.

This colourlessness and characterless manner of portraiture, and this lack of individuality, mark the descriptions of architecture by the romance writers when they are not drawing imaginary pictures. It is fortunate that they did not attempt historical accuracy in their treatment of occurrences which were mostly supposed to have happened before their own day. With commendable naïveté,—for which we cannot thank them sufficiently,—the old writers imported into their stories, whenever and where-soever the plot was laid, the dress and manners and surroundings of their own times, just as the ecclesiastical sculptors and the illuminators of our MSS. clothed the Blessed Virgin and St. Joseph in the everyday costumes of the men and women around them. The casual mention of what was to the writer personally familiar may always be trusted. But when he sits down to describe in earnest what we should all so much like to hear about, his fancy gets the upper hand, and he is wildly and grotesquely inaccurate. As a knight is always brave and a lady always beautiful, so a castle is always fair, a tower high and strong, and a palace rich and noble. It is in the details of these qualities and the translation from the abstract to the concrete that all sorts of extravagancies appear. And just as the knights in the stories slay hundreds with their single arm; turn, unaided, the tide of battle and decide the fate of empires by their personal prowess; as the ladies are endowed with impossible perfections, with complexions which shame the whiteness of the snow and the crimson of the rose, and with eyes whose brilliancy make the diamond dull and the sun himself a very second-rate affair; so the palaces and the towers of the author's imagination are invested with every variety of extravagant conceit.

Amongst such hyperbolic touches common enough to the minstrelsy of the Middle Ages the following is pretty well. The scene is the residence of "An Admiral," and is laid in Babylon, of all places in the world; and thus the faithful chronicler proceeds to portray its surroundings:

"About the orchard goeth a wall,
 The *worl* stone is crystal;
 The gravel in the ground of precious stone,
 And of virtue y-wis each one,
 Of sapphires and of sardines,
 Of nyzes and chalcodones."

After such a "sweet and lovely wall" as this, and after garden-walks of precious stones, it is a little disappointing to find that the tower in which the beautiful princess is imprisoned, although a thousand toises long and a hundred broad ("we hope here be truths") is merely built of "the purest marble with mortar so hard that no steel can cut it."

Some little recompense is, however, made us by the glory of the dome or cupola which surmounts the palace, and which is

"Y-wrought with so much rede,
 That men no firen o' night burne
 Neither torche no lantern.
 Such a dome was never bigone,
 It sheweth o' night as o' day doth the sun."

There is in all this an obvious reminiscence of the architecture of the East, which was doubtless known to the writer through the Crusades, and the dazzling brightness and beauty

whereof must have lingered in the memory of many a listening knight and of his "monie" who followed him to the wars.

Now and then one meets in these old poems that one touch of nature which makes the whole world kin, and bridges over the gulf of five centuries. In one instance a lover is recommended to gain access to the tower where his ladye love languishes *par amour*, by assuming the character of an architect charged with the commission to build a counterpart of the tower in a far countree. Minute instructions are given as to the arts by which he is to cajole the warden, with whom he is to gamble and *lose*. There are perhaps some among our younger readers who will be pleased to hear that the pious fraud was entirely successful. When was sympathy found on the side of the father, and not with the lover who would rob him of his daughter?

In the romance of the "Seven Wise Masters," the architect of the period figures in a tragic part, and his fate reconciles us to many of the drawbacks incident to the present practice of the art. The professional gentleman in question was called in by a powerful knight and commissioned to design and build a castle of unusual strength. It was to have a very artfully contrived arrangement of subterranean galleries, stores, magazines, and dungeons for the retention of unfortunate prisoners. These galleries were to form a sort of maze, to be approached only from one point of access, and the construction and disposition of them was to be kept a profound secret, even from the workmen, for the knight and the architect were themselves to fix the last seal to the work, the key of the whole mystery. The work was most happily accomplished in every particular, and to the entire satisfaction of the knightly patron. That is, with one single exception. The secret of the plan was shared by the knight and the architect, and this was one too many for perfect security. The architect might disclose the whole matter, and so, without more ado,

"The knight quit well the service
 Of the mason for his quarryise.
 He slew him soon, that like day,
 For fear that he should ought say."

A practical measure, no doubt, promptly conceived and carried out. The commission of the murder is related without comment or reprobation, and appears to have been regarded as a mere matter of prudent and business-like caution on the part of this "very parfitte gentle knight." The more we become acquainted with this personage through the medium of the old romance the more we are convinced that he was, with rare exceptions, an unmitigated ruffian.

There is, fortunately, very little danger of confounding the imaginary architecture of the old writers when they wish to design something very fine with the real architecture by which they were surrounded. "A fair castle, with spacious orchards and gardens, and a bower, its apices surmounted by vanes, richly gilt and shining like the sun," is a picture which makes no demand upon our credulity, and one which we can recognise and trust; and so we can that of the old manor-house, "surrounded on all sides by a river or moat," and consisting—

"Of chambers and of an high hall
 Of old work, for-crazed all."

The last line brings vividly before us the forlorn and rickety dwelling of the knight whose absence at Court or in the wars is felt in the neglected condition of his ancestral home. But the descriptions which bear the stamp of truth are not in sufficient detail to be of much use to us, and those which abound in detail are manifestly untrue.

A strange glare is occasionally thrown upon the social life of the Middle Ages by a chance passage or allusion, such as that which exhibits the Earl Gaston de Foix coming out of his chamber at midnight to sup, twelve variettes holding twelve torches, which shed a lurid light on a crowd of attendant knights and esquires. We see, in fact, more of the interior of Mediaeval dwellings in these old romances than of the exteriors; but here, again, the interior of one is the interior of all. Almost all the transactions of the household were conducted in the great hall, and one great hall was very much like another. At one end the entry, the screen, and lavatory; at the other the dais, flanked by the great bay-window. In the middle, the brazier, and over it the louvre, soaring high up above the ridge, and garnished with vanes and gilding.

The same picture is presented to us over and over again with its main characteristics unvaried. The life of that time must have been full of ennui, and there is but little wonder that its depressing intervals of tedium and social stagnation should have been broken by wild bursts of revelry, and still wilder fits of savagery and slaughter.

When the prose romance succeeded the metrical romance, and when the invention of printing had reduced to a permanent form what had hitherto been but little more than mere floating tradition, the substance remained unchanged, and the courtiers of our Tudor sovereigns solaced themselves with long stories about giants and sorcerers, which would now be too improbable and incoherent for the entertainment of the nursery.

The feeling that the present time and its doings are unworthy of serious record, and that the Golden Age is always somewhere in the far-off past, appears to dwell eternal in the human breast. It has often formed the theme of the moralist,—from the eloquent protest of Macaulay in the closing words of his marvellous picture of the England of the Stuarts, to the impassioned appeals of Ruskin to find in the life about us, the matter for our pen and pencil. But there is probably little use in exhortations which appear to run contrary to a fixed propensity of our nature. We always magnify the past and underrate the present, and probably shall always do so. We printed but quite lately an appeal from one of the closest observers of nature to our artists to take their stand on the wharfs of the London Docks and see there the sights provided for their brush, instead of hanging about decaying Venice and painting for the thousandth time what has been painted for us often enough already. Long ago Mr. Ruskin pointed out that the only really historical painting is the painting of the scenes of our daily experience. But our painters are, as yet, but half converted. It is true that the finding of the dead body of Harold has dropped out of our catalogues; but sixteenth and seventeenth and even eighteenth century episodes absorb nearly all their attention, and the costume and the old curiosity-shop play far too large a part in contemporary art. The marvels of our own day pass unrecorded while our artists are trying to imagine how the English archers looked at Agincourt, how Elizabeth received her courtiers and parasites in dresses which we hope were as uncomfortable as they were ridiculous, or how the belles and beaux of the last century talked scandal and drank tea in hoops and farthingales.

This indifference to what the passing hour supplies accounts for the dearth of pictures of the arts of the Middle Ages in our early writers, and hence that painful search which Sir Walter Scott truly says is necessary to arrive at any accurate knowledge about those arts.

The revival of classical learning dealt a death-blow to the romantic school, and replaced the dragons and goblins by a not less absurd mythology. The universal passion for travel brought England into constant intercourse with Italy, where the taste for Pagan literature and Pagan art had a hundred years the start of us. Chapman's translation of Homer achieved an immediate popularity, and thenceforth nothing went down but gods and heroes. As a matter of course the taste in architecture ran in classic grooves. All literary references to the art took an antique cast, and our indigenous styles failed to move the admiration of writers filled with the classic ideal. The romantic spirit blazed out again in Spenser, but his verse was an anachronism, and the obsolete phraseology and machinery a mere affectation. It is partly to this cause that we must lay the fact that the architecture of his great poem partakes of the extravagancies of his predecessors, and that gold and ivory and precious stones are his ordinary building materials.

The old romances furnish a clue to the daily habits, the manners, dress, household economies, and occupations of the Middle Ages, to all that pertains to the arts of love and war and the laws of the chase. But we cannot recommend to the architectural student a perusal of the weary lengths of tedious story in prose or verse with the hope that he will extract much profit therefrom. The buildings which failed to elicit the praises of the writers have happily endured to our day, and in their stones are sermons which those who run may read.

In following essays we shall have occasion to

advert to the literary treatment of those edifices when they had themselves become antiquities, and so had graduated in the only school which can, apparently, confer a title to admiration.

THE CITY GUILDS, THE APPRENTICESHIP SYSTEM, AND TECHNICAL EDUCATION.

LONG before the formation of our London School Board, we advocated in these columns the principles embodied in the Elementary Education Act, conscious that such a measure was urgently needed in the interests of the country. Long, also, before the present loud cry for technical education was heard, we urged the matter upon the attention of the City Guilds, and roughly mapped out what these once *bonâ fide* but now nominal guilds of trade could do on behalf of our artisans and the skilled industries of the nation. We well remember how long it took before the City Companies could be convinced of the duties that devolved upon them, and it is a matter for regret that none of these guilds took action in the cause of technical education until an unmistakable note of warning was sounded in respect to their reform. Although the present movement on the part of a number of the guilds in voting funds for the establishment of technical colleges and schools, and awarding prizes for specimens of the best workmanship in particular branches of trade, is highly commendable, it would have come with a better grace had it preceded the threatened measure of reform, than coming after that warning.

Indeed, it is more than probable that, had the City Guilds a quarter of a century ago united, and earnestly gone in for their own reorganisation, and for the cause of technical education, the present scheme of impending reform might never have been formulated. The City Guilds or Companies certainly for several centuries represented the skilled trades of London, and were composed of masters and workmen who were actual and efficient members of the crafts they respectively represented. It is needless to tell the story of how these old guilds degenerated from what they had once been, into merely nominal guilds of trade, becoming at last little more than political and convivial bodies, though performing functions in connexion with the corporation with which they were always associated, or formed a part and parcel of, from an early period. Whilst the Municipal Reform Acts of upwards of forty years ago led generally to the abolition of all the old guilds of trade in alliance with the corporations in the three kingdoms, the municipal body of London and its minor corporations remained untouched. For nearly fifty years, therefore, the Corporation of London and the City Guilds had ample breathing time to take counsel together and devise a scheme through which the old trade bodies might show good reasons for their continued existence. Unfortunately the opportunity was allowed to pass by, and now the City Companies are placed face to face with the report of a Royal Commission which has been sitting for three years, inquiring into the trusts of the companies and their administration.

With the merely political aspects of the reform of the City Guilds we have nothing to do in these pages, nor is it our intention to discuss them, but with the important question of technical education we have obviously much to do, for the building and cognate trades alone form no inconsiderable portion of our artisan population. How best to impart technical knowledge for the benefit of the young workmen of the future, and how the knowledge obtained can be efficiently applied with good results, are questions that deserve serious attention. Owing to the rapid advance of machinery for several years past, and its utilisation in nearly all industrial fields, our old skilled trades are being split up, and a minute subdivision of labour has taken place. The old apprenticeship system, adhered to and insisted upon for many centuries, is rapidly dying out. Indeed, in several trades it is disused, and certain short agreements and conditions between masters and youths take its place. In country towns the apprenticeship system in some trades is adhered to, but in London and other large cities the great majority of our building and other young workmen have never been indentured to the trades that they have partially acquired, or are in process of acquiring. Many youths obtain a knowledge of their trades by working with their fathers in certain workshops where boy

labour can be utilised. Boys or youths at the present time are constantly passing from workshop to workshop, and from job to job, thus "picking up" their trade and gaining experience.

In some places in the three kingdoms it is the custom of late years for fathers to bring their sons to the trade societies of which they are members, and have their boys bound or indentured to the society. This practice appears, however, to be more a matter of form than of real legal apprenticeship, although the youths thus bound may work under the character of apprentices for seven or five years, or until they obtain sufficient practical knowledge of their trade to commence as regular journeymen. We consider that it is a great mistake, and a mischievous one, that the system of apprenticeship should be disused. If through the modern exigencies of life, living, and trade, a seven years' apprenticeship were considered too long, the indentured servitude could be reduced to five years. To learn efficiently some trades seven years' servitude to a master is not too much. Under the old system of apprenticeship the master took an interest in teaching the youth his trade, or seeing that he was properly assisted by his foreman and workmen. The sooner the youth became useful, the more to the advantage of his employer. Under the present loose system, unless the boy is working alongside of his father it is no one's interest to assist him onward, and it depends upon his own efforts to obtain a knowledge of his trade as best he can. We may establish technical schools and industrial workshops in connexion with some of our large factories, as, to some extent, they have done on the Continent, but it is very doubtful whether the system will succeed as well as a regular system of apprenticeship, allied with technical education. Had the apprentices of the old school such facilities for obtaining technical or practical scientific knowledge as our young men of the present day have, our skilled industries would have long since attained a high state of perfection and our class of general workmen would be more plentiful in the country, instead of being rapidly disappearing, to the great loss of the community. The great value of technical education to our present-day workmen and those of the future will lie in the facilities they will be afforded in usefully applying it. This knowledge must not lie on the workman like Saul's plate on the shepherd boy, encumbering him instead of arming him. Let us look some of the difficulties straight in the face. A quota only of our young workmen can become foremen and masters, and the great majority must remain all their lives operatives. This fact would be no reason why all our young workmen should not still be ambitious to obtain technical knowledge. To understand drawing; to know the properties of stone, wood, bricks, lime, and mortar, the strength of materials, and the chemical or other changes that these undergo, their bearing power, and how they are affected by the action of other elements, is very useful, and may be, under certain circumstances, indispensable knowledge. The value of this knowledge, as we have said already, depends on how our workmen can apply it. If some of our simple trades are split up into several subdivisions, and if this disintegrating process continues in respect to other trades, it is evident that the part-workmen of the present day or the part-workmen of the future as much as would our old future will not benefit as much as would our old class of general workmen. The part-workman who will only know a little bit of his trade, the one-sixth, or possibly the one-twelfth, is left no scope for applying his technical knowledge. The executive workman, however, who is able to set out any portion of the work of his trade and finish it, is the one, and he alone, who can truly benefit by the advance of technical knowledge as applied to skilled handicraft. There is no denying that machinery has been a boon in many ways, and has greatly benefited a large number of workmen in different trades, by lightening heavy and toilsome labour hitherto performed by the hands. It has cheapened the cost of production and the necessities of life, while at the same time annihilating sundry old forms of manual labour and reducing the hands to poverty. There are without question certain drawbacks to the universal employment of machinery, and some of these we have indicated. Our present subdivided labour, which is the outgrowth of its application, is leading fatally to our workmen losing all interest in their work, which as a whole none of them can call their own. What is made up of bits of the many, can never

efford enjoyment to the one contributing his small part. The stone carver or mason, who of erst gave expression to the face or form divine he embodied in stone, or who developed a panelled niche in masonry, impressed his mind upon his work, which may be interpreted as conscientious and enduring handicraft. Let us not run away with the fact that our workmen of old had not sound practical geometrical knowledge, though the cry of technical education was not heard in the streets in their time. The many massive and light and beautiful open-timber roofs which our British carpenters constructed in the Middle Ages go to prove that the problems of Euclid, and the application of the principles enunciated in his work, were practically acted on by our old master-workmen. Marvels in masonic construction, and in carpentry and joinery and other building trades, were executed by our Medieval builders and workmen.

The age of steam has, however, introduced a new system of ways and means into our midst; and while availing ourselves of any benefits it brings us, we must not travel too fast or allow ourselves to be swept too far forward by the current of innovation. The traveller sometimes finds it necessary to retrace his steps to reach the straight road that leads direct to his destination. Little is performed well in the world, either in the building or other arts, that is not planned well beforehand. In respect to imparting and applying technical knowledge in behalf of our own workmen and skilled industries this principle also holds good. A proper basis must be laid for the structure we hope to raise. There is another important consideration which must on no account be lost sight of when considering the scope and application of technical education and estimating its value. If the stream is not so directed that its spread through the land will bring moral dealing and commercial honesty, the flow of the current will be in vain. The knowledge of how to work well will not suffice if the will to do it does not exist, and unless employers feel interested on the score of credit in turning out conscientious work. Unfortunately, in not a few branches of trade at the present hour there are many scamps, too much artificers, and but little honest art. Through the greedy practices of unprincipled employers in various branches of trade, the workmen are demoralised, and from the exigencies of their position they are unable to protest or rebel. The application of technical education, to be successful, must be assisted all over the country by employers who take a pride in turning out good work, and who will only employ well-conducted and efficient workmen. We will repeat once more that theory is good, principles are good, but the young workman must be afforded proper scope for the application of the scientific principles which govern his trade. It may be taken as a maxim that no school or college can make a practical workman, or afford that peculiar training and experience that can only be acquired in the workshop and at the building.

THE SUEZ CANAL IMBROGLIO: A SOLUTION.

THE Suez Canal negotiations, referred to in our last number, are still unconcluded. On the one hand, the ship-owners of the northern ports are not contented with the terms proposed by the London committee. On the other hand, the directors of the company have taken time to consider them. Meanwhile the Egyptian Government intimates that it must be consulted before the *status quo* can be legally altered; and behind the Egyptian Government the sanction of the Porte is required for any such change.

All this makes it the more important to understand what can actually be done by this country within the exact limit of the existing firm and statutes of the *Compagnie Universelle*. Mr. Conder has pointed out in the columns of the daily press a simple mode of issue from the *impasse*. The English Government hold 176,000 shares. According to the "statutes," no holder of less than twenty-five shares has a vote, and no number of shares can give more than ten votes to a single holder. Thus the small and the very large shareholders are equally deprived of voting power. On the other hand, by the "statutes" of the company the privileges attaching to the shares follow the possession of the certificate, in whose ever hands it may be found; and by the agreement by which the British Government bought the

176,000 shares, their right to dispose of any or all of them at any time is explicitly declared.

It is therefore only necessary for the British Government to sell a certain number of these shares, or to "dispose of them" in the hands of trustees, in order to command 7,000 votes. The largest number of shares ever represented at any meeting of the company (if the Khedive's shares which we hold are not counted) was 57,714, which could not quite make up 2,300 votes. Thus it is easily within the rights and the power of this country to remove the whole question from the field of politics, and to allow the shareholders of the company to decide on the conduct of its affairs, precisely as the shareholders of any great English or French railway, canal, or shipping company, are in the habit of doing.

No permission from either the Khedive or the Porte, and no concession or assent on the part of either M. de Lesseps, or of the other directors, is necessary to carry out this simple plan. It is within the four corners of the "statutes" of the company, and of the agreement between the company and the English Government. It is the plain matter of fact in which all great public works are conducted. The fact that so many of the shares are in English hands is so far advantageous to this country that we may feel assured that no political step to our disadvantage could be taken by a public meeting in which the large majority of votes are in English hands. That would satisfy the national requirements; and as to those of navigation, all difficulties would disappear the moment that the company, by the means suggested, was put in the condition of fair representation of interests provided for by the firm and the statutes. It is probably owing to the fact that the procedures of the company to this time are only recorded in French, and are not very accessible in this country, that this view of the case has been so long neglected.

ARCHITECTURAL ASSOCIATION.

"PAPERS."

A PAPER on papers was read by Mr. E. Ingress Bell at the meeting of the Architectural Association on the 7th inst. The author said:—

It might have been supposed that the invention of printing, with all its marvellous facilities of reproduction, would have almost wholly superseded the practice of oral instruction. But this has not proved to be the case. Either because one is more impressed by what one sees and hears than by what one reads, or more probably from the presence of the element of personal curiosity, or for some reason unexplained, the address delivered in person maintains its ancient popularity.

If to the known number of papers read in London we add the suspected number of unrecorded instances, and then add a due proportion for all the considerable towns in the kingdom, we reach a total which is little less than amazing. And now the question arises,—What is the outcome of all this immense intellectual activity? That also is obviously unascertainable and incalculable. It is, no doubt, considerable. It may be greater than I suppose; but I still think matters may be so ordered that the result, whatever it may be, shall be augmented. A little streamlet, which has for ages trickled down the crag side unregarded, is caught in its descent by a modern philosopher, and by wise conservation and direction of its energy is set to turn certain cylinders, and to generate that subtle and mysterious current which gives off at a distance of a quarter of a mile an intense light,—white, brilliant, and abundant. Do you think that the broad and deep stream,—the ever-widening flood and torrent of "papers,"—papers social and scientific,—papers æsthetic, artistic, architectural, archeological, antiquarian, and miscellaneous, give out a light proportionately brilliant and abundant; or, are you of opinion that a great portion of this cataract of learned disquisition,—this oratorical Niagara, if I may so call it,—passes away in mere confused noise and runs to waste?

You may perhaps infer that I would abolish, or at least curtail, the practice of reading papers. Not at all. I think the custom may, with advantage, be extended. But first it must be systematised; and the attempt can better be made by such a society as this than by more august bodies. There are many lines of inquiry and subjects of collective study open to you

which could not be pursued by other bodies without compromising their dignity. It has been noted that fewer books are written by architects nowadays than heretofore. There are compilations of various kinds, and some hybrid volumes which approach, as nearly as the proprieties will permit, the tradesman's illustrated circular. There is also but a feeble struggle for the prize essays on professional subjects, although prize designs bring up crowds of competitors. The further cultivation of the "paper" amongst students would go far to remedy this defect. It has been said that the way to understand a subject is to write a book about it; and I will engage that no one, however conversant he may have been with his theme, ever set to work honestly to prepare a paper about it without leaving off a wiser man than when he began. The incidental advantages attaching to this form of literary exercise are numerous and obvious, and have often been insisted upon. For my part, I confess that I think a little improvement is practicable, and I would ask your permission to suggest a few points for your consideration, with a view to conserve and systematise the forces at command. Although I wish to treat the subject in the abstract, and make my remarks as impersonal as possible, I must nevertheless keep in view the constitution and aims of the Association whose members I am now addressing.

Papers may be roughly divided into the following classes:—1. Those which embody the results of experience. 2. Those which formulate opinions. 3. Those which record observations. I might add a fourth division for those papers which resemble the later homilies of the Archbishop of Grenada, as reported by "Gil Blas"; but as papers of this class are never met with within these walls, their consideration need not delay us. The papers in the first class,—viz., those embodying the lessons of experience,—are analogous to the lectures of the University professor. It is not to be expected that many papers of this character can be furnished by the general body of the members, who, for the most part, have their experience to gain. Such papers will, as a rule, be contributed by members who, having passed through the ranks, are engaged in the active duties of their profession. A few questions may follow such papers to elicit further information; but we should listen to their authors as to experts, and take thankfully the fruits of their long years of study and practice. The second class of subjects,—viz., those which formulate opinions,—are almost equally unsuited for treatment by young men. Opinion, to be worth anything, should be based upon experience, and experience comes with age. The opinions of young men are necessarily immature and notoriously unstable, their instability being only equalled by the confidence with which they are advanced. If this were a mere debating society, any subject would serve as a field for the practice of dialectics, and as a school for acquiring the art of public speaking, but it aspires to more practical ends, and merely speculative matters should absorb but a small part of our attention. We now come to the third class of papers,—viz., those which are the records of personal observation. This is a class of paper peculiarly fitted for the members of the Association, and one which should, it is thought, be more assiduously cultivated. Every year the seekers after knowledge go further afield, and every year the search grows more keen. Nothing would so much sharpen observation and help towards systematising the results as the knowledge that it was to be put into shape for the benefit of fellow students. If the experiences of such were embodied in a compact and business-like paper, illustrated by equally business-like sketches, the greatest possible benefit would accrue to all concerned. For such a form of literary and artistic exercise is twice blessed,—

"It blesses him that gives and him that takes." It is rarely the case that architects in full practice can afford the time to prepare papers for the edification of their younger brethren in the profession, although they all, no doubt, have the will. But that many of them would furnish the necessary materials for the compilation of such papers I have no doubt. And there could be no better exercise for a young man than a careful study of the works of any architect who had shown himself a master in some special work of art, whether ecclesiastical, domestic, civic, or what not, with the view of ascertaining the secret of his success. A series of working drawings of Board schools, for instance, would

form a most valuable exhibition, and it would be invaluable if accompanied by a carefully compiled account of the principles embodied in the several designs, the accommodation secured, the difficulties of site or foundations surmounted, the constructive methods adopted, and the cost. A similar series for science schools, or for municipal buildings, for markets and other important works, might follow at decent intervals, and would provide an educational exercise of the highest value. It is not likely that the members themselves could, from their own practice, obtain the materials for this form of paper; but I should be much surprised if the courtesy which always allows the members of the Association to inspect actual works in progress, stopped short of rendering facilities for this sort of comparative examination of the several works of the more successful architects of the day. Criticism should, of course, be suppressed; the object being to learn from the successful works of an acknowledged master the lessons which his works convey.

There is still another field open to the earnest student. From time to time books are published which embody the thought and work of a life; books which are too expensive for a young man to buy, and if read and studied thoroughly, as they deserve to be, would take up a larger share of time than in this busy age is likely to be spared for the purpose. It would be not only a profitable exercise for the individual, but a wholesome economy of the energies of the general body of students if one, to whom the requisite facilities required be given, would master the subject, reduce it to a *précis*, and give an intelligent verbal rendering of it, with appropriate comment and illustration. With some such modification the "paper" may not only retain its strange attractiveness, but become increasingly useful. In conclusion, I admit without reserve that I am a shocking example of the system I deprecate; but I shall be content to account myself the last and worst specimen of a faulty system if, by drawing attention to this matter, I can be the means of inaugurating a better.

In the discussion which followed, the chairman (Mr. Cole A. Adams, President), and Messrs. Stannus, Gotch, H. W. Pratt, Brodie, Baggalley, and Ellison took part. The value of the suggestions contained in the paper was admitted by all the speakers, though one or two gentlemen questioned the practicability of carrying the whole of them into effect. A hearty vote of thanks was accorded to Mr. Bell for his paper (of which the foregoing are only the leading passages), not only for the matter it contained but for its pleasant and effective delivery. It was said by one speaker that only about one architect in every ten could write a paper, and that only one in twenty could read a paper when it was written. Mr. Ingress Bell, as was said, can do both well.

EGYPTIAN CHARACTER AND EGYPTIAN ART.

In the remarkable address which he delivered to the Royal Academy students on Monday last, Sir F. Leighton dwelt on the relations of artistic production to the conditions of time and place under which it was evolved, and the characteristics of the race to which it was due. We reprint his remarks on the Egyptians and their art:—

Here, at least, the problem of evolution is reduced to the simplest form known to us west of the cradle of our race, though not to the simplest form conceivable; for although one branch of Egyptian art, sculpture, had reached a very high, perhaps its highest, level between 3,000 and 4,000, or, according to Mariette and Maspero, between 4,000 and 5,000 years before the Christian era, the Egyptians were not, it is believed, indigenous on the Nile. For our present purposes, however, they may be considered practically a primitive race. What manner of people were they? They were a people endowed with brilliant gifts, and of whom a prominent characteristic was their piety. "The Egyptians are religious," says Herodotus, "far beyond any other race of men." Piety was printed on all their works. They believed in an after-life, and on that after-life their thoughts were chiefly bent. They traced to the heavens the origin of their royal throne, and believed that in a far, unchronicled past the gods themselves had ruled

within their land; the right hand of the immortals was extended over them in protection; their pontiff kings visibly represented the god-head upon earth, and at their death were in their turn taken up into the heavenly ranks. They were a race which during long centuries, —those early centuries in which its arts took shape and ripened,—grew up in unchallenged peace to strength and conscious greatness, knowing as yet no rivals, drinking in daily the deepening sense of a security unassailable and immemorial. Visibly favoured in a climate beyond example steadfast and serene, and in a soil lavish of every gift, they were above all made confident in the sight of generation after generation of the ever renewed blessing of the great stream in whose waters that soil was each autumn born anew; and so of the sense of abidingness would add itself that of unexhausted wealth and plenty. I said that they were pre-eminently pious,—dwelling constantly in thought on the life of which the gate is death. We need not enter here into their complex creed concerning the soul and the intelligence, the body and its double; it is enough for us to note that in their belief a material form was needed after death as a home and resting-place, until the day of doom, for that surviving "double," —that *eidolon*, —which was an incorporeal counterpart of the body. To furnish this tenement for the double was, therefore, a sacred duty, and it was accordingly provided in two ways: first, by enbalment of the corpse itself, and, further, for the event of injury to the mummy, by the manufacture of stone or wooden counterfeits made in its exact image, and for greater safety these were frequently very numerous. Such, then, being the mental attitude and such the custom of a race with strong plastic and building instincts, what sort of art should we look for in it? Should we not look for an art in which the temples of the gods and the abodes of the dead were the most salient feature? And should we not further expect of such a people that whatever connected itself with the glorification of those gods, or with the exaltation of earthly rulers scarcely less divine, or with the service of the departed, would be the inspiring motive of their graphic and plastic art, as well as of their architectural production? And this art, being an entirely spontaneous and sincere expression of the national temper, should it not convey to us a sense of strength, of dignity, of stability, and of repose? And would not the consciousness of unlimited resources find expression in a tendency to the excessive in size? Well, these are precisely the characteristics which we never fail to find in the monuments of Egypt, and in so much of her plastic art as is not purely domestic in character and descriptive of private life. Those whose fortune it has been to stand by the base of the Great Pyramid of Khoofoe and look up at its far summit flaming in the violet sky, or to gaze on the wreck of that solemn watcher of the rising sun, the giant Sphinx of Gizeh, erect still, after sixty centuries, in the desert's slowly rising tide; or who have rested in the shade of the huge shafts which tell of the pomp and splendour of hundred-gated Thebes, must, I think, have received impressions of majesty and of enduring strength which will not fade within their memory. But if the general character of these monuments bears the impress of the moral temper of the Egyptian people, we shall find a special requirement of their faith exercising a direct and vital effect on the development of their sculpture and of their painting,—in the case of the former, first for good, and afterwards, indirectly, for mischief. I mean the duty which, as I have told you, they held sacred, of supplementing the embalmed corpses in the tombs with images of the deceased in stone or wood. Out of this duty arose necessarily a vast activity in the field of sculpture; but the object of the artist was to produce, I said, in these images an exact counterfeit of the outward form and features of the departed, in order that the second life,—the life in the shadow of the tomb,—might mimic as faithfully as possible the old life in the light of day, and the result was, as might be expected, a remarkable development of individualisation in treatment of form and figure; in fact, a vigorous and uncompromising school of portraiture. This view of the causes which influenced Egyptian sculpture in its origin is very lucidly set forth in the admirable work of Messrs. Perrot & Chipiez, which I commend to your study, and in which you will find it sup-

ported by a series of most excellent illustrations. While, however, so large a demand for works of sculpture had a very stimulating, and, at first, a very wholesome effect on plastic art, the very extent of that demand became eventually a source of harm, and we may safely attribute to it some not small share of the stagnation and eventual decline of this branch of art on the banks of the Nile; for, in exact proportion to the necessity for rapid and almost unlimited production would the obstacles to thoughtful treatment and a close study of nature increase, the sculptor would fatally tend to become a mere manufacturer and purveyor, and in the speed to which he was compelled, life and character would more and more surely disappear from his work. Be this as it may, we see in Egypt this strange thing, that the earliest efforts of sculpture which have come down to us are in general the best. Certain wooden panels, for instance, carved in low relief, which are preserved at Boulak, and which display a delicacy of workmanship and a spontaneity of treatment seldom equalled in Egyptian art, are believed by M. Maspero, under whose guidance I had the good fortune to see them, to date back to the third dynasty,—that is to say, to over forty centuries before the Christian era. And the qualities which distinguish the most perfect phase of this art are precisely a subtler perception of individuality, and a more unreserved obedience to nature, than we see at any subsequent period. Our acquaintance with this epoch of Egyptian art is of very recent date, and it had been till quite lately much the custom to take an exaggerated view of the stagnancy of Egyptian sculpture to which I just now alluded. A truer appreciation, both of the achievements of that art and of the phases through which it passed, is now beginning to prevail; meanwhile we must, I think, be on our guard lest we now fall into an opposite error, ignoring unduly the limitations from which the sculpture of Egypt never freed itself, and forgetting that if in fifty times a hundred years it underwent marked and considerable modifications, those changes did not bring improvement with them after a certain early period. Of this arrested growth the causes must in great part remain obscure; the explanation which I have suggested, and of which I would not overrate the bearing, applies only to funeral art, and though 'no doubt the whole current of plastic production would be affected by the vicissitudes of its main affluent, we must look for other causes to account for the strange and pulseless monotony which we see in the treatment of the statues of the gods. One of these M. Perrot is inclined to seek in the necessity imposed on the artist of representing those gods as a monstrous compound of man and beast, a necessity which shut him out from any inspiring ideal; much, again, of the absence of action in Egyptian statues, and of the empty smoothness which so often characterises their modelling, he attributes to the extreme hardness of the material in which they are habitually wrought, and which, while lending itself to a high polish, was extremely difficult to carve. To these causes we may add the absence of any founding contact with other races. But behind and beyond them all, we must recognise as the primary agent a certain peculiarity and inertness of the race, a narrow but tenacious spirit of which, whatever may be its sources, we find the perfect counterpart only in the great Turanian Empire of the East,—the not less ancient land of China. I could have wished to say, also, in this place, a word on the harmony which exists between Egyptian building and the scenery in which it is set, but for this time leaves me no leisure; I have yet, before passing to other lands, to glance briefly at Egyptian painting. Of this our knowledge is drawn wholly from the tombs. Like sculpture, it owed its chief impulses to the views of the Egyptians in regard to a suspended life within the grave; for not only were meat and drink laid for their sustenance before the dead, but, just as to the mummy were added supplementary semblances of the body, so also was the painted semblance of food placed about it in its long abode; nay, more, as the ghostly inmate could no longer wander forth into the world, the world was piously brought in effigy to him in the tomb, and on the walls around him he saw unfolded each scene of daily and domestic life, in the sight of which he might once more seem to himself to sow and to reap, to count his hoarded gain, to carouse, and to rehearse in all things his vanished earthly days. Here, more than elsewhere, we find the

Egyptian artist untrammelled by material, and we are accordingly struck with an increased vividness of dramatic treatment and the greater freedom with which he handles the human form; here, too, we note a certain cheerful *bonhomie* which was a characteristic of the race. I have spoken of these designs as paintings, but they would be more accurately described as outlines filled in with colour; for throughout Egyptian art colour appears solely as a flat tint. It is a prevalent opinion that the Egyptians were colourists; skilful harmonisers, that is, of subtle tints. In this opinion, though not unmindful of the harmonious effect of some of their enamels in which the original tints are still preserved, I find some difficulty in concurring; faded and bleached by the sun, the coloured hieroglyphs which still enliven some of their buildings are no doubt very delightful in their play of tones, and to many paintings on papyrus or on mummy cases decay or golden resins have given the delicacy of fresco, or a glow as of mosaics; but the sight of well-preserved paintings of comparatively recent discovery has left grave doubts in my mind in regard to the colouristic aptitudes of the people which produced them. This, however, is worthy of notice,—that we see in Egyptian painting the first use of that combination of green and blue which was to be the dominant note of so much that is most beautiful in Eastern coloured decoration.

THE ROYAL ACADEMY: STUDENTS' DESIGNS.

THE works executed by the students of the Royal Academy in competition for the various prizes offered were exhibited to public notice (as usual each year) on Tuesday and Wednesday in this week, in the Burlington House Galleries. The general average of the work appeared to us, on the whole, hardly so good as in some other years. There could be no question as to the propriety of the award of the gold medal and travelling studentship for historical painting, which was won by Mr. W. M. Loudan; the subject, "Peter denying Christ." This was the only one that rose to anything like a thoughtful rendering of the subject; the attempt to render the expression of mingled fear, and shame of his own cowardice, in the face of Peter, seated apart in a corner and discovered by the accusing damsel, must be highly commended. The remainder of the competitors seem hardly to have aimed at more than effects of light and grouping, in some cases very stagy. In the oil landscapes, illustrating a verse from "In Memoriam," painted for the Turner Gold Medal and Scholarship (50*l.*), the successful candidate was Mr. Rickatson, whose work seemed the best on the whole; but we may observe that only one among the paintings, that marked No. 8, really illustrated the landscape described in Section XI. of "In Memoriam," a view from an eminence over a wide plain stretching to the sea. The rest of the competitors seem to have taken the verse given them, without looking at the verses collectively. In respect to the rendering of the tones of early morning, No. 8 (author's name not given), seemed to us superior to the rest, and at least very well meant. The Creswick prize,—subject, "An Old English Country Inn,"—was given to Mr. Olivier for what was undoubtedly the best of the set, but with too much inn and too little landscape to realise quite what one expected from a painting for a prize bearing the name of Creswick. Passing over some of the other groups, we noticed the drawing by Mr. Margetson, for which an extra prize was given, for a full-size study of a draped figure, as distinctly the most thoughtful and artistic in feeling of the set, certainly more so than the rather theatrical figure of Mr. Griffenhagen, to which the first prize (silver medal and 25*l.*) was awarded. The Council did not award the first prize for design for a figure subject in monochrome (St. Sebastian was the subject given); the collection is neither so large nor so clever as last year. The life studies in crayon were quite up to the usual standard, and the central study among the six for which the first prize was given, by Mr. J. E. Breun, a drawing of a half-recumbent female figure, was not only a very good drawing, but had the additional excellence (not often met with in Academic life studies) of being a really expressive drawing with a good deal of sentiment in it; a drawing which might be regarded as a work of

pictorial beauty and not a mere prosaic copy of a figure. The award for painting in oil from the life was not made; the competition did not appear to us inferior to those exhibited on other occasions when the award was made; but no doubt the Council are right to make the standard high for this most important and difficult section of work. They do not seem to be so exacting about architecture; we must say decidedly that the prize for original architectural design represents 200*l.*, and a gold medal very easily earned; and if this is the best response to the best prize for architecture, it is evident that architecture at the Academy wants brushing up a good deal. Mr. R. T. Blomfield won the first prize for designs for "a London House," a very picturesque front rather weakly constructed, mostly resting on an elliptical arch.

EXHIBITION OF DECORATIVE ART.

AN exhibition, including tapestry from the Windsor Tapestry School, wood-carving arranged by Mr. Rogers, and wrought-iron work, is open free, at present, at the rooms called the Medieval and Industrial Art Studios, at 175, Bond-street. The tapestries may be said to be good work done in a wrong school. They include landscapes, or figure-subjects with landscape backgrounds, realistic in treatment. A great deal of tapestry has been executed on this principle, but the adoption of tapestry for such purely pictorial treatment cannot be defended from a critical point of view. The best-executed scene in tapestry looks coarse and wanting in that delicate blending and shading off of tones which brush-work alone can give. Landscape, especially in tapestry, is to us almost offensive, except as an antique curiosity to be judged of apart from its purely artistic standpoint. As art, it is only an attempt, very unsatisfactory at the best, to do what the material cannot possibly effect. And the treatment of realistic figure-subjects is, for similar reasons, but in a less ratio, a necessary failure. The style of work which can really be executed in tapestry with effect would be a more conventional and flat method of treatment, in which, for instance, figures were interwoven with elaborate decorative design, not attempting to be pictorial. There seems to be plenty of good workmanship available at Windsor; what is wanted is that it should be directed into a better channel, into a type of design more suited to the material.

The collection we are speaking of also includes some examples of a new method of decorative effect, for screens and panels, by a metallic solution applied to natural leaves, flowers, and sprays, whereby they are, as it may be said, fossilised in metal, on a ground of wood or other panel. This is not, of course, design, it is a process merely; but it seems capable of realising some rich and rather novel effects. The exhibition of wood-carving in the upper gallery of the same establishment is arranged and partly contributed to by Mr. G. A. Rogers, and is a kind of sequel to that which was arranged under his supervision in the Albert Hall in 1879, and which we commented on at the time. The collection, chiefly of objects lent, illustrates some of the greatest refinements of the art of wood-carving, as well as its bolder style. The quality of high finish is especially perceptible in the medallion-portrait of Charles II., by Grinling Gibbons, which is a masterpiece. Some of the very minute and delicate boxwood carvings, lent by Mr. Spread, ovals which look as if meant for personal ornaments rather than for the ordinary positions of wood-carving, are wonderful in execution, but they are curiosities and *tour de force* rather than true wood-carving. Among the examples of the opposite type, of bold grandeur of style, one of the finest is the panel of a Flemish altar-rail, lent by Mr. Spread (No. 35), in which the ordinary forms of Renaissance foliage ornament are treated with the greatest freedom and vigour; this may be compared with the Jacobean panels near it (No. 33), which are exceedingly neat and finished, but look tame and mechanical both in design and execution beside that bold piece of flowing work of the earlier and higher Renaissance type. Among the pieces which, we presume, are by Mr. Rogers himself, the most important is a carved oak chimney-piece, very fine in style, and not over-finished with surface work. Two ovals of snipe and wood-

cock, by the late Mr. W. G. Rogers, are lent by Mr. Beaumont; these are obviously in emulation of Gibbons, and not far behind their model. Two figures, carved by Hogarth when an apprentice, are among the curiosities of the exhibition, which we should have been glad to have commented on at greater length did time and space permit.

The collection of wrought ironwork, under the superintendence of Mr. A. Newman, we shall speak of more particularly next week. It contains some very beautiful and interesting work.

TWO NEW CITY THOROUGHFARES.

IT is expected that the new street, with a railway beneath it, from Great Tower-hill to Eastcheap, will be opened for traffic on the 1st of January next. We may point out that the scheme for this straightened approach is by no means novel in its conception. In a plan of 1766, set out by J. Gwynn,—who, indeed, seems to have had quite a prophetic eye for the improvements of an after-age,—the thoroughfare is clearly foreshadowed. We see it as a wide street, reaching from the eastern end of Cannon-street to the north-western angle of Tower-hill, by Trinity-square, absorbing both Little and Great Eastcheap, together with Great and Little Tower streets.* The subsidiary alterations indicated in Gwynn's plan leave untouched all the church sites in this quarter, such as St. Martin's Orgar; St. Michael's, Crooked-lane; St. Dionis; St. Benet's Grass-church; St. Dunstan's, St. Olave's, and All Hallows. But situations are laid down for a new Navy Office at the east of All Hallows Barking, to replace the building then existing in Seething-lane,—the Navy Office of Samuel Pepys's and the Earl of Sandwich's time; as well as for a new Victualling-office where the Royal Mint now stands. The victualling-offices were subsequently appropriated for the Government tobacco-warehouses. These in their time gave way to the Mint buildings, erected here 1806-1811, by Johnson and Smirke, since the Tower, where our coinage had been produced, ever since the days of King Edward I., no longer afforded room for the works. The Mint cost altogether nearly 262,000*l.*, and was almost totally destroyed by fire on October 31st, 1815. The original Victualling-office had succeeded that East Minister, or Abbey of Our Lady of Grace, in which King Edward III., grateful for a safe return from France, hoped to rival and excel the other great Minister in the West, where so many of the Plantagenets are laid. But considerable changes are contemplated by the plan in Lower Thames-street. It was proposed to widen that street, and to build an arcade along its northern side more remote from the river, having at the middle point, just south of St. Dunstan's Church, a fresh Custom House, instead of that (being Ripley's) and the fourth one built here) on the opposite side of the road, a little further eastward.

So similarly with Throgmorton-avenue, now being made through Drapers' Gardens. A plan prepared for the Corporation, and dated 1802, delineates a fine wide street to join the then projected Finsbury-circus (site of Bethlehem Hospital, Moorfields) with the end of Throgmorton-street and so by Bartholomew-lane to the Royal Exchange.† That street, it should be observed, passes over Bell-alley, Three Pigeon-alley, Angel-court, Copthall-court, and Drapers' Buildings, and to the west of old Carpenters' Hall and Garden at the London-wall end. The Avenue is laid to the east of the former Hall, which has been re-erected in the immediate vicinity. Moreover, an earlier scheme of J. Gwynn, 1766, embraces two thoroughfares from Throgmorton-street to a new street running south of and parallel with London-wall, these thoroughfares passing at either side of Drapers' Gardens, which they leave intact. Rather more than two years ago, Mr. Bassett Keeling's designs were accepted for continuing the eastern portion of King's Arms Yard, Moorgate-street, as a carriage-way into Tokenhouse-yard, Lothbury. This involves

* The railway-shaft facing No. 14, Trinity-square,—in which the Scottish noblemen were lodged on the eve of their execution in the years 1746, 1747,—marks the exact position of the scaffold.

† Established temp. Queen Elizabeth for the stores collected by Sir Wm. Wynter, who was appointed "Surveyor of our Ships" by patent of Edward VI.; and sold in 1728 for 11,500*l.*

‡ John Luffman's plan shows an intended continuation of this from the other side of the Exchange in a direct line to the foot of (old) London Bridge.

the demolition of some fine old merchants' mansions, one dating from the middle of the seventeenth century, and all, like the new restaurant, occupying land leased from the Mercers' Company, to whom Sir Richard Whittington devised it in trust. Noteworthy together with these specimens of the houses in which City traders were once content to dwell, and at no sacrifice to their personal comfort, are twelve in the adjoining Warford-court, which are also being pulled down. Built in 1637, just after the Great Fire, on a site sold by the Grocers' Company, these have to yield to the more expensive and more showy tastes of the present day. One of them, No. 6, is remarkable as having been the residence of George Peabody when occupied with business in London. Mr. Reilly, of St. Swithin's-lane, is the architect for the new offices. Standing on the site of a house and garden that belonged to Lord Arundel, Tokenhouse-yard was built temp. Charles I. by the celebrated Sir William Petty, one of our earliest authors on political economy. Undertaking the survey of Ireland in the year 1664, he had in sixteen months' time completed the measurement of two million eight thousand acres of forfeited lands. For this work he had contracted to receive 1d. per acre, and did actually obtain an estate worth 6,000l. per annum. By her marriage with Thomas, twenty-first Lord of Kerry, created Viscount Clannmaurice and Earl of Kerry, his daughter Anne became ancestress of the present house of Fitzmaurice, Earls of Lansdowne. Tokenhouse-yard is believed to derive its name from the manufacture here, in close proximity to the brassfoundries of Louthbury,—of the metal tokens which, during the sixteenth and seventeenth centuries, supplied the great deficiency of copper halfpence and farthings.* Throgmorton-street, where the Drapers settled in 1541, purchasing of King Henry VIII. the house and garden-ground of the attainted Thomas Cromwell, Earl of Essex, is so called after Sir Nicholas Throgmorton, whom Dudley, Earl of Leicester, is said to have poisoned. This Company, third on the list of our civic guilds or masteries, dates from about the year 1390, when they had established themselves at Cornhill. Their next hall, in St. Swithin's-lane, is first mentioned in 1405, when we find particular entries of the lordly feasts for which they were long pre-eminent, and of the apartment they yet retain, namely, "The Ladies' Chamber."

DISCOVERY OF ROMAN ANTIQUITIES.

FIVE Roman mile-stones have just been found on a piece of land not far from Ladenburg, near Mannheim; valuable antiquities having been discovered in the same place in the sixth decade of this century. Ladenburg (originally Vicus Lopodanum, later called Civitas Ulpia in honour of the Emperor Trajan, and finally known as Civitas Ulpia Septimia Nemetum, after the Emperor Septimius Severus) was the centre of a right-Rhenish Roman administrative district until the middle of the third century, when Roman supremacy on the right bank of the Rhine was overthrown by the Alemannians. From this centre, the roads of the Romans spread to Worms, Heidelberg, and Speier, and all the mile-stones of the municipal district refer to the chief place, Ladenburg. The eight Roman league-stones found six years ago at Heidelberg bear the words A.LOP(oduno) T(eugae) IIII, from Lopodanum & Gallic leagues = 6 Roman miles = 8.89 kilometres. Like the Heidelberg mile-stones, those of Ladenburg contain the names of a whole series of Roman emperors, as will be seen from the following inscriptions:—

I. Set up in honour of the emperor Gordian III., in A.D. 238:—

II. I. I. I. I. CAES Imperatori Caesar
M. ANTONIO Marco Antonio
GORDIANO Gordiano
PIO FELICI AVG Pio, Felici, Augusto
P. M. TR. P. Pontifici maximo, Tribunica pote
P. P. C. S. N. tate
Patrie patris Civitas Septimia Nemetum

L. I. Leuga I
(This stone was either marked erroneously L. I = Leuga una or prima, or brought from its

original position, half an hour's walk from the centre, to its present one. The fact that the base is wanting is in favour of the latter supposition.)

III. Set up in honour of the emperor Philippus Arabicus and his son of the same name, "the imperial crown prince" (Nobilissimus Caesar), in A.D. 246:—

IMP IIII IIII Imperatori Caesar
M. Marco Julio
PI Philippo Pio
F. AVG IIII Felici, Augusto, Tribunica
P. V IIII Potestate IIII, Consuli
L. I IIII et Marco Julio
PH IIII Philippo
NOB IIII Nobilissimo Caesari
C. V. N. Civitas Ulpia Septimia Nemetum.

III. Set up in honour of the emperor Decius, in A.D. 249:—

IMP. CAES Imperatori Caesar
G. MESSIO Gaius Messio
QUINTO Quinto
TROIANO Trajano
DECIO P. F. Decio, Pio, Felici,
INVICTO Invicto
AVG. P. M. T. P. P. P. Aug., Pont. max., Trib. pot., Patri
patris
PROCONS. C. S. N. Proconsuli Civitas Septimia Nemetum.

IV. Set up in honour of the younger Decius, the heir-apparent, A.D. 250:—

Q. HERENNIO Quinto Herennio
LITRUSCO Litrusco
MESSIO DECIO Messio Decio
NOBILISSIMO Nobilissimo
CAESARI C. V. L. S. N. Caesari Civitas Ulpia Sept. Nemetum.

V. Set up in honour of the emperors Valerian and Gallienus, in A.D. 254:—

IMP. CAES Imperatoribus Caesaribus
P. LICINIO Publico Licinio
VALERIANO Valeriano
ET P. LICINIO et Publico Licinio
GALLIENO Gallieno
PIS. FELICIBVS Pii, Felicibus
AVG. C. V. S. N. Augusta Civitas Ulpia Sept. Nemetum.

The above inscriptions, all, with the exception of the second, well preserved, correspond with those found in 1877 at Heidelberg, which were described by the well-known antiquary, Herr Karl Christ, of Heidelberg, in the *Bonner Jahrbücher*, lxi. 10 and lxxv. 62. It is hoped that three other league-stones (erected in honour of Elagabalus, Severus Alexander, and Maximinus) will be ultimately discovered. Large stone slabs, over 2 metres in length and 30 centimetres in thickness, and a large square stone, are still lying, at a depth of about 3 metres, in the same place at Ladenburg, and it may be supposed that much is hidden beneath them.

LUTHER'S CONVENT IN ROME.

ALL roads, says the old proverb of pilgrim days, lead to Rome, and many of that yearly increasing crowd who at this season,—some invalids, others pleasure-seekers,—flying our northern winter, find southwards will, we may be sure, long before the snows have made their appearance with us, be enjoying themselves under the pleasant Italian sky on their first stay in the Eternal City. Of that number how many, we wonder, when they visit the famous Pincio, looking down over the panorama at their feet, and immediately below, the Piazza del Popolo with the conspicuous group of Sta. Maria del Popolo, are aware that in the adjoining convent, no longer the home of its former occupants, the Augustine monks, once resided during his short residence in Catholic Rome the great champion of the reformed religion, Martin Luther. It is a memory which the devout Roman Catholic would endeavour to forget, but history, with its inexorable rigour, can never pass by what to the Protestant visitor to Rome should add a ten-fold interest to the church whose pompous marvels are shown with so much pride.

Guide-books and *ciceroni* never fail to draw the attention of the visitor to the splendour of the Chigi chapel, the frescoes of Pinturicchio, the marbles,—with all their fascinating Italian names, *verde, giallo, nero antico*, and how many others,—of the Cibo chapel, the architecture of Bernini and the sculpture of the Renaissance; and, truth to say, of his visit to Rome the stranger cannot fail to bear away a vivid recollection of the interior effect of Sta. Maria del

Popolo. The painters have long known the beauties of the church; but just now, the pavement of the old church will be found in the afternoons almost unseemingly strewn with painters' easels,—we are not exaggerating when we say a dozen or two,—before which are sitting chiefly young lady-artists depicting the interior beauties of the church. It is a little singular that while thus Sta. Maria del Popolo is crowded with sketchers, the even more suggestive church of the Ara Coeli is as deserted and sombre in its romantic silence as when, tradition tells us, its solitude suggested to Gibbon the theme of his great work on the Decline and Fall of the Roman Empire. It is not, indeed, to the Catacombs that the lover of silence should repair in the Rome of to-day, but to the church at the top of the steps leading up to the Ara Coeli side by side with the broad flight of the Capitol stairs.

While to the architect, the painter, and the antiquary the interest of Sta. Maria del Popolo is written in every stone, there is an event connected with the history of the church, recalled by no tomb, by no fresco, by no tablet, but treasured by tradition, the residence of Martin Luther in the adjoining convent. Luther's visit to Rome occupies an important place in the life and teachings of the great Reformer. Luther had but recently been appointed,—by the advice of the benevolent Staupitz, so long his spiritual adviser,—professor of philosophy at the new university which had been founded at Wittenberg by Albert of Saxony, the Weiss König of Albert Dürer and Hans Burkmaster. It was shortly after this, in 1511, that Luther was sent to Rome on business relating to the administration of the order of the Augustines in Germany. Arrived in the city of the Popes he was lodged in the convent near the Porta del Popolo. He stayed only a few weeks, but it is from this brief connexion with the history of his eventful life that there attaches an additional interest to the hallowed shadow of the now-deserted convent where once resided during his short visit to Rome, the young Augustine, "Frate Martino," the Martin Luther of Protestant history, who more than once, as he himself relates, celebrated mass at the altar of the Gothic Church of Sta. Maria del Popolo.

THE UNCOVERING OF THE FAÇADE OF THE CATHEDRAL OF FLORENCE.

THE façade of the Duomo of Florence, begun seven years ago and finished from its base to the crowning point, was uncovered to public view on Wednesday, the 5th of December. The ceremony was a very undemonstrative one, no enthusiasm was shown, and it was accompanied by an expressive silence.

The original design by the architect, the late Emilio de Fabris, was that terminating in the three gable points; but on its being exhibited, it elicited so many grave objections that he determined to finish it to the height of the balustrade that runs round the cathedral, and leave the style of completion to be decided by the public, whether it should be triconical or basilical. Accordingly two erections in wood have been arranged; that on the north-west side has its terminal and lantern; that on the south-east the basilical style, with its balustrade like that running round the other parts of the edifice. The favour of discussion on the subject of the crowning of the façade runs as high as a political point in the time of the Guelphs and Ghibelines.

The majority will be found in favour of the Basilican style, the gables losing ground every hour the more the effects are studied. The objections to the latter are very decided. Standing a few hundred yards from the north-west point of the façade, and looking towards the east, the beautiful line of Brunelleschi's cupola is cut up cruelly by the gable and the unmeaning cage-like lantern; while, if adopted, the Campanile of Giotto would suffer equally from the confusion of styles thrown so close to it. Precedent examples are named, by those favouring the three gables, of the façades of Orvieto and Siena; but neither possesses a cupola or campanile* like Santa Maria del Fiori of Florence.

As it now stands, the balustrade carried on at

* Like many other persons, our correspondent does not seem to be aware that the Campanile itself was intended to have a spire, and that, in its present state, it is unfinished.

* See Burn's catalogue of the Beaufoy Cabinet in the Guildhall Museum, and J. Y. Akerman's work on "Tradescant's Tokens current in London 1648-72," 4to, 1849.

the same height as that of the north and south sides, comes too close on to the niches of the twelve apostles.

Objections may be made to the minuteness of the decorative part, to the want of depth of the portals, which, compared with those of Orvieto and Siena, are very inferior; also to the size of the four lower niches, in which the statues of the four dignitaries of the Church who at different periods blessed the building of this church, from its foundation in 1296, to the blessing of its temporary façade in 1446. These seated figures seem somewhat over-ponderous. All the statues placed in the niches, works of Florentine sculptors, are in plaster only; modifications might therefore be made when putting them into marble.

The workmanship leaves nothing to be desired. It has been carried on with a zeal and perfection of execution equal to those shown in days of old. It is like that of the most highly-finished mosaic,—not a crevice of a hair's breadth to be found between the different marbles.

The greatest, almost incredible, economy has been used in the undertaking. Both the lamented De Fabris and his successor, Del Moro, worked at the plans, kept the accounts, correspondence, did the work even of master builders, with a noble disinterestedness worthy the object they sought to accomplish.

Few workmen have been employed. The material work has been directed by an intelligent stone-cutter, one Malucetti.

The whole has been carried out by public and voluntary subscription, from that of the 200l. of the rich to the halfpenny of the poor. The cost of the work to now amounts to about 27,000l.

An animated balloting is now going on to discover public opinion.

The serious divergence of opinion may lead to an endless delay, but it is earnestly to be hoped that the work may be speedily resumed, when it is said the façade can be completed in less than a year, if funds sufficient are found.

FIRENZE.

NEW PREMISES, NEW-STREET, BISHOPSGATE-STREET.

THE building illustrated occupies the site of the old houses and has been erected for Messrs. H. W. Eaton & Sons, silk brokers, who have removed from Old Broad-street. It contains a lofty and well-lighted basement and four floors above it, with attics for housekeeper in addition. Each floor is well lighted both back and front. The ground-floor is used for offices, the first and second floors for silk sampling-rooms, the third being for the periodical silk sales. Convenient lavatories are provided for each floor. There are strong rooms in the basement and on the ground-floor. The main staircase is of oak, with handrail and balusters of walnut and pitch-pine. The floor of the basement is paved with wood-block paving. There is a lift from the basement to the street, and another delivering to each floor. The front of the building is of white Suffolk bricks with Bath stone cornices and dressings.

The warming and ventilating are effected by the *Abolus Ventilating Company*, of 235, High Holborn, the warming being by means of two of the company's new gas stoves, fixed in the basement, which deliver a copious supply of pure, fresh, warm air to each floor by means of shafts passing up each side of the building with valves in each room to regulate the supply, and the vitiated air is drawn away by flues in the side walls, on the top of which are powerful exhaust-ventilators, which work admirably. The "Water Spray" ventilator of the company is also fitted to be used in connexion with the stoves when the outer air is close and warm. The consumption of gas is very small, the heat regular and without any smell.

The lifts have been supplied by Messrs. Waygood & Co.; the sanitary work by Messrs. Stidder.

The contractors were Messrs. W. Cubitt & Co., and the architect, Mr. Charles Bell, Dashwood House, 9, New Broad-street.

A Marble Statue of Mr. Gladstone was unveiled at the City Liberal Club, in Walbrook, on Thursday last, the 13th inst., by Mr. E. W. Currie. The statue is by Mr. E. Onslow Ford. The granite pedestal was supplied by Messrs. Bellman & Ivey, of Wigmore-street.

DESIGN FOR A COTTAGE HOSPITAL.

THE object kept in view in this design, which received the second premium in a recent competition for a new hospital of this class at Surbiton, has been to produce a convenient plan, suitable in all respects for the object in view, and so arranged as to secure the greatest amount of comfort for the wards, and thoroughly good and economical working for the administrative part of the building.

The special points required in a small hospital of this class have been taken into account; the accident ward and operating-room (the latter lighted from above) are kept so that they can be well shut off from the rest of the building; the convalescent room is rendered cheerful and inviting by a south and west aspect and a large projecting bay; the water-closets are properly cut off by ventilating lobbies; and the plan generally is arranged so as to make the most of the spaces. On the upper floor a verandah provides means for the nurses to get change of air occasionally without leaving the upper floor of the building. The plan and design are by Mr. Loxwood King, architect.

PALACE FOR THE MAHARAJA HOLKAR OF INDERE, CENTRAL INDIA.

THIS important building is very solidly constructed of stone and marble, arranged in three colours,—the lower or basement story in dark grey; all the rusticated work in pale purple; the mouldings, &c., pure white, with delicate rose-coloured columns and pilasters; the statuary in white marble, and the roof covered with brilliantly coloured enamelled tiles. All the external ironwork is richly gilt. The general effect will be costly and rich in the extreme. Great variety of light and shade is obtained by the numerous open arches and recesses, forming ample shelter on all sides from the sun's powerful rays. The interior of the Durbar Hall is a bold and striking design, elaborately treated, a view of which we hope to be able to give in a future number.

The work is being carried out from the designs of Mr. John Campbell, architect, of Bombay. Our illustration is from a water-colour drawing by Mr. George Nattress, of Great James-street, London.

THE INDIAN COURT, SOUTH KENSINGTON.

AMONGST the important additions which have been recently made to the South Kensington Museum, the great Indian Court is, perhaps, the most interesting, and is decidedly the most extensive. Owing to its great size and height it has been found possible to reconstruct within it whole fronts of houses, and large portions of buildings, so that instead of merely studying Indian architecture piece by piece, we may now gather a good idea of the general effect of the street architecture of that wonderful country. The South Kensington authorities also deserve all thanks for rescuing so many exquisite architectural works from destruction. It is a painful fact that our conquest of India, and our attempts to introduce European civilisation into that country, have resulted in the destruction of native art. Any one who will compare Indian works executed half a century back with articles being now produced, cannot help being struck by the deterioration both in design and execution.

The art now springing up in India is simply a bad imitation of European work of the worst description. That this should be so is a matter of the greatest regret, because the native workmen possess a skill in the design and execution of ornamental detail, which has probably never been surpassed in any country, or in any age. That these very workmen should be encouraged in giving up their own style of work in order to make imitations of the miserable modern European workmanship, itself at best an imitation, or revival, of the designs of some former age, is simply the most disastrous fact connected with the history of modern art. Here, absolutely with art-workmen equal in artistic and executive skill to those of the best period of the Middle Ages, we are forcing upon these men our own vulgarity and degradation. These may seem strong expressions, but let any one compare these native works at the South Kensington

Exhibition with the best European products of our time, and we venture to think that he will come to the conclusion that, as far as ornamentation goes, we are utter savages compared with these Orientals. So far from designing their wonderful geometric patterns, we can scarcely draw them when we see them before us. Then again, look at their use of colour, which is simply perfect. Whether they use the brightest or the most subdued tones, it makes no difference,—everything is harmonious and delightful. Now all this is rapidly disappearing before the growth of "European civilisation." Our European settlers in India will have their "home comforts"; they will insist upon having "the neat stucco portico" balustrade, and pediment, of the London "jerry builder"! We have just been looking at some photographs of Calcutta, showing the "palaces" of the European "merchant princes." Is such contemptible architecture to be found anywhere else in the whole world? Here is a building with a huge pediment, constructed of rubbish covered with plaster, half of this abomination has broken away from the wall, which refuses to remain any longer in such bad company! Opposite is another "palace," with one whole pilaster, two half dittoes, and the cap and base of a fourth: the putty or glue with which they were stuck to the front has, we suppose, melted in the Eastern sun! It is painful to think that the native workmen should be taught by us to build such vile rubbish, and to execute such degraded designs. And we are glad to see the South Kensington authorities bringing together, while they still exist, examples both of ancient and modern native Indian work.

Our illustration shows the fronts of two remarkable houses, dating from the seventeenth century, which were formerly at Ahmenabad, one of which was called the House of Shams-Shah-Bahadur. The whole of the ornamentation is composed of floral work, and shows strong Persian influences in the design. The splendid ceiling to the left of our drawing is a work of totally different character, the ornamentation being for the most part composed of figure subjects and grotesques. This formed a portion of the Pagoda of Cochín, which was pulled down in 1881.

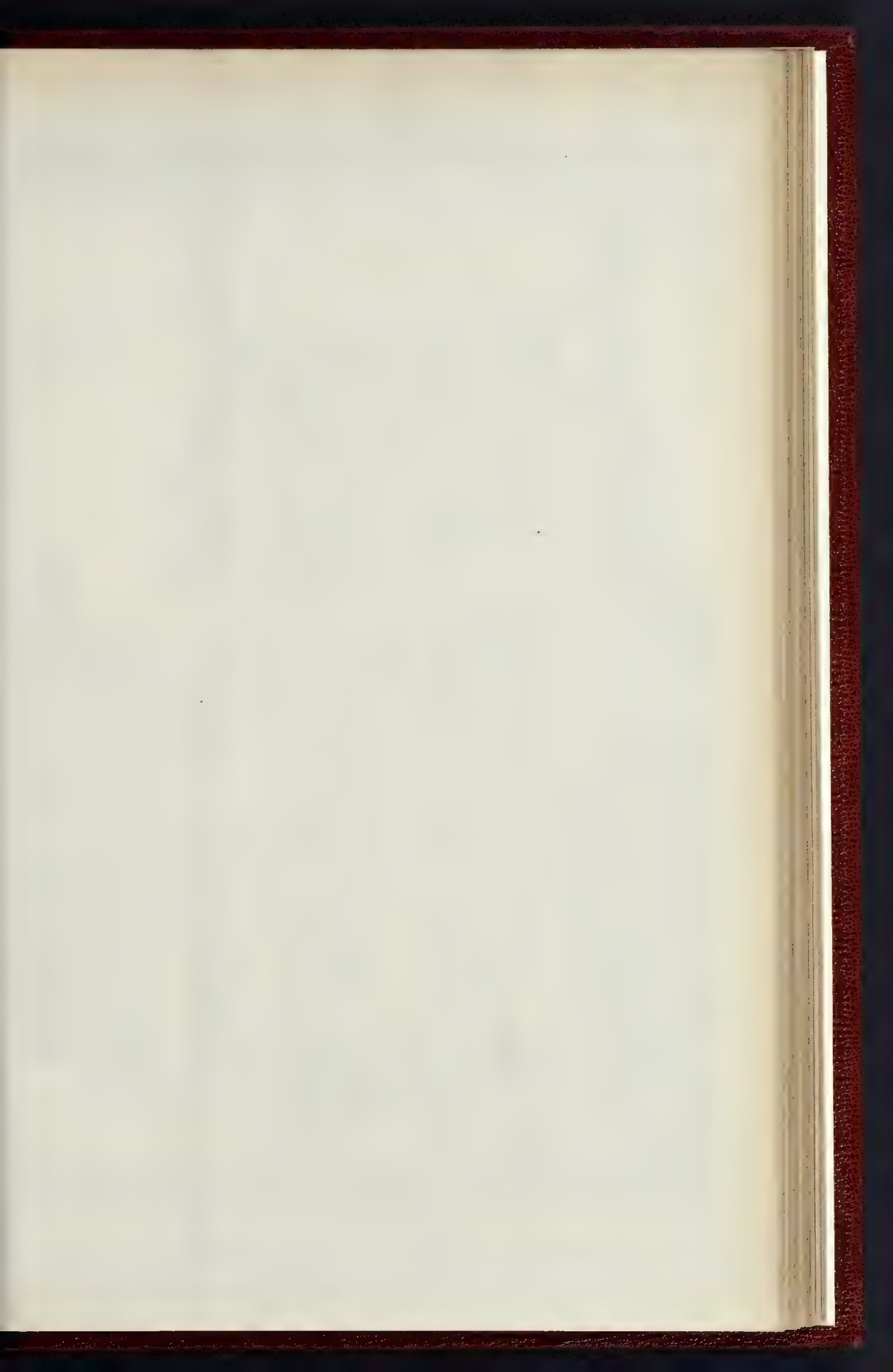
The beautiful doorway to the right comes from Amritzur, the balcony from Lahore, and the doorway and window in the corner of the room from the Punjab. These latter are all of very late date, some of them not earlier than the end of the last or commencement of the present century, and there are examples dating almost from the present time, showing that it is not too late even now to rescue this beautiful style of art from entirely disappearing before the march of European "civilisation."

H. W. B.

ST. BEDE'S CHURCH, LIVERPOOL.

WE illustrate, this week, a new church which is about to be built in the Hartington-road, Liverpool. The church is to consist of five wide bays and an apsidal east end for the sanctuary, the chancel floor being brought out to the first bay of the nave, to give an unbroken line to the arcades, for appearance of length, the site necessitating a rather short church. There are also aisles, two transepts, north and south porches, with a tower and spire adjoining the south transept, this being the only spot on the site where it could be placed, and the ground-floor of which is to be used as a vestry. The church is designed to hold 750 people. It is to be built of the local red stone, and the arcade pillars will be of magnesian limestone. The estimated cost is 7,500l. The architects are Messrs. J. E. K. Cutts & A. H. Mackmurdo.

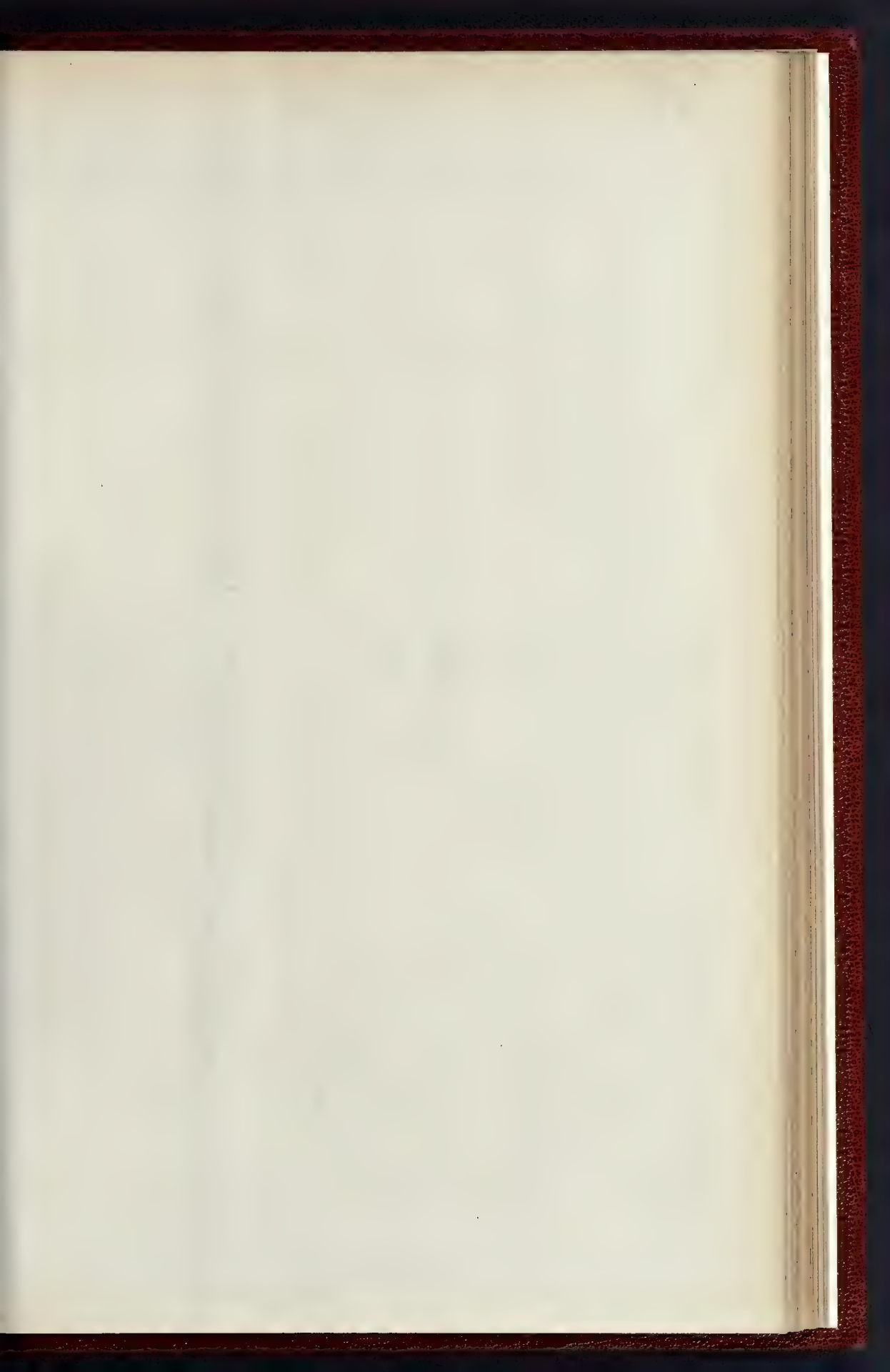
The Drainage of Kilburn.—In the Queen's Bench Division, on the 3rd inst., before Baron Pollock, the case of the Metropolitan Board of Works v. The Willesden Local Board, came up. It raised the question whether districts outside the Metropolitan area, as defined by the Metropolitan Management Act, 1855, are entitled to discharge their sewage into the Metropolitan main drainage system, the Metropolitan Board having no power to levy a rate outside their own area. The plaintiffs asked for an injunction as regarded both the Kilburn and the Harlesden districts. His lordship granted the injunction in the Kilburn case, with costs, and a qualified injunction in the other case.





Invert Brooks Day & Son, Photo Ltd

NEW OFFICES AND WAREHOUSE, NEW ST., BISHOPSGATE STREET WITHOUT.
MR. CHARLES BELL, F.R.I.B.A., ARCHITECT





PLAN OF GROUND FLOOR.



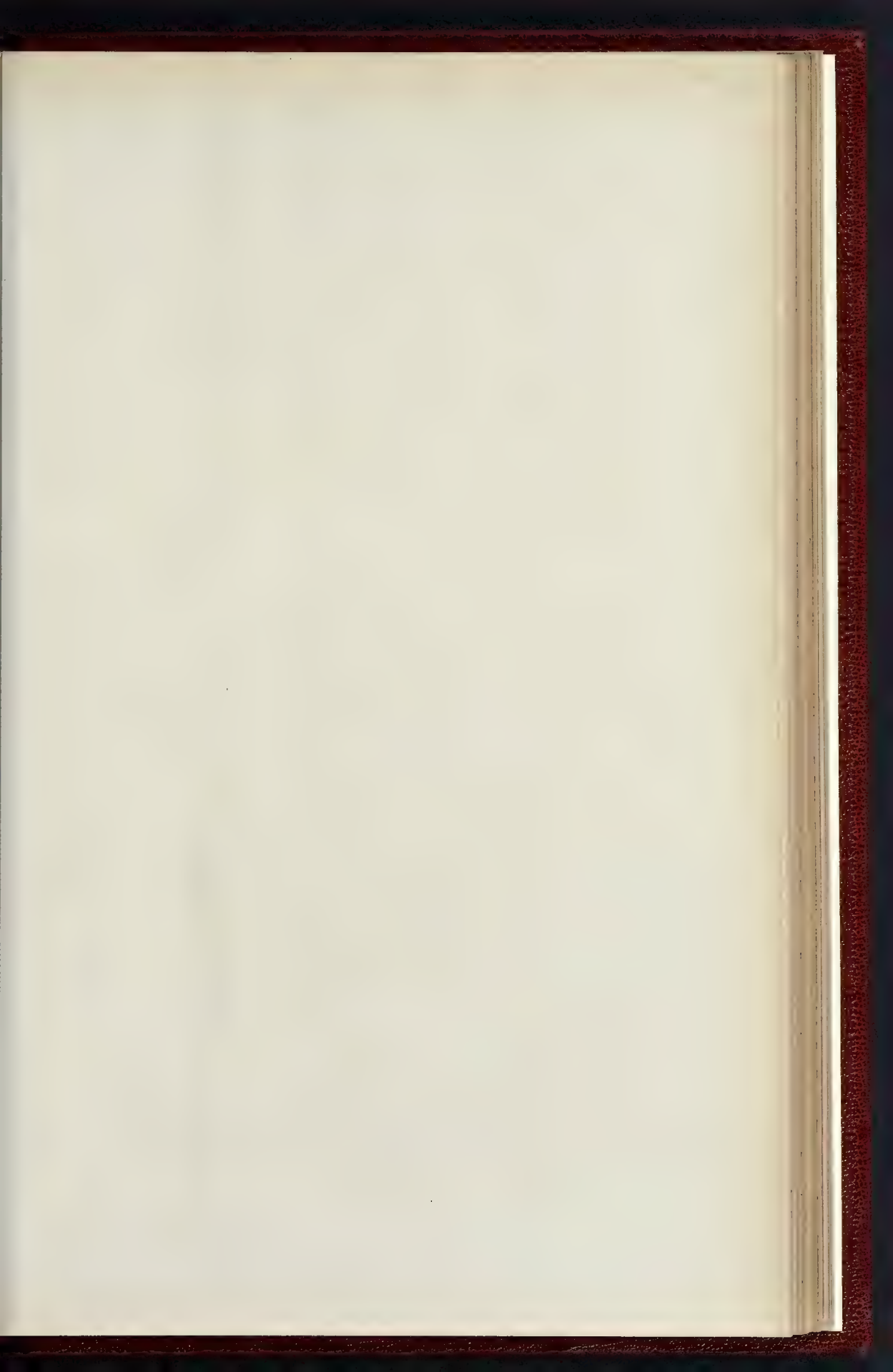
PLAN OF CELLAR.

- E Entrance from outside to Special Ward
- G Vestibule - 12 ft. x 10 ft. to the same outside
- H Main entrance - 12 ft. x 10 ft. to the same outside

Summary of Accommodation in Wards
 Male Side
 Single Ward 5 Beds
 Special do 1
 Female Side
 Single do 5
 Special do 1
 Total 12 Beds
 of
 Occident Ward

PLAN OF UPPER FLOOR.







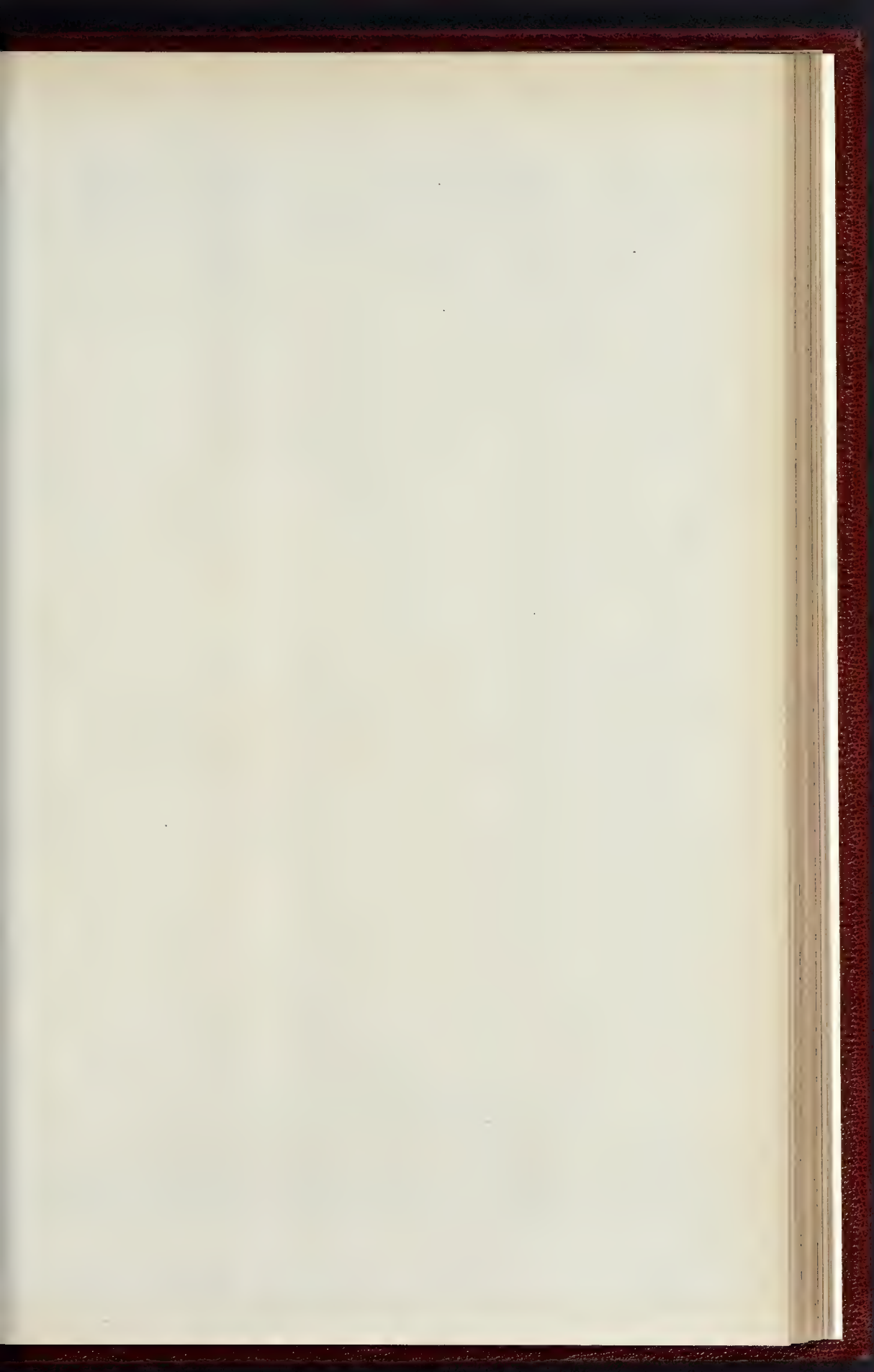
Vincent Brown, Esq. & Son, Photographers

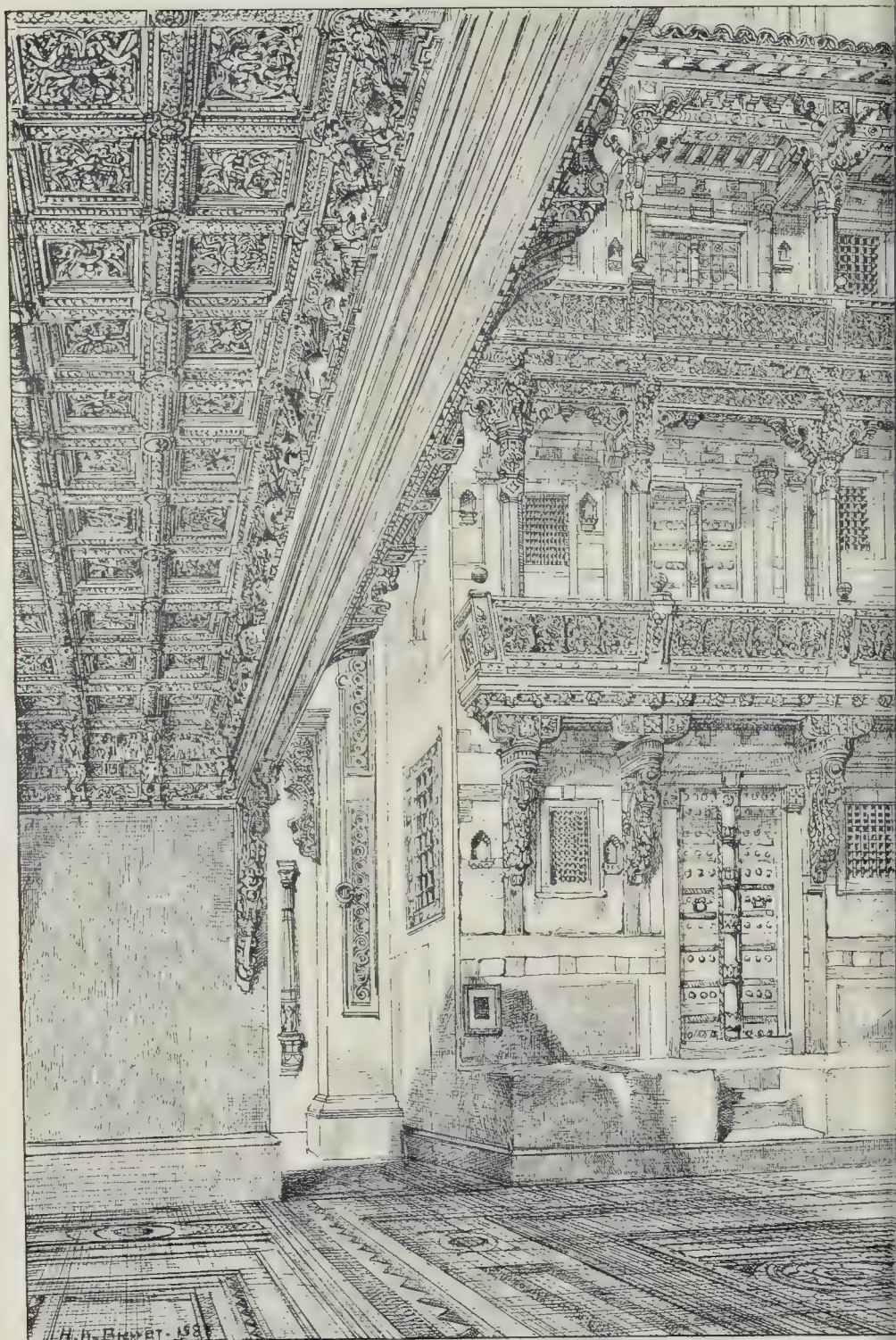
PALACE NOW BEING BUILT FOR THE
From the Designs and under the S



From a Drawing by Mr. George Nattress

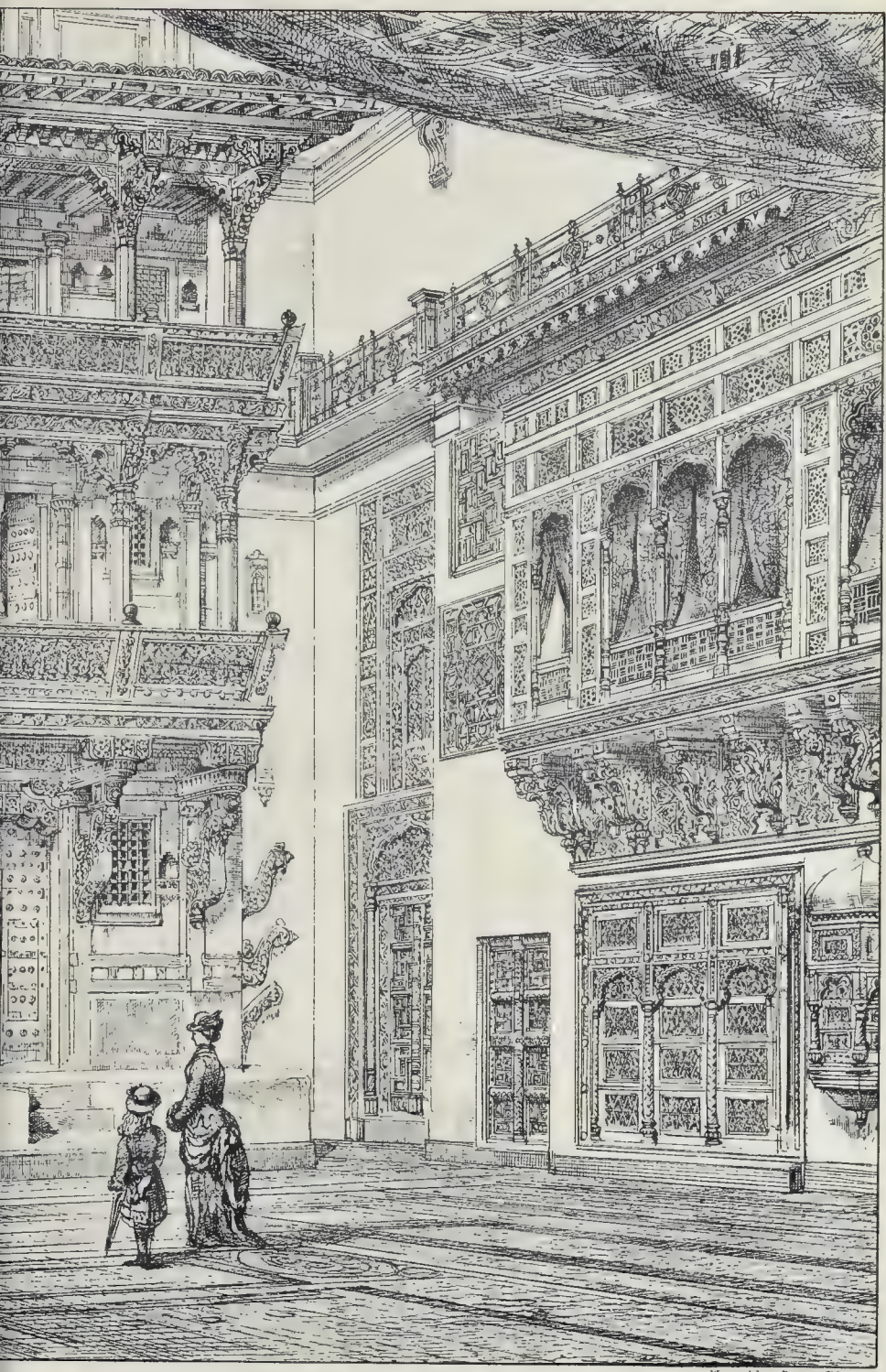
HOLKAR OF INDERE (CENTRAL INDIA),
OF MR. JOHN CAMPBELL, of Bombay.





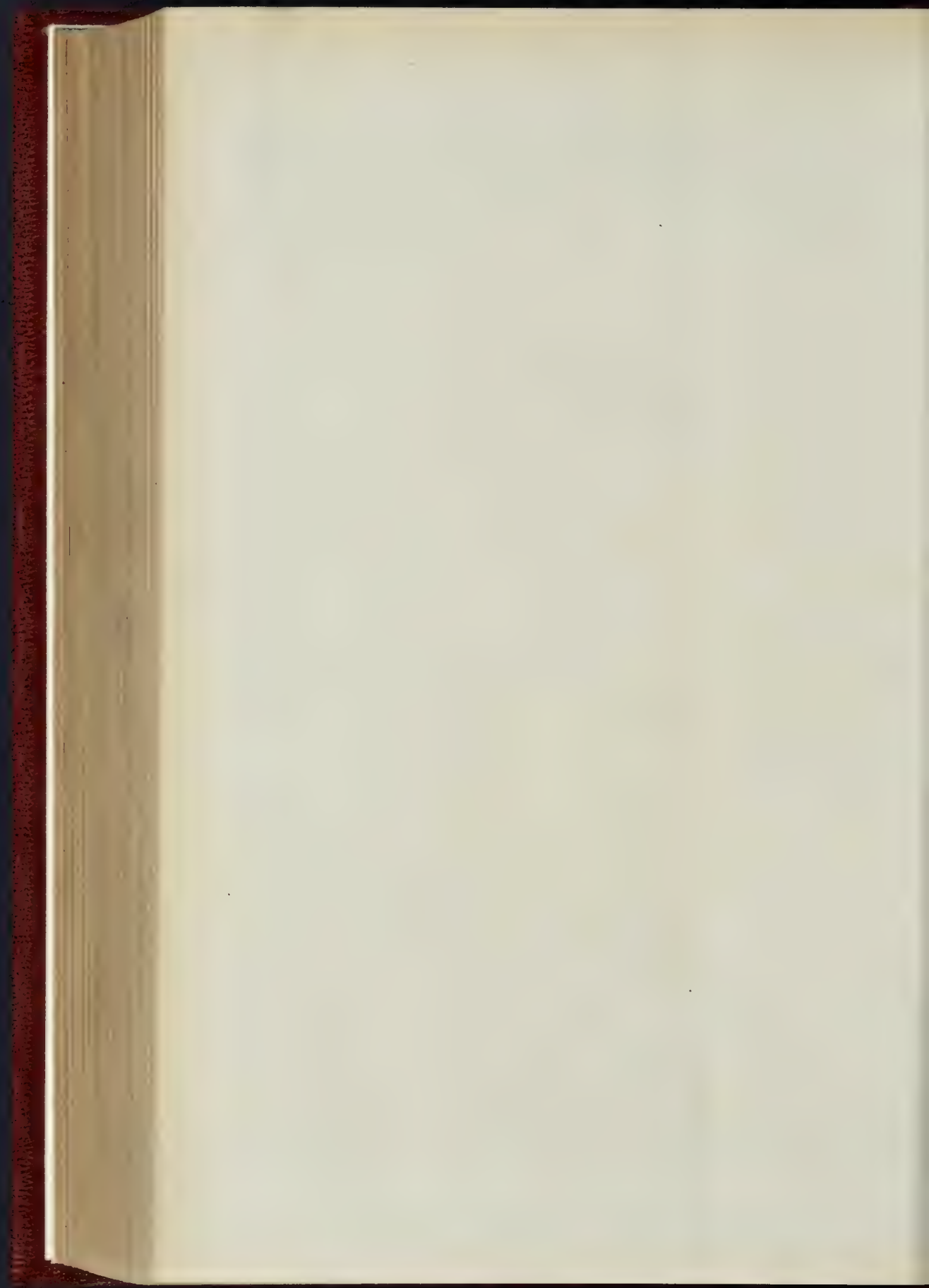
H. N. B. & T. 1937

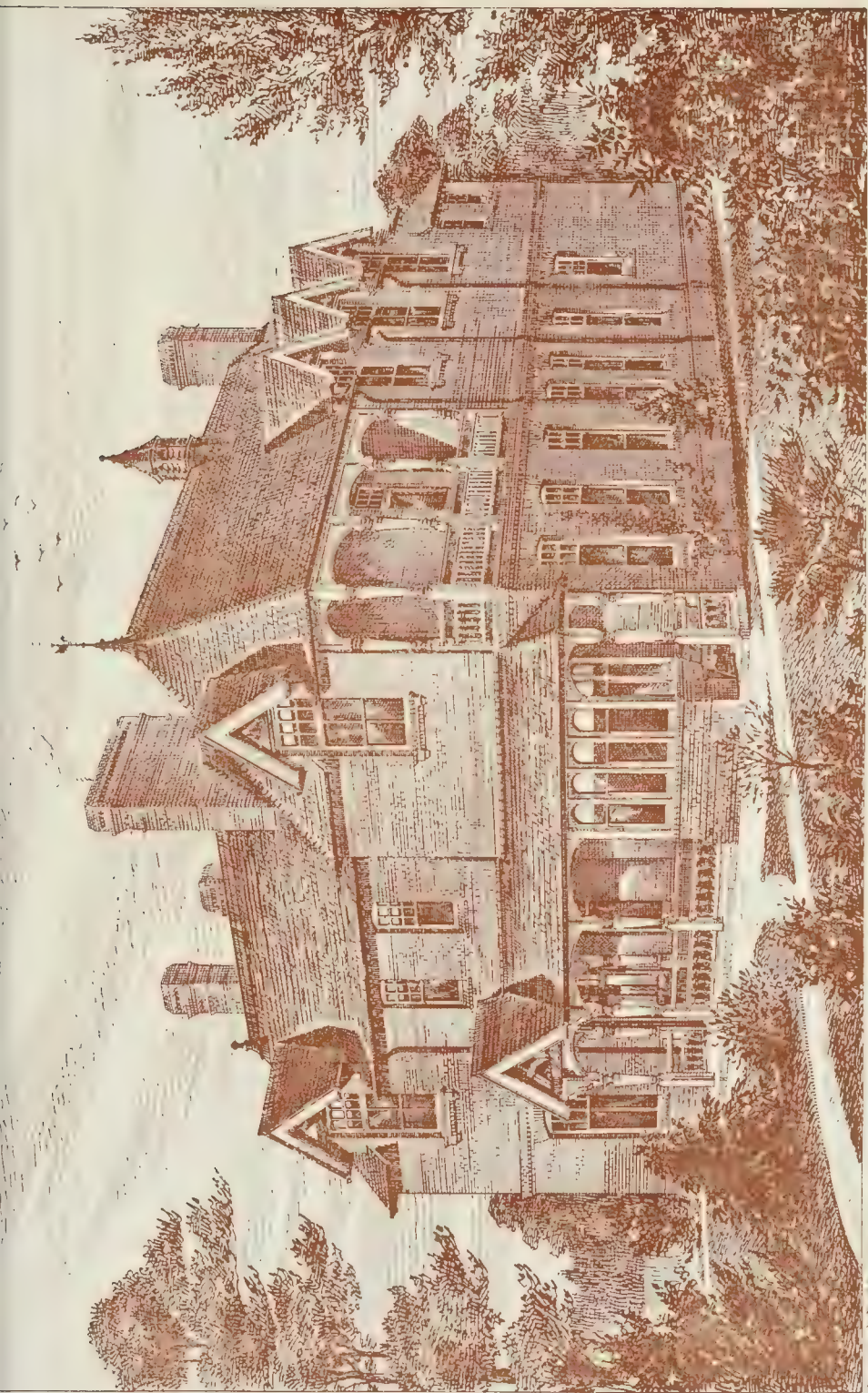
Whitteman & Bass Photographs 236 High Holborn



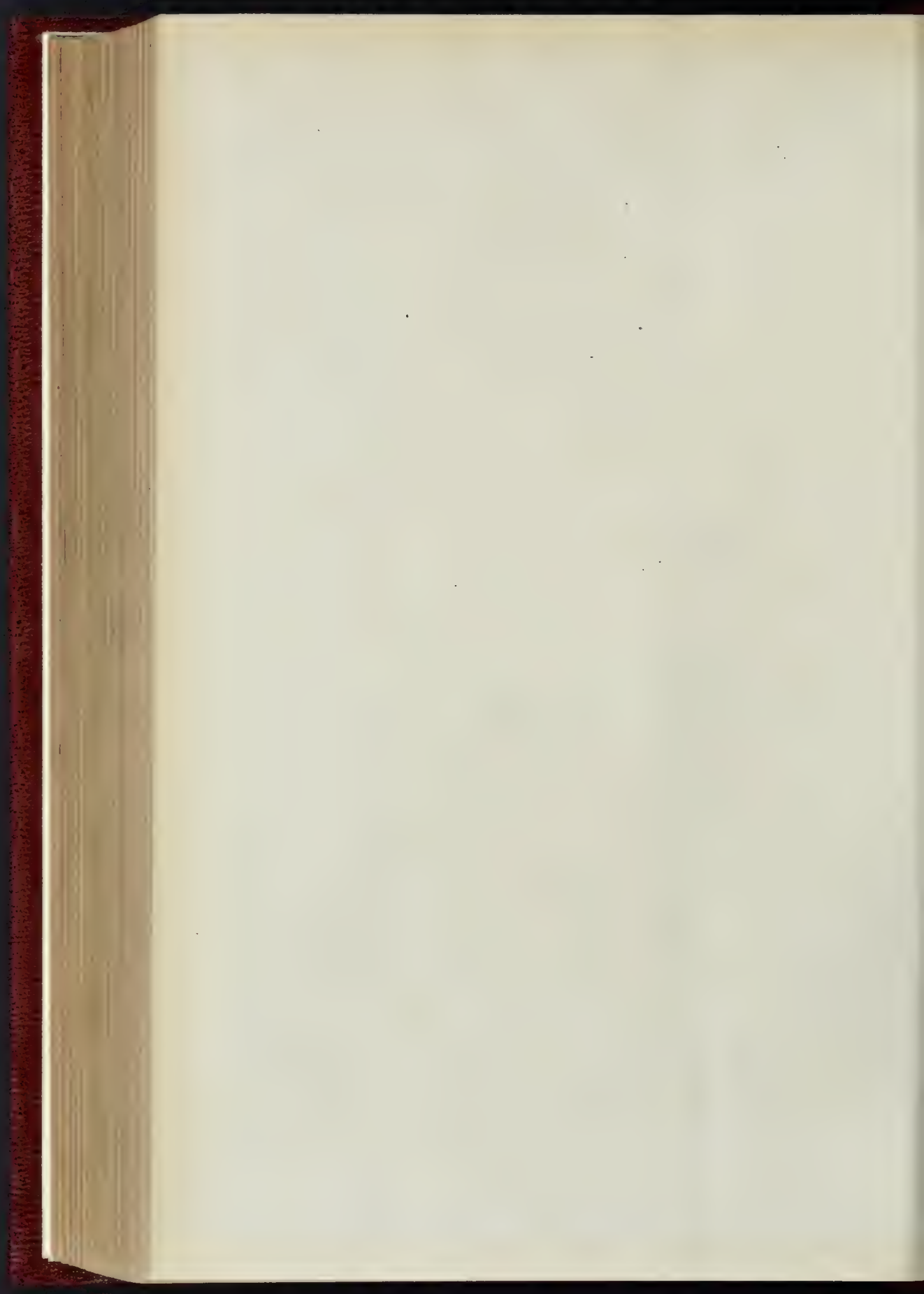
Wyman & Sons Printers "Queen's"

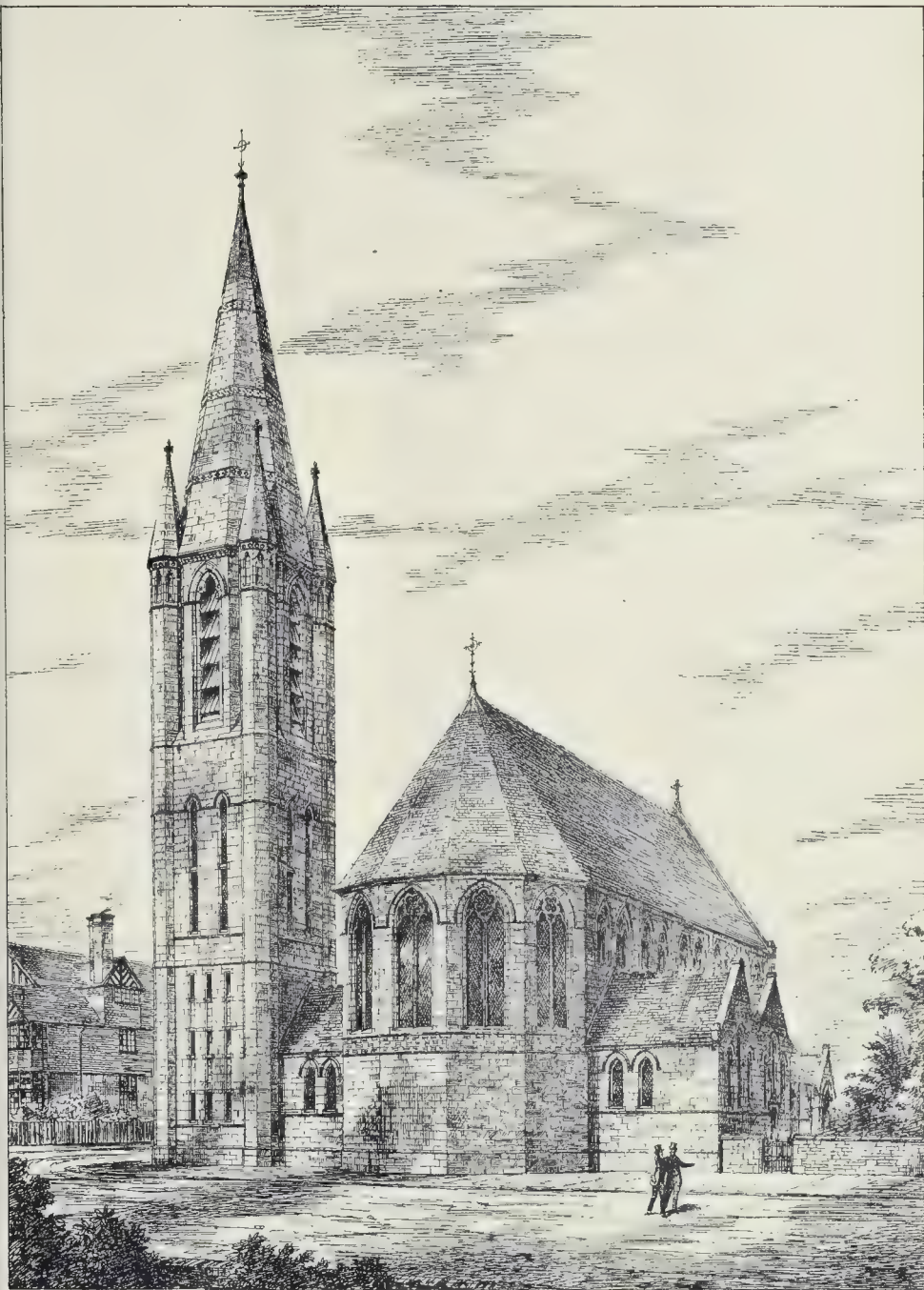
KENSINGTON.





SURBITON COTTAGE HOSPITAL, 2ND PREMIATED DESIGN. — MR. J. LOXWOOD KING, ARCHITECT, A.R.I.B.A.





Vincent Brooks Day & Son, Photo Lith.

ST. BEDE'S CHURCH, LIVERPOOL. N.E. VIEW.
MESSRS. J. E. K. CUTTS & MACMURDO, ARCHITECTS.

OPEN SPACES AND RECREATION
GROUNDS.

This was the subject of an interesting paper, read by Mr. Alderman W. H. Bailey, of Salford, at a meeting of the Manchester Field Naturalists' Society, held in the Memorial Hall, Manchester, on Tuesday evening last. After speaking of the useful work done by this Society for many years past in promoting the study of the beautiful in Nature, further progress in which work would, he believed, greatly mitigate the growth of those terrible social evils which are created by the congested state of the dwellings of the poor, he expressed it as his conviction, from a considerable acquaintance with the condition of the working classes in Lancashire towns, that there are large numbers of highly-paid artisans who have no occasion to live in the slums unless they choose. Having shown the intimate connexion between open spaces and health, and that the unwholesomeness of crowded districts is not only a cause of degradation, physical weakness, and pauperism among the ratepayers and a perpetual tax upon the inhabitants, but a charge upon the benevolent, the lecturer referred to and quoted from a pamphlet recently published on the subject by Mr. Herbert Phillips, and described what has been done by the Salford Corporation in getting hold of some of the odd scraps and corners of land which occur along all recently-widened thoroughfares, planting them with trees and shrubs, and providing them with seats. He urged that although the building regulations of the borough gave them far better streets and wider area than they had a few years ago, it would be desirable, when they next went to Parliament, to obtain improved building regulations. He suggested that it would be a great public advantage for municipal bodies to obtain Parliamentary powers to compel landowners to devote any one acre as open area in every twenty acres they sold for building purposes. After referring to the account in last week's *Builder* of the open spaces provided by the Manchester and Salford Dwellings Company, the lecturer urged that when a builder of houses is prepared to allow more passage accommodation and more street space than he is absolutely required to by the building regulations, the municipal authorities should have power to pave and flag, free of extra charge, all such extra space devoted to the public. In Salford this had already been done to some extent, but there was further scope for such action. In conclusion, the lecturer said he viewed with some alarm the idea that the evils of congested town dwellings must be ameliorated by Government assistance in the shape of public loans. If the Legislature stepped in at all it should be in order to invest local authorities with stronger powers and more stringent building regulations. The cure for existing evils in this respect was in the hands of the people themselves. They had demanded and obtained free libraries and reading-rooms, public baths, and other good things; let them, therefore, co-operate to make the dwellings of the poor more worthy of a Christian community and of the triumphs of local self-government.

MACHINERY AT THE SMITHFIELD
CLUB SHOW.

The display of machinery in connexion with the eighty-sixth annual Cattle Show of the Smithfield Club does not include many exhibits of special interest to the building trades. Agricultural implements and machinery are, of course, in the ascendant, but even among these it was not possible to detect many novelties. Such well-known firms as Aveling & Porter, Rochester; Barrows & Stewart, of Banbury; and Clayton & Shuttleworth, of Lincoln, have no difficulty in maintaining their repute. The same thing may be said of Messrs. Davey, Paxman, & Co., who exhibit portable, horizontal, vertical, and semi-fixed engines, of great excellence of design and finish. This firm lays itself out to give special attention to engines for electric lighting, and the engines which they supplied for this purpose to the recent Fisheries Exhibition won high encomium from all who saw them. Mr. James Coultas, of Grantham, has on exhibition a good portable engine, exhibiting many improvements, not the least of which is the absence of all bolt-holes under the lagging. The engine is fitted with Coultas's patent chimney-elevator, a very

necessary improvement, both for convenience and for safety of the workmen. Messrs. John Fowler & Co., of Leeds; Messrs. Richard Garrett & Sons, of Leiston; Messrs. R. Hornsby & Sons, of Grantham; Messrs. Marshall, Sons, & Co., of Gainsborough; Messrs. Ransomes, Head, & Jefferies, of Ipswich; and Messrs. Ruston, Proctor, & Co., of Lincoln, hold their own, as usual. Messrs. E. R. & F. Turner, of Ipswich, show, among other exhibits, varieties of their excellent and compact "Gippeswyk" engines, of which we have spoken in terms of commendation on previous occasions. Mr. E. S. Hindley, of Bourton, shows some of his excellent horizontal and vertical engines; in the latter some very considerable improvements in the direction of simplicity, durability, and accessibility of parts have lately been made. Messrs. R. Waygood & Co. are exhibitors of a good horizontal expansive engine, with patent governor. Messrs. Henry Wurr & Co. show some very useful machinery for the builder's yard, and for use on jobs, including woodworking machinery, combined engines and mortarmills, &c.

Among the miscellaneous exhibits, Mr. John Bellamy, of Byng-street, Millwall, exhibits wrought-iron tanks for agricultural and other purposes. Messrs. Burrey & Co., of Millwall Docks, are also exhibitors of the same class of goods. Messrs. F. Morton & Co., of Liverpool, exhibit models of galvanised corrugated iron structures. The St. Pancras Ironwork Company show some of their excellent stable, cow-house, and piggy fittings, than which none can be better. Crosskill & Sons, of Beverley, are among the exhibitors of vans and carts. Messrs. Bradford & Co. are exhibitors of laundry machinery. Messrs. F. Rosher & Co. show stable paving, and Messrs. Fabian Bros. exhibit a new and ingenious ironing machine, admirably adapted for the use of laundries or large public institutions. The linen to be ironed is passed over a revolving cylinder, beneath the polished surface of a saddle-shaped "iron" extending the whole length of the cylinder, and to which (the "iron") a to-and-fro motion is imparted, lengthwise of the cylinder. The "iron" is hollow, and heated by steam. Mr. Hancock exhibits his "Paragon Automatic Combination Bolt and Unpickable Lock," of the merits of which we have previously spoken.

CONFERENCE ON THE DWELLINGS OF
THE LONDON POOR.

The Lord Mayor (Alderman Fowler) presided on Tuesday at a meeting which he had convened in the Egyptian Hall of the Mansion House to consider the question of the dwellings of the London poor. Among those present were the Archbishop of Canterbury, the Bishop of Bedford, Archdeacon Farrar, Mr. W. Fowler, M.P., Sir R. Carden, Mr. Alderman Cotton, Sir Edward Watkin, Lord Claud Hamilton, the Rev. W. Rogers, the Rev. S. A. Barnett, Mr. Ernest Hart, Mr. George Potter, and others interested in the question.

The Lord Mayor opened the meeting by briefly expressing his opinion that what they needed was more sympathy between the rich and the poorer classes, and paying a well-deserved tribute to the clergy who had worked among the poor in the East end, and the house-to-house work of the City Mission.

In the course of the proceedings Mr. Sawell, secretary of the City Mission, said the root of the whole question was found in the habits of the people. They might clear away the "rookeries," but it was more difficult to change the habits of the "rooks." This, he believed, would scarcely be done in a generation.

Lord Claud Hamilton, the chairman of the first established Artisans' Dwellings Company, said he believed private enterprise was the only solution of this great question; State aid should be entirely dismissed from the calculation, and they must depend upon their own exertions. He dwelt upon the fallacy of many of the proposed remedies, and especially that of emigration, which was absurd. They did not want fresh laws; all that was needed was to put the present legislation in force.

It will be observed that these conclusions are entirely in accordance with the views we have already expressed in a recent article, and in a note to a letter on the subject which we printed last week.

Resolutions were passed at the close of the

meeting, somewhat lengthy in wording, but the main end of which was in the same direction, viz., that the consolidation and more vigorous enforcing of existing statutes in regard to insanitary dwellings, was the best weapon that could be used to fight against evils which are not wholly within the province either of law or philanthropy.

SCHOOLS OF ART.

Wolverhampton.—At the annual meeting of the Wolverhampton School of Art, held on the 30th ult., Sir Rupert Kettle, in the course of some remarks on the practical applications of art, remarked that he would have been much better pleased had they been able to see upon the school walls some examples of the application of art education to the productive industries of the town. The desire was that the trade of the town should be developed. Therefore it would have given him pleasure to have seen an attempt at modelling of metal-work patterns, or the drawing of designs of something made in the town. His desire was that the principle of art should be applied to some ornamental or decorative work which would be absolutely useful to the place, and he hoped that a class would shortly be formed in the school having that object in view. As an example, he instanced the great usefulness of modelling in wax for the improvement of brasswork made in the town, and hoped some attention would be given to art teaching of that character. He remarked that if among the judges at South Kensington one had been appointed to judge the merits of the rendering of surface textures, the school would have stood very much higher in the prize-list.

Newbury.—On Saturday last the prizes gained by the students in the Science and Art Schools at Newbury were distributed by Mr. Walter, M.P., who delivered an address to the students, in the course of which he commented on the entire neglect in the great public schools, till very recently, of any instruction in science or art. He considered these subjects, up to a certain point, should be part of the instruction of every boy and girl.

BUILDING PATENT RECORD.*

APPLICATIONS FOR LETTERS PATENT.

- 5,585. W. J. Penny, London. Window-sashes and sash-frames. Nov. 30, 1883.
- 5,596. G. Greig, Harrieston. Ventilating apparatus. Dec. 1, 1883.
- 5,621. G. W. von Nawrocki, Berlin. Laying wood pavement. (Com. by R. Albrecht, Tilsit, Germany.) Dec. 3, 1883.
- 5,640. H. Darby, London. Stoves for warming air for heating apartments or buildings, &c. Dec. 4, 1883.
- 5,650. R. Hall and C. C. Woodcock, Leicester. Wood-paving. Dec. 5, 1883.
- 5,659. W. P. Thompson, Liverpool. Seat-trap for wash-basins, water-closets, &c. (Com. by A. Edwards, Ashbury Park, U.S.A.) Dec. 6, 1883.

NOTICES TO PROCEED

have been given by the following applicants on the dates named:—

Dec. 4, 1883.

- 3,718. B. D. Healey, Brighouse. Asphalte apparatus. July 30, 1883.
- 3,740. T. W. Helliwell, Brighouse. Water-closets. July 31, 1883.
- 3,754. C. M. Tate, London. Ventilating, &c., the atmosphere of rooms, houses, and buildings. July 31, 1883.

Dec. 7, 1883.

- 3,760. F. J. Austin, London. Automatic flushing and antiseptic tank.
- 3,848. W. Clark, London. Fireplaces and fire backs. (Com. by J. H. Burnam, Fayetteville, U.S.A.) Aug. 7, 1883.

ABRIDGMENTS OF SPECIFICATIONS,

Published during the week ending December 5, 1883.

- 1,891. A. M. Clark, London. Appliances for preventing the passage of flames from one story to another. (Com. by J. McCarroll, New York, U.S.A.) April 13, 1883. Price 2d.

The well of the elevator lift is enclosed with fine wire gauze, provided at each floor with doors of the same. The well is also divided horizontally at each floor by trap-doors of wire gauze, which are lifted as the cage passes through them. (*Pro. Fro.*)

* Compiled by Hart & Co., Patent Agents, 186, Fleet-street.

1,894. W. Berry and P. Stuart, Edinburgh. Pavements. April 14, 1883. Price 6d.

The pavement is formed of two tiers of blocks, and in the meeting faces of these are grooves through which telegraph wires, &c., can pass.

1,897. H. J. Haddan, London. Manufacture of mortar, concrete, and artificial stones. (Com. by T. F. Leupolt, Zittau, Saxony.) April 14, 1883. Price 2d.

Portland cement, plaster of Paris, lime, salt, and soluble glass, are mixed with water in a box by blades on the sides of the wheels thereof, and then formed in a moulding chest. (Pro. Pro.)

1,906. J. A. Hanna and T. F. Shillington, Belfast. Stoves. April 14, 1883. Price 6d.

This is an improvement on Patent No. 2,749, of 1883, in forming a chamber below the grate, to receive the ashes which pass from the fire thereto, through an aperture in the front of the solid bottom of the grate, while a bar prevents the fuel from passing through, and in many other details not capable of being condensed.

1,926. A. M. Clark, London. Construction of walls, ceilings, floors, partitions, air-shafts, &c., of buildings, for preventing the spread of fire, and admitting light and air. (Com. by J. McCarroll, New York, U.S.A.) April 16, 1883. Price 2d.

These are constructed of two or more layers of wire gauze, kept at a fixed distance apart, and which may be embedded in mortar or plaster, &c., or which may be left uncovered. (Pro. Pro.)

1,930. J. D. Sprague, London. Hinges or movable joints. April 17, 1883. Price 2d.

These are applicable to swing windows, looking-glasses, &c. The end of the pivot is shaped like a ball, which is held in a suitable socket, and a spring clasp the ball and prevents the pivot being easily turned. (Pro. Pro.)

1,951. C. J. Bell Greenwich. Movement for swing looking-glasses, &c. April 17, 1883. Price 2d.

Inside a short cylinder or barrel which forms the pivot is a spring which presses against the interior periphery of the barrel, and holds it in position. (Pro. Pro.)

2,052. R. Hudson, Gildersome. Manufacture of metallic roofing, cisterns, boilers, wagon and barrow bodies. April 23, 1883. Price 6d.

To dispense with "dishing," the metallic sheets are furnished with angle-pieces, or are made to overlap, and are joined together by riveting or bolting, and the roofs, &c., are built up in angular sections thereof.

2,099. J. Haigh and I. Haigh, West Bromwich. Apparatus for flushing water-closets, urinals, &c. April 25, 1883. Price 6d.

The cistern is divided into two compartments. In one the discharge-pipe rises nearly to the water level, and over it is a cap, inside of which is attached to the top thereof a pipe sliding tightly on the stand-pipe, and in the upper part of the sliding pipe are apertures. The bottom of the cap is undulated, and the top is attached to a lever and is counterweighted. A valve also attached to this lever governs the passage from the other compartment in which is the ball-valve. Both compartments are filled up to the required level, and the pull depresses the cap till it touches the bottom of the cistern, and the water flows through the undulations in the bottom of the cap through the apertures in the upper part of the sliding pipe, and down through the stand-pipe, thus setting up the syphon action that empties the cistern. At the same time the valve closes the passage between the two compartments, and no more water can enter until the pull is released, and the cap is raised, when the valve is also raised, and a fresh supply of water passes in.

DRAINAGE AND WATER SUPPLY.

Portliven (Cornwall).—On the 7th inst. Mr. Smith, C.E., Local Government Board inspector, held an inquiry at Portliven relative to a proposal by the Helston Rural Sanitary Authority to constitute portions of Sithney, Breage, and Portliven a special drainage district, and to borrow £6,000, for works of sewerage and water supply. Mr. F. V. Hill, clerk to the Authority, having given evidence as to scarcity of water in the district during the summer months, Mr. Dennis, C.E., said he had been consulted with reference to the points under consideration. He proposed to take the water from a spring of an old mine adit below Breage Churchtown. The body of the volume was gauged in the summer months, and the minimum quantity yielded was 27,000 gallons a day. The water could be acquired from the Duke of Leeds, the owner of the land. The height of the spring was 200 ft. above the quay, and more than 100 ft. above the lowest house in Portliven. There would be plenty of pressure. At the mouth of the adit he proposed to form a small covered reservoir to contain 40,000 gallons of water. There would be forty-two hydrants about the town, and thirty stand-pipes. The cost of this portion of the work was £2,151. In reply to a ratepayer, Mr. Dennis said the water-gauges were taken this year, which was a fair average year.—Mr. W. Husband, C.E. and other gentlemen having given evidence, the inquiry was brought to a conclusion. The town clerk distinguished himself (according to the report in the *Western*

Morning News) by opposing the project, observing "I'm a ratepayer, and do not want any water in the place!"

Darlington.—At the monthly meeting of the Darlington Local Board, on the 4th inst., Mr. Pritchard, C.E., was instructed to prepare plans and specifications for sewerage works. The Chairman said the sewerage of Darlington was a very serious matter, as it would involve an expenditure of 25,000. It was resolved that a provisional contract be entered into for the purchasing of land for sewerage works at The Green, at a total cost of 1,291l. 12s. 3d., and also that the clerk give notice to the Public Works Loan Commissioners that the Board would require a loan of 21,000l. for sewerage works and 4,000l. for public offices.

Hendon.—The Hendon Local Board having certain drainage works in contemplation, for which plans and specification for the first contract were prepared by their surveyor (Mr. Pollard), seem to have been so much concerned as to the wording of the specification that at a recent meeting they referred it to a committee for consideration, and at the meeting of the Board on the 1st inst. the committee reported that they had examined the document, and approved of the same, subject to the legal clauses being seen to by the Board's solicitor. But this did not seem to satisfy some members of the Board, and it was eventually resolved that each member of the Board be supplied with a copy of the specification for perusal. Mr. Hancock, one of the dissatisfied members, said he would have liked attention to have been paid in the drafting of the specification to the printed "Suggestions" of Sir Robert Rawlinson, C.B. Mr. Pollard said he knew the work referred to by Mr. Hancock. There was a copy in the office. Some of the suggestions it contained were very good. Mr. Hancock continuing, said they were following the precedents of that colossal body, — the Metropolitan Board of Works, — instead of following the instructions of the Local Government Board. At the same meeting it was resolved to open negotiations with companies who might be willing to treat the sewerage.

IRON AND CONCRETE.

Sir,—Having, perhaps, tested, examined, and reported upon as many specimens of concrete as most people, I trust I may be permitted to add a few remarks to those which have already been made in your columns by Mr. Tarver, Mr. Emerson, and Mr. Thwaite. I am glad to hear that it is a material which is beginning to seriously attract the attention of architects, and that it is "the building material of the future." I do not know that I should like to go quite so far in eulogy of it myself, for the simple reason that there is concrete good and concrete bad, and a very small quantity of the latter will ruin the reputation of the good, and prevent its use for years. Given a properly-proportioned concrete, made with suitable aggregate and the best cement, and also properly gauged, I know of no building material that can equal it in strength, hardness, or durability; but it is on those four points,—proportion, aggregate, cement, and gauging,—that its value rests, and these points should therefore have the most careful attention of all those making and using concrete.

For foundations and in trenches, where the concrete is confined on all sides, a lesser quantity of cement is required than in more finished work. Ballast, by itself, would be almost as good as concrete; and, in fact, though called concrete, the very homopathic dose of cement which is sometimes added to it,—perhaps only the shadow of a cement-sack,—reduces it to little else but ballast. Failure, however, is not likely, and if it does occur,—well, it is out of sight.

Mr. Tarver is proposing to use concrete instead of stone, and I admit that stone is the material which concrete is destined to supersede in districts where building stone is scarce, but I submit that it should be used as stone and not as iron; and I would ask Mr. Tarver if, in the first instance, he would put up a stone beam in the position shown in his sketch having 15 ft. bearing? And, secondly, if he did so what size he would make it? Then, without going into the comparative strength of different building stones and concrete, my opinion is that the concrete beam should be the same size as the stone one. If, however, he is only going to cover an iron girder with concrete, then I maintain that he is using a material for a covering

which is a great deal too good, as well as being unsuited to the purpose. Plaster, or any cheap combination of lime and sand, would be equally effective in appearance, have all the fire-resisting properties, and be much lighter than concrete; but why not build his church of concrete, treating it as he would stone? He can get all the detail of ornament, and all the strength, at considerably less cost,—and his clients, the clergy, would not "have to shrink from an innovation in the architecture of their churches."

As I look upon the manner in which concrete should be used differently to your correspondents, it is not surprising that I cannot follow them in the means they suggest, or giving it tensile strength. Concrete is practically incapable of tension, and I fail to see how the introduction into it of a material which is capable of great tension can increase its strength; for it appears that the concrete would break before the iron rods could have had any strain whatever put upon them,—the combination of two such different materials in one member must result in the entire uselessness of one or the other.* If the iron has to do the work, then the concrete puts an undue strain upon it. If the concrete is to do the work, then the introduction of iron rods or any other form of iron destroys its homogeneity and weakens it.

I cannot help thinking that Mr. Emerson's concrete vaults would be equally strong without the wire netting. To be of any use the netting must be strong enough to carry this concrete, in which case I should think the concrete was unnecessary; if such is not the case, then the concrete is weakened by the insertion of the netting.

The manufacture and use of concrete is too large a subject to deal with in an off-hand manner. It wants very careful consideration, and above all, careful supervision in manufacture; but, with proper materials and proper manipulation, I agree with Mr. Emerson that concrete is the "building material of the future."

HENRY FAIRB.

"QUANTITIES."

Sir,—Permit me to say a word in reference to the letter by "E." in your issue of the 1st inst., and to that by J. H. Colls in the *Builder* of the 8th inst.

When builders tender in competition, no doubt prices are their affair, and not the architect's. But the quantities to which the prices are attached are surely the responsibility of the architect, who should control this part of the business as much as any other in his client's interests, and who knows, or who should know, exactly what quantity his design requires.

In the Transactions of the Royal Institute of British Architects for the Session 1880-81, pages 249 to 252, is a statement on this subject which I have never yet seen disproved. Any architect (competent for this work) who takes out, or controls the taking out, of his own quantities, knows well that tenders on his own quantities are almost always considerably lower than those founded on the quantities of an outside and independent surveyor, whose main interest is to satisfy the *builders*. Such a man has to see that there is *enough*. He is punished if there is too little. There is no one in the client's interest to see that there is not too much. There is hardly anything that affects a client's pocket so directly and so extensively as the way in which quantities are taken out, and measuring of builders' work done.

I contend that any architect who hands this work over to an independent surveyor fails to discharge one of his chief duties to his client. I maintain, also, that if clients understood the subject they would insist on this duty being discharged by the architect, or they would at least often prefer the architect who *saw to it himself*.—(a) that the quantities were not only enough, but not more than enough; and (b) that when extras and deductions are adjusted at the end, the client's rights are as much respected as the builder's.

In my experience, even the most reputable of outside surveyors have a great disposition to squawk up pleasantly for the builder, and are very apt to accept claims because they do not quite see how to disprove them; whereas, the right rule manifestly is to admit no claim of the righteousness of which the builder has not clear proof.

Again, builders are always stiff in not admitting deductions; and outside surveyors (seldom well acquainted with all the circumstances and bearings of the case) are usually lax in insisting on deductions and ready to receive a builder's flimsy "reasons" for not deducting.

* The theory is that the iron is put in to resist tensile strain where it may be expected, and the concrete supplies the resistance to compression.—E.

An architect proper is much more than a designer. He must be able to get his design duly carried into execution (often quite as difficult a matter as making the design on paper). And, thirdly, he is,—or he should be,—the custodian (so far as the building goes) of his client's purse. This he cannot be if he hands over money matters to a man whose interests are, and sympathies may most likely be, on the side of the builder.

A PROVINCIAL ARCHITECT.

* * According to our correspondent's theory, the builders ought very much to prefer an "outside" surveyor, in their own interests; according to their own showing, they prefer that the architect should be responsible for the quantities. Even if "Provincial Architect" is right, therefore, his reasons would seem to be the wrong ones.

THE LAW BUSINESS OF ARCHITECTS.

SIR,—There is much in the discourse delivered by Professor Kerr to the Architectural Association contained in your issue of the 1st inst. (p. 714) that may be read with interest by all concerned in the building trades. There is undoubtedly at the present time much less honourable practice in every branch connected therewith than even twenty years ago. Every trade and profession is in a crowded state at present, hence the keen competition, and necessity often unfortunately influences principle.

I endorse the opinion expressed as to builders having themselves to blame for undertaking to supply materials of best quality. They cannot be mistaken in this matter. Most builders are practically acquainted with the quality of the various materials applicable to building purposes, and are well aware of the difference in quality and price of such materials.

Surveyors generally take great care in specifications of all materials required for carrying out buildings in accordance with drawings prepared by architects, and in due course the contractor commences his contract,—often, no doubt, after reading scarcely a line of the conditions or specifications, but beginning with reasonably good materials; the brick, timber, stone, merchant, &c., supplying good materials, or such as may be considered passable at first.

The contractor selected being generally the lowest in tendering, presses on all to supply him with materials at the lowest possible prices; hence after the commencement, each delivery of materials is generally of worse quality than the former; also the quality of the labour. Often the most qualified workmen are dismissed for men at lower wages, or are urged to do more work by scamping every part possible. As the work proceeds generally all these matters progress with it. If the contractor at the commencement deal with one of the merchants supplying a reasonably good article, travellers call and urge that the firm they represent supplies as good an article at some slight reduction in price. All pressure is brought into force for economy in price of materials and labour, entirely regardless of conditions and specifications; the contractor urges on his foreman in charge, and who, of course, in turn does all he can to get over the work as cheaply as possible for his own security. But the clauses in the conditions and specifications remain the same and possess the same meaning as when the contractor signed the contract. It is a bona-fide agreement, and the proprietor has a legal and perfect right to what he agrees to pay for, and if contractors were more frequently compelled to adhere to the clauses in agreements on building contracts, there would not be the inferior work now visible and daily increasing in all parts of the country.

The vast difference in prices of tenders should indicate to proprietors what they may reasonably expect, generally, from the competitor offering to do work often at one-third less than the highest tender.

R. G.

THE "PARSON'S UMBRELLA."

SIR,—In your notice of the Rev. Canon Blunt's interesting records of the Church of Chester-le-Street, (p. 706) you mention the "Parson's Umbrella." May I suggest that this article was for the protection of the clergyman in stormy weather when conducting funerals? I remember seeing such an umbrella in the vestry of an old church in Lapshish, which was quite a curiosity in its way. The stick was a pole, and the framework all of wood; the covering, some kind of oilcloth,—in fact, a sort of portable tent. And I was told it was, or had been, used in the way I have suggested.

G. W.

ROMAN REMAINS AT FRILFORD, ABINGDON.

SIR,—The account of the excavation which appeared in the *Times* and other papers was entirely unauthorised on the part of all those connected with it, and is calculated to give a very exaggerated impression of the importance of the discovery. The actual circumstances are as follow:—Mr. Aldworth, the owner of the property on which the remains are situated, has for some years noticed the abundance of Roman fragments on and about the spot. Taken in connexion with the previous discovery at Frilford of a Romano-British and Saxon cemetery, excavated and described by the late Dr. Rolleston, Mr. Aldworth rightly regards the occurrence of Roman coins and pottery on this site as indicating the neighbourhood of a Roman villa.

At Mr. Aldworth's request, Professor Moseley and myself in his company went over to examine the ground, and we were so satisfied with the result of a preliminary dig that we at once decided to undertake a more extensive excavation, in conducting which we had the ready help of the owner of the soil and the friendly co-operation of Dr. E. B. Tylor.

The result has been to lay bare one complete and one fragmentary ground-plan of a Roman building. The foundations of the first form a small parallelogram, with a somewhat projecting hypocaust chamber in the south-eastern corner, and many small rooms. We discovered a few fragments of Samian ware, but the traces of tessellated pavement and wall-painting left do not betray any great amount of luxury on the part of the Roman possessor. The ground-plan of the second building has been too imperfectly preserved to afford any certain clue to its shape, but the presence of a longish drain or conduit favours the conclusion that one part of it was devoted to a bath-chamber.

As we have not altogether completed our observations, it would be premature on my part to give you a more detailed account. When, however, our report is finished, I shall be very happy to send you a plan of the villa and full details.

In conclusion, I can only say that should the circumstances of the present discovery be of interest to any of your readers, you are quite at liberty to publish this letter.

ARTHUR J. EVANS.

Oxford, Dec. 8, 1883.

DILAPIDATIONS.

GALPIN C. HUSSEY.

SIR,—Our attention has been drawn to a paragraph in the issue of your paper of Dec. 8, calling attention to this reference. The rather misleading report which has been sent to you would naturally lead the reader to suppose that the surveyors on the opposite sides had differed as to the money values of the work to be done. We think it right, therefore, in justice to Mr. Christopher and Mr. Edmeston, the plaintiff surveyors, to state that, as the referee remarked, the question turned almost entirely upon the legal interpretation of a rather peculiar covenant, a question upon which the counsel engaged had given differing opinions, and upon which we are about to obtain a higher judicial decision.

It was admitted that, presuming that plaintiff was entitled under the covenant to claim that the whole work should be done, the value set upon it by his surveyors was not an excessive one.

LEONARD & LEONARD.

* * We have received letters to the same effect from Mr. Edmeston and Mr. Christopher.

The Society of Engineers.—The twenty-ninth annual general meeting of the members of the Society of Engineers was held on Monday evening last, the 10th inst., in the reading-room of the Society, Victoria-street, Westminster. The chair was occupied by Mr. Jabez Church, M. Inst. C.E., F.G.S., president. The following gentlemen were balloted for and duly elected as the council and officers for the ensuing year, viz.:—As president, Mr. Arthur Rigg; as vice-presidents, Mr. F. E. Duckham, Mr. Charles Gandon, and Mr. Perry F. Nursey; as ordinary members of council, Mr. Robert Berridge, Mr. T. H. Hovenden, Mr. A. F. Phillips, Mr. Henry Robinson, Mr. W. Schönheyder, Mr. John Waddington, Mr. A. T. Walmisley, and Mr. N. Ogilvie Tarboton, the last-named gentleman being a new member of the council; as honorary secretary and treasurer, Mr. Alfred Williams; and as auditor, Mr. Alfred Lass.

ILLOGICAL SANITATION.

SIR,—The recommendation by Dr. Charles Kelly to ventilate the street sewers up the water-closet soil-pipes of our houses, because he considered cases of enteric fever had occurred from the effluvia escaping from the sewer-gratings in the street, is surely a curious style of improving matters. It looks to me like "out of the frying-pan into the fire."

Seeing, as per p. 751, he referred to special ventilating shafts up the sides of houses for the sewers, it would have been far more sensible to have recommended that the putting up of such should be compulsory than, as he does, to advocate the disuse of disconnecting-traps and the letting on of the sewer-gases with their concomitants to the people's soil-pipes and into their houses!

Another inconsistency in Dr. Kelly's remarks is his advocating the discharge of sinks and baths above ground, the water to run by an open-air channel into a trap at some distance so as to prevent all possible chance of sewer-air entering by the waste-pipes, and then actually forcing the soil-pipes with their branches inside of the houses to be full of it!

His ideas are absurd, and I was glad to see that Mr. Mark H. Judge had spoken out in condemnation of them. Had he or some other person not done so, the ghost of Parkes might have blown the Museum up.

W. P. BOCHAN.

SEWERS AND HOUSE DRAINS.

SIR,—In your report of the proceedings at the Parkes Museum of Hygiene on the 29th ult., I am glad to have said that "disconnection of the sewers and house drains was imperatively necessary so long as sewers were imperfectly constructed and inadequately ventilated."

This does not quite convey the meaning of my remarks, as it implies that, in cases where the sewers are properly constructed and ventilated, I was of opinion that disconnection would be unnecessary; whereas I said that in all cases every house should be disconnected from the public sewer, and that the owner or occupier should be held responsible for the ventilation of his own drains and the sanitary condition of his own dwelling.

In my opinion, the public sewers should be thoroughly ventilated by the public authority, and the ventilators as well as the sewers should always be under public control, which could never be the case where Dr. Kelly's suggestion, that private house-drains and soil-pipes should be used as ventilators for the public sewers, might be adopted.

In case of an epidemic of typhoid fever, for instance, the only protection against the disease germs entering every house in the district having a water-closet inside the house, would be an absolutely perfect trap and sound soil-pipe and drain.

MARK H. JUDGE.

LIABILITY FOR DAMAGE CAUSED BY HOARDINGS.

WILSON V. CLARKE.

This case, heard in the Clerkenwell County Court on the 3rd inst., was one of some importance to builders and others as regards the erection of street hoardings.

The plaintiff was a cab proprietor, and the defendant a builder. The claim was for 73s. 8d., damage done to a Hansom cab, and loss sustained through coming into collision with a hoarding in Chancery-lane. The hoarding was in front of some buildings which the defendant was erecting, and between it and the road were placed some balks of wood to protect foot passengers from the vehicular traffic. It appeared that on the 13th of August a man in the plaintiff's employ was driving his horse and Hansom cab from Fleet-street towards Holborn through Chancery-lane, and in passing the hoarding, there being no light, the cab came in contact with the balks of wood, was overturned, the lamp smashed, and other damage done, besides injuring the driver.

For the defendant it was contended that he was not the right person to be sued. By the Paving Act, 57 Geo. III., cap. 29, sec. 15, it was enacted "that no person or persons whatsoever should erect, set up, or build, in any public place within the jurisdiction thereof, or erect any posts, bars, rails, or any enclosure for any purpose, without having a licence and sanction of the surveyor of that district." That licence was taken out by Messrs. Willing & Co., for posting their advertisements on the hoarding in question.

The Judge (Mr. Eddis, Q.C.) held the defendant's view of the case to be the correct one, and a verdict was given for the defendant, with costs.

Royal Courts of Justice Clock and Bells.

We understand that the clock and bells (furnished by Messrs. Gillet & Co.) are now completed, and that the clock will be formally started by Messrs. Blomfield & Street, the architects to the building, at 11:30 for noon on Tuesday next, the 18th inst.

PROVINCIAL NEWS.

Longton (Staffordshire).—On the 5th inst. Major Tulloch, R.E., an inspector of the Local Government Board, held an inquiry at the Court House, Longton, into an application which had been made to the Board by the Town Council to borrow a sum of 20,000l. for the extension of the Gasworks and 2,500l. for the completion of the baths. The Town Clerk explained that the producing capacity of the present Gasworks had now become insufficient in consequence of the increased consumption and the growing requirements for the supply of gas. There was now only sufficient storage for sixteen hours' consumption, and if anything unforeseen should occur so that an increased consumption was demanded, they would be quite unable to provide for it. The Council therefore considered it absolutely necessary to extend the works. In reply to the Inspector, it was stated that the works were very profitable, and that last year they earned a net profit of 3,920l. for the borough after repaying the principal and interest. There being no opposition on the part of the ratepayers, the Inspector passed on to the subject of the loan of 2,500l. for the baths. Councillor Farmer submitted a statement showing that there was still due on the original contracts and for extras a sum of 1,734l., the balance being intended to be used in improving the baths in various particulars, and for increasing the heating powers so as to supply the demand for warm baths. In answer to the Inspector, the ex-Mayor said that on the average the baths had brought in within about 50l. per annum of the working expenses. Major Tulloch: That is very good; if they continue to do that, you may congratulate yourselves. He added that he did not know of any town where the receipts from baths covered the maintenance, but the small amount which was required from the rates conferred a great boon on the inhabitants.

Slough (Yorks.).—On the 8th inst. the cornerstone of a new Liberal Club-house here was laid by Mrs. K. F. Beaumont. The new building will comprise large billiard, reading, and smoke rooms, committee and secretary's rooms, and a lecture or concert room capable of seating 700 or 800 persons. The cost of the land has been 120l., the contracts amounting to 1,650l., and the cost of warming apparatus, &c., 150l., making a total of 1,920l. Mr. Thomas Henry Haigh is the architect.

South Shields.—The Corporation of South Shields have just completed an improvement at the Mill-dam, by building a wall across the dam and filling it up with the excavations taken from the Commercial-road improvement. A large open space has thus been formed. The large open space has been block-paved, care being taken by the Borough Engineer to considerably improve the levels, thereby making not only the approach to the quay, but also to the Holborns and Commercial-road, very much easier for vehicular traffic. The contractors for the walls, filling up of the dam, and erecting the new conveniences, &c., were Messrs. Todd & Marshall; for the paving, Messrs. Wilson & Walton; and for the flagging, Mr. Henry Gillespie, all of whom have executed the work in a very satisfactory manner, from plans prepared by Mr. Matthew Hall, the Borough Engineer, under whose supervision the various works have been carried out. The Commercial-road improvement is probably one of the best street improvements effected by the Corporation during the last ten years. Commercial-road, from the Mill-dam to Conestreet, was a dirty, narrow road, and very steep, so hilly indeed, as to be shunned, not only by the owners of vehicles, but by pedestrians, the result being that most of the traffic to Tyne Dock, &c., went round by Green-street and Laygate-lane. To remedy this state of things, the Corporation decided to go in for an extensive improvement, and bought a slice of land and houses on the east side from the North-Eastern Railway Company, two houses on the west side, and also a piece of land forming the hill-side at the foot of the road. The houses, &c., were pulled down, and the new retaining-walls on either side of the road have been built with cement concrete. The walls being built, the excavations were proceeded with, and 12 ft. in depth was taken from the crown of the old road, the excavated material being used for the filling in of the Mill-dam. By lowering the road, as described, the gradient has been improved from 1 in 8 and 1 in 12, as before, to 1 in 20 and 1 in 60 as now, and it has been widened an average

width throughout of about 15 ft. The contractors for this work also are Messrs. Todd & Marshall, the work being done under the direction of Mr. Hall. Both the Mill-dam and Commercial-road improvements secured the sanction of the Local Government Board, who authorised the Corporation to borrow 5,600l. for their execution, but the *Shields Gazette* understands that the works have been done for considerably less.

Mansfield (Notts.).—A rearing supper in connexion with the extensive alterations and additions to the Mansfield Union Workhouse was held on the 7th inst. at the Green Dragon Hotel, Mansfield, when about sixty workmen and friends sat down to an excellent repast. The new buildings, which consist of a new infirmary, to accommodate about eighty-five patients, laundry and washhouse, workshops for painters, tailors, joiners, and smiths; male receiving wards, enlargement of dining-hall, bath-rooms, lavatories, and water-closet blocks, new water supply (hot and cold), new cooking apparatus, &c., are being carried out from the plans and under the superintendence of Mr. R. Frank Vallance, architect, Mansfield and Nottingham, by Mr. John Greenwood, contractor, of Mansfield. Mr. J. Martin is the general foreman, and Mr. J. W. Start the clerk of works. The engineers' work has been entrusted to Messrs. Benham & Sons, of London; and the sanitary arrangements have been carried out by Messrs. Doulton & Co., of Lambeth. Messrs. Longden & Co., of Sheffield, have supplied the cooking apparatus.

CHURCH-BUILDING NEWS.

Aberdeen.—St. John's Episcopal Church, Aberdeen, has recently had added to its interior fittings a reredos. The east window is so low that little scope for the treatment of the reredos was given to the architects, Messrs. Pirie & Clyde. On each side of the tabernacle is an arcade of three bays,—of Early English character. The columns supporting the arches are of beautifully variegated and polished Devonshire marbles, and are surmounted respectively by carved capitals of conventionalised foliage. Within and between the arcades are recesses for vases and flowers, &c.; and above are bosses of polished marbles. The structure generally is of grained Caen stone. The tabernacle is of finely-wrought and polished brass, the central part of the door being ornamented by a large sunflower-like enrichment. This reredos, which is the work of Mr. Harry Hems, Exeter, is mainly the gift of a lady.

Cawsand.—On the 30th ult. the new chancel of St. Andrew's Church, Cawsand, was opened. The work has been carried out by Mr. W. B. Carne, builder, of Kingsand.

Micheldever.—The parish church of Micheldever, Hants, which contains sculptured memorials to the Barings by Flaxman and Boehm, has just received an addition to its chancel in the form of a handsome reredos and side wings composed solely of polished alabaster and marbles. The central part consists of a succession of five recessed panels standing upon a moulded and massive super-altar or re-table of polished Purbeck marble. Each panel is separated by columns of green Pyrenees marble surmounted by carved capitals. The arches are ogee in outline, cinque-foiled on their lower side, and ornamented by crockets above, terminating in four instances by a foliated finial. The central space, however, is carried up to greater altitude, and finished with a cross. The label moulds of each arch spring from representative heads of kings, bishops, priests, virgins, and martyrs, and between each is a bold and traceried buttress, which, rising above the main cornice, terminates with a carved pinnacle. The whole of this work is in beautifully-veined and polished English alabaster from the Derbyshire quarries at Chellaston. The *abaci* of the various capitals are in polished Purbeck marble, affording a delicate contrast of colour and of material. The cornice is embattled, whilst the spandrels within and behind the arches are filled in by tracery work. The side wings are carried out on both sides as far as the north and south walls respectively. Starting from the ground the alabaster bases carry fine columns of polished Ippelen (Devonshire) marble, each side or wing being divided into three compartments. Above the ogee heads (each divided into five openings by cusps) is much elaborate tracery work, surmounted by a boldly-moulded cornice. The

wings, like the reredos proper, are constructed entirely of polished alabaster. It is designed to place mosaics in the recessed panels. This rich example of ecclesiastical art, which is stated to be the gift of one of the Earl of Northbrook's family, has been designed by Messrs. Colson & Son, architects, Winchester, and from their drawings the work has been carried out and placed *in situ* by Mr. Harry Hems, of Exeter.

Horsforth.—On Saturday last the Rev. Dr. Hellmuth, Coadjutor-Bishop of Ripon, consecrated the new parish church of Horsforth, near Leeds. The new church is Early Pointed in style, and has been erected from the plans of Mr. J. L. Pearson, R.A. The edifice is 137 ft. long from east to west, and 67 ft. from north to south. It is built entirely of Horsforth stone, and the walls are in broken courses. The tower, taken up to an altitude of 90 ft., is temporarily roofed, the intention being to surmount it with a pyramidal spire when funds permit. The addition of porches is dependent upon a like condition. The nave arcades are in five bays. A memorial window has been presented by Mr. G. Shearer, of Leeds. It is by Messrs. Powell Brothers, and represents Christ commissioning Peter to feed His sheep; and the Saviour with James and John delivering to Peter the keys of the kingdom of heaven. The pews are of pitch-pine, and open at each end, while the pulpit and the choir-seats are of oak. The floors are laid with White's patent wood blocks, and those of the aisles with Staffordshire glazed black and red tiles. The church is warmed by means of hot water, an Excelsior boiler being used for the purpose. The principal contractors were Messrs. Whitaker Bros., Horsforth; Bentley & Burn, Leeds; J. & W. Bealard, Bradford; Booth & Hepworth, Otley; and J. Hall Thorp, Leeds. Accommodation has been provided for 890 persons, the outlay so far being 12,300l.

Books.

The Renaissance and Italian Styles of Architecture in Great Britain; their Introduction and Development shown by a Series of Dated Examples, together with Others exhibiting the contemporaneous Employment of Medieval Architecture, &c. By WYATT PAPWORTH, F.R.I.B.A. London: Batsford. 1883.

This is one of those useful books, in regard to which it may be said that "virtue must be its own reward," too often at least; one of those which are not showy and do not attract general readers, but which have a real and sterling value for the architectural student, and represent solid and painstaking work. The series of examples was commenced, Mr. Papworth says in his preface, many years since, having been added to from time to time as the notes were obtained in the course of consulting various publications for other purposes. The book,—a thin octavo in paper cover,—is simply a list of buildings of the class alluded to, from 1450 to 1700; nothing could look more unpretending, many readers might say nothing more dry; but to those who can read between the lines it is full of interest and suggestion even to look through, and to all who are systematically studying the history of architecture it will prove an invaluable key to assist in tracing out the history of that branch of our own architecture with which it deals. Armed with this key, a man with some available leisure can go from place to place and trace out the successful modification of English Renaissance in buildings, or minor remains of which the names, dates, and localities are here put down in chronological order. Those who have not opportunity to follow out the buildings themselves may still gain much from the references to prints and engravings of them, which are also given. It is not a kind of book that necessitates, or gives occasion for much, criticism; we believe it will be found thoroughly reliable, and will be a necessary addition to every good architectural consulting library. Mr. Papworth merits the thanks of all students of architecture for having accomplished for them a difficult and, perhaps in some senses, irksome task, which comparatively few would have the patience to work out for themselves. Apart from its practical value, to us the catalogue is a pleasant one to turn over; it suggests so much. Many of the names of the buildings mentioned are full of history, architectural and social; as we follow them down the page pleasant visions

ise before the imagination,—successions of dignified and refined structures, not very logical in their architectural ordonnance, but the outward representation of a genuine love of architectural design, and a desire to make it the expression of refined and cultivated sentiment.

The Pictorial Architecture of the British Isles. By the Rev. H. H. Biscoe, M.A. London: Published by the Society for Promoting Christian Knowledge. No date.

The title of this book is badly worded; "pictorial" is used apparently as in "pictorial glass" and such other titles; but "pictorial architecture" really would mean the same as "picturesque architecture." The title should have been "Pictorial Handbook of Architecture," or "Pictorial Guide to Architecture," or something of that kind. The book is, as may be supposed, one of those popular illustrated works in architecture which seldom do much good in providing for a really intelligent knowledge of the subject. In this case, however, we are glad to note a better informed and more critical style of writing than we have noticed in many popular works of the kind. The author traces the changes of architectural development in this island from the Norman period down to the present day; the City of London School, Truro Cathedral, and the Natural History Museum, furnishing some of the most modern illustrations. There are good many useful truths about architecture to be found scattered up and down in the book; not new, but such as we do not too often come across in a popular book by an amateur writer. For example, the eminently rational character of the Gothic style as a *stone* style, using stone in the fittest manner, both statically and economically, is well pointed out; and on other such critical questions the author seems to have got hold of his subject well, and may at least set some readers asking themselves questions. It is impossible, however, really to illustrate such points without geometric and unattractive drawings of a more severe type than any which are found here. The book is obviously intended as a cheap publication, and contains a great number of engraved illustrations, which, however, are of very various, and mostly very moderate, merit. Still they are better than nothing; and it is a good deal to say of a work on architecture of this class, that it really seems to contain nothing that is false theory, and that if it cannot offer its readers a very thorough or systematic treatment of the subject, it at least is not calculated to mislead them.

Among the illustrations of the modern period a view of the dome and roofs of St. Paul's from the circular window of the north-west tower, showing the outer screen-wall, and the internal clear-story wall within it. This is a happy case, and this one view may enlighten a good many people in regard to that curious sham architecture of the metropolitan cathedral, which so few people out of the ranks of architectural professors or students are aware of.

Proceedings of the Association of Municipal and Sanitary Engineers and Surveyors. Vol. ix., 1882-83. London: Spon & Co. 1883.

This volume, edited by Mr. Cole, the secretary of the Association, contains a great deal of very useful practical suggestion, sufficiently illustrated by diagrams. Among the papers is one on the Manchester, Bury, and Rochdale steam railways, giving the section of the road employed, and a section and description of the principal rail which has been designed for the purpose, the object being to have "the strongest and best rail it was possible to get." This is a rail with deep web and broad bottom flange, fished with steel fish-plates, the groove in the wheels, in order to ensure greater security, being cut after the rails have been bedded, by a separate operation. The cost, from 100. per ton, as against 61. 10s. per ton on an ordinary rolled rail, is a serious consideration in the commercial side of the question. Mr. Read, city surveyor of Gloucester, contributes a paper on the ventilation of sewers in house drains, the main point of which is proposed use of the road grids as inlets, jets being carried up above the roofs of the houses. In the course of the address of the President, Mr. White, at the annual meeting at Oxford, the subject of the improvement of Maidenhead Railway Bridge is treated of, and some interesting diagrams appended, showing the construction of the bridge and the manner in which it has been dealt with, which the President hoped

would eventually be regarded not as an act of Vandalism, but as a work of much public utility. "The preliminary borings having shown the presence of running sand, it was determined to pile down to the Oxford clay, which is at a depth of about 18 ft. below the surface of the meadow. . . . The old foundations were discovered to be two thicknesses of 6 in. elm plank, laid a little below the river bed, without any bearing-piles. These foundations had" (as might have been expected) "settled so irregularly that the piers and abutments were much out of level. As the Thames Valley Drainage Commissioners intend shortly to deepen the river considerably below the old foundations, it was thought advisable to take this opportunity of securing them. Skewbacks were cut under the old work, and inverted arches of 18-in. brickwork in cement, with a versed-sine of 3 ft. 6 in., were put in from pier to pier. The river-bed between the new piers was also covered with a foot of cement concrete, in order to protect the heads of the piles, if the river-bed should be scoured out at this point after its level has been permanently lowered, and the work was finished by a sheeting of 3-in. elm piles driven across the river above and below the bridge, and tied into the brickwork and concrete." Rank Vandalism! The correct thing would have been to let the bridge fall, through the failure of its foundations. But engineers will do these things. The separate system of sewerage as carried out in Reading is the subject of a paper by Mr. Parry, the borough surveyor; it was followed by a very full and suggestive discussion. The volume is a very good specimen of what the reports of such an association should be, both as regards matter and form.

VARIORUM.

WE have before noticed the admirable South Kensington Freeland Drawing-books, edited by Mr. Poynter. The former sets presented subjects taken from artificial objects; a new set reaches us giving studies of flower and leaf subjects. As in the former case, the subjects are drawn in outline on one page, to be copied rather larger size on the opposite page or on the space below. Messrs. Blackie & Sons are the publishers.—*Amateur Work* (Ward, Lock, & Co., London and New York) is one of those books dear to clever boys, containing suggestions and instruction how to set about making every sort of thing they may be inclined to try their hand on; a capital boy's present-book, and with something in it for the girls' school-room too. Mr. John Hogg (London) sends us a handsome edition of the immortal *Robinson Crusoe*, with reproductions of Stothard's old illustrations, some of which are good, others not. In spite of Stothard's name, there ought to be room for a much better illustrated *Crusoe* than this; the book contains suggestive matter enough for any artist to think worth his best attention.—From Messrs. Hildesheimer we receive a sumptuous collection of Christmas and New-year cards, many of them admirable examples of chromo-lithography, and some of them going out of the usual line of Christmas cards; for instance, there are sets of very pretty etchings of English river scenery, and others with photographs of scenes. The floral coloured cards, however, impress us more for their execution than their design; they are too much mere groups of flowers, too little (indeed, almost nothing) of actual decorative design, which is far more suitable for production in "chromo" than are realistic imitations of flowers.—Messrs. A. Barnes & Co. send, in the *Decorator's Assistant*, a little book which combines practical information on the use and composition of pigments and other materials used in decoration. Mr. H. Atkinson contributes a short article on external house-painting, and Mr. J. H. Tiltman some good remarks on interior decoration, though he is a little too fond of "neutralised" colours,—the fashion of the day. By the way, we may point out that the old faith that "red, blue, and yellow are the primary colours" is not to be stated now without reservation; mixture of coloured rays gives different results from mixture of pigments. The practical part of the book is the best; in that light we believe it will be useful.—*A Guide to Window Dressing*, published at the office of the *Warehousemen and Drapers' Trade Journal* in Aldersgate-street, shows how varied are the directions in which questions of "good taste" extend themselves nowadays. This is simply a manual for arranging the articles for show in a shop-window; "to place a lot of bright goods in a given space might

seem to the casual observer but a very light and insignificant task, but carefully considered as a business work, it opens a very wide field for study and improvement, and window-dressers who acquire success often disclose a natural gift in the judgment of colour and effect of no mean order." Then follow suggestions for various classes of window goods and their arrangement, of which we take note, and will examine the haberdashers' window-shows with a new and more critical interest for the future.—"The Artist's Table of Pigments," by Mr. H. C. Standage (Wells Gardner, Darton, & Co.), gives the usual names of pigments, flanked by parallel columns giving data as to "chemical names and composition, artistic qualities, conditions of permanency, condition of non-permanency, general adulteration, tests for purity and nature of adulterants, and general remarks." This useful compendium is dedicated to Sir F. Leighton, P.R.A.—"The Patents, Designs, and Trade Marks Act, 1883" (Longman, Green, & Co.), is a reprint of the new Act, with an introduction pointing out the principal alterations effected by the measure; Mr. James Johnson, of the Inner Temple, and Mr. J. Henry Johnson, solicitor and patent-agent, are responsible for the work.—"The Bankruptcy Act, 1883" (we hope the conjunction with the Patent Act will not be thought ominous), is another handy reprint sent us by Mr. Pettitt, with comments, summary, and analytical index by Mr. A. W. Blunt, public accountant; and another book of similar scope is "An Election Manual," by Mr. J. E. Gost, Q.C., M.P. (Chapman & Hall), containing a reprint of the "Corrupt and Illegal Practices Prevention Act, 1883," with introduction and analytical chapters pointing out the rocks ahead in electioneering business under the new law. Architects wishing to enter Parliament will find it useful; and perhaps now that a check is put on election expenditure we may hope to see some of the profession (who have less money to throw about among hungry constituencies than many other people) serving their country in the Legislature; we know one or two who would make admirable members, and could enlighten the House on some things which it, collectively, knows very little about at present.—The "Practical Boiler-maker, Iron-ship Builder, and Mast-maker," by Mr. R. Knight, General Secretary of the Boiler-makers' and Iron Ship-builders' Society (Wyman & Sons), is a useful instruction-book or compendium on the working of plate-iron and riveting for the class of things referred to in the title, and the geometrical methods of setting out the lines of the work where necessary.—Messrs. William Rider & Son send the *Timber Trades' Journal* list of "Shipping-marks" on deals, battens, and other timber and joinery exported from various countries, with the English and French classifications, compiled from information supplied by shippers, agents, and "other authentic sources."—The Patent Victoria Stone Company send us a book about their material, giving some very high results of crushing-tests, as compared with the best natural stones; even, in fact, surpassing one of the granites in this respect.—Messrs. Dowdeswell send us an exceedingly successful specimen of photogravure reproduction from a picture by Sig. Andreotti, "The Dancing-masters' Pay-day," the same size as the original picture. The general tone is rather like a good etching, though of course quite different in texture.—*Cassell's Family Magazine* keeps up its position as a periodical of varied interest for family reading, with very good illustrations for the price of the publication.—From Sir Robert Rawlinson we have a reprint of three addresses on "The Social and National Influence of the Domiciliary Condition of the People," which ought to be read with interest at the present juncture; they are published by Messrs. P. S. King & Son.—Messrs. Lettis & Co. send us an admirable collection of diaries for house, office, or pocket, suited to every kind of memoranda.—Messrs. Hudson & Keams's diaries and date-indicating blotting-pads are admirable; the blotting-pad especially, with its diary memorandum of day of the month, and slip of blank paper at one side for immediate notes, is a most useful and time-saving article.

Knighton (Herefordshire).—The Knighton Board of Guardians has decided to build a new workhouse, at an estimated cost of 8,000l.

Miscellanea.

The College for Working Women.—The new hall which has been built in connexion with this excellent institution, at 7, Fitzroy-street, Fitzroy-square, was used for the first time on Saturday evening last, when Lady Wolsley distributed certificates and prizes to the successful students. Professor Henry Morley presided, and gave some account of the working of the College, which, he said, was one among the many fruits of the labours of Frederick Denison Maurice.

It was founded to enable those who were at work during the day to spend the evening in the development of their mind by careful intellectual culture, and also by friendly social intercourse. It was not only by attendance at classes and lectures, but by human fellowship, that human minds were developed, and provision was made in both these ways for the improvement by those who attended this college. With regard to the occupation of the students, he found that those in attendance between October, 1882, and July, 1883, were thus classified,—artificial flower and toy makers and feather cleaners, 9; book-keepers, clerks, and law copyists, 32; brush-makers and chair-caneers, 15 (blind women, for whom a special class was held, without fee, their earnings being very small, and for whose benefit it was hoped that by the aid of friends a library of the literature printed for the blind might be formed); bookbinders and compositors, 4; domestic servants, 26; embroiderers, lace milliners, &c., 9; fancy trades and stationers, 9; gilders, china painters, artists, &c., 9; hospital nurses, superintendents, and housekeepers, 21; machinists, 16; milliners, needle-women, dress and mantle-makers and tailors, 107; shop-women, 52; teachers and pupil-teachers, 37; upholsterers and bedmakers, 16; and with no occupation (young women principally employed in domestic work at their homes), 72. Mr. J. C. Fitch spoke of the success with which the hall had been constructed, under the superintendence of Mr. E. C. Robins as architect.

British Archaeological Association.—At the second meeting of the session, held on Wednesday, the 5th, the chair being occupied by Mr. Thos. Morgan, F.S.A., Mr. C. H. Compton referred to the mode of working the flint decorations of the churches of Norfolk and Suffolk, illustrating his remarks by photographs of specimens at Cromer Church, where the flint-work is laid with great regularity and with very close joints, the flint being cut square with remarkable precision. Mr. Loftus Brook, F.S.A., exhibited a silver-gilt Royalist badge, having on the obverse side the face of Charles I., and on the reverse the arms of England, &c., quarterly in engraved work. A second paper was read by Mr. Compton, on the Remains of Brambletye House. After tracing the descent of the Manor from early times the lecturer reviewed the evidence of the house having been erected by Sir Henry Compton, temp. James I. The evidence of the erection are much assisted by various armorial devices and initials which still remain in the ruins, and the importance of the use of such aids to history in our buildings was dwelt upon.

Surveyorship, South Shields.—At the monthly meeting of the South Shields Town Council, on the 5th inst., it was resolved, on the recommendation of the Town Improvement and Sanitary Committee, "That in consideration of the valuable services of the borough surveyor (Mr. Matthew Hall) in the construction of the tramways and the tramway stabling, as well as other important works in the borough, the Council be recommended to pay him one hundred guineas in addition to his salary." The discussion of the motion was marked by considerable acrimony of feeling, some members of the Council being of opinion that the surveyor is sufficiently well paid with a salary of 300*l.* per annum, and a commission of 2½ per cent. on paving works.

Liverpool Engineering Society.—The annual meeting of this Society was held on the 5th inst. at the Royal Institution, the President, Mr. Bramall, M.Inst. C.E., in the chair. The report of the Council, having been read, was adopted, the President congratulating the members upon the flourishing state of the society. The officers for next year were then elected, Mr. R. R. Bevis, junr., being chosen President. Mr. Bramall afterwards delivered an address on "Modern Progress in Mine Engineering."

A Christmas Present for Mr. Gladstone. A dessert service of Derby Crown china, subscribed for and specially designed and manufactured at the instigation of the Liberal working-men of Derby, is now nearly completed, and is to be presented to the Premier at Hawarden Castle on the 22nd inst. According to the Derby correspondent of the *Times*, the dessert service consists of twenty-six pieces,—viz., eighteen plates, four high comports, and the same number of lower ones. The Derby Crown Porcelain Company (Limited) have been entrusted with the execution of the order. Designed in the style of the eighteenth century (Renaissance), the shape of the dessert plates is that known as "The Devonshire," being plain circular, with a narrow, flat rim. The ground colour is rich cobalt blue, and the decoration consists of a Derbyshire scene in the centre of each plate, and these scenes are framed with broad ornamental gold bands. On the edge of each plate is a broad ornamental gold band, and between these bands are six small panels,—three oval and three oblong. The ovals are filled with a profusion of flowers upon a dark ground, while the other panels have Mr. Gladstone's initials, "W.E.G.," in slightly raised gold letters. Around the panels and along the gold bands is light ornament in gold, through which the rich blue ground is seen. On the under portions of the comports the blue ground is preserved,—it being relieved by floral medallions, and at the bottom of each piece follows an inscription, executed in red letters, "Designed and manufactured by the Derby Crown Porcelain Company (Limited) for presentation to the Right Hon. W. E. Gladstone, M.P., by the Liberal working-men of Derby, 1883." The views on the plates have been taken from the scenery in the Peak of Derbyshire.

The Board's (or the Law's?) Delay.—At the meeting of the Metropolitan Board of Works on the 7th inst., a letter was received from the Home Office conveying the concurrence of the Home Secretary in the Board's decision to take no steps in regard to the representation of the Vestry of Bermondsey as to an unhealthy area in the neighbourhood of Salisbury-place and Foxton-street. In the course of the letter Mr. Godfrey Lushington said:—

"I am directed by Secretary Sir William Vernon Harcourt to inform you that he concurs with the Board in the conclusion at which they have arrived, viz., that the area in question is not new within the scope of the Artisans' and Labourers' Dwellings Improvement Act, but that portions of it ought to be dealt with by other means. But I am to point out that whereas the official representation was communicated to the Board on the 15th of July, 1878, the final decision of the Board was not made known until the 25th of October in the present year. During these five years this area has not been dealt with in any sufficient manner by any authority, and, though improved by the pulling down of a considerable number of houses, it has been allowed to remain in part, as it had been described, 'a plague-spot and fever-nest, and a disgrace to a civilised community.' This long postponement by the Metropolitan Board of Works of their decision is a matter which appears to the Secretary of State much to be regretted, because though it would not justify inaction on the part of the Vestry, it inevitably tended to weaken their sense of continuing responsibility."

It was ordered that this communication should be referred to the Works and General Purposes Committee.

New Congregational Hall, Hornsey.—This building, recently opened, has been erected at a total cost of 2,433*l.*, including 250*l.* for site, and 100*l.* for furniture. The hall accommodates 350 adults, and has seven class-rooms in communication with it; by the removal of the partitions between these class-rooms and the hall a total of 450 persons can be seated. There is an additional infants' room for 150, and a mothers'-meeting room for 100, making the total seating accommodation 700. The builders were Messrs. Mattock Bros., of Finsbury Park, and the architects are Messrs. Lander & Beddells, of John-street, Bedford-row. The building is spoken of as "a model mission-hall," and at the opening ceremony special mention was made of the architect's skill.

Sunday Opening of the Free Library at South Shields.—The South Shields Town Council has, on the motion of Mr. R. Readhead, resolved, by seventeen votes to seven, to recommend the Free Library Committee to make the necessary arrangements for opening the Reference Library and Reading-room on Sundays.

Statuary for Blackfriars Bridge.—The Bridge House Estates Committee of the Corporation have had under their consideration for some time past the question of placing statuary on the four pedestals of Blackfriars Bridge, and after a careful consideration of the subject they arrived at the conclusion that equestrian statues would be most appropriate, and most in accordance with the original idea of the late Mr. Joseph Cabitt, the engineer and designer of the bridge. The committee had had some difficulty in dealing with the subject, in consequence of the size of the pedestals, and they accordingly determined, before giving a commission to any sculptor, to have a model made and placed on one of the pedestals, so that they and the public might have an opportunity of forming an opinion whether or not an equestrian statue would be appropriate. It was suggested that a plaster cast of a statue at the Crystal Palace by the French artist M. Clesinger would be suitable as regards height and size. Application was accordingly made to the Crystal Palace Company, who consented to a model of the statue being taken and placed on the north-west pedestal of the bridge. In placing this model on the bridge, the committee wish it to be understood that it is not intended to execute that particular work for the purpose of its being permanently erected on the bridge, or even to indicate the proposed treatment of any subject for a statue, but it is merely desired to give some idea of the size and general dimensions of statuary hereafter to be put on the pedestals.

Society of Antiquaries of Scotland.—The annual general meeting of this society was held on the 30th ult., in Edinburgh, Dr. Arthur Mitchell, vice-president, in the chair. The list of deceased members having been read, the society resolved to record in their minutes the great loss they had sustained in the death of these members, and specially by the decease of one of their secretaries, Dr. John Alexander Smith, who had been for twenty-six years secretary. The number of deaths during the year has been sixteen, and the number of members elected forty-seven. The vacant places in the list of office-bearers were filled by the re-election of the Marquis of Lothian as president, the Earl of Rosebery as one of the vice-presidents, Mr. B. W. Cochran-Patrick, M.P., as one of the secretaries, Mr. Gilbert Goudie as treasurer, Mr. David Douglas, Mr. George Seton, Mr. C. H. Thomas, and Mr. Stair Agnew as members of committee. The annual report announced that the number of visitors to the museum for the past year had been 19,842, that during the year 523 objects of antiquity had been presented to the museum, and 5,600 articles had been added by purchase.

Cottages for the Brighton Waterworks Employes.—The Corporation of Brighton recently advertised for tenders for six cottages proposed to be erected for some of their waterworks employes, from plans and specifications prepared by the Borough Surveyor, Mr. P. J. Lockwood. It will be seen from the list (which we publish in another column) that the amount of the lowest tender was 2,775*l.*, or about 46*l.* per cottage. The Waterworks Committee recommended the acceptance of the low tender, but stated that the Borough Surveyor was instructed to specify for cottages to be about 200*l.* apiece. It was subsequently explained that it was necessary that they should be more than usually substantial. An amendment referring the matter back to the Committee was carried with but one dissenter. In the meantime some of the builders who tendered are disposed to complain that the time and trouble are not duly considered by the Corporation.

Death of Mr. Richard Doyle.—Mr. Richard Doyle, the well-known artist, died suddenly Tuesday last. He was apparently in good health on Monday evening when he dined with his friends at the Athenaeum Club. Mr. Doyle was born in London in 1826, and belonged to an Irish family. He first attracted attention as a contributor of several of the most striking early cartoons in *Punch*. He was for many years a constant contributor to that journal, severed his connexion with it in 1850 under circumstances which are well known. The fame of our popular contemporary was designed by him. Mr. Doyle illustrated in well-known books, and published some sketches of English society in the *Cornhill Magazine* some twenty years ago.

Meteorology.—The first of a course of lectures on Meteorology, by Mr. W. Marriott, F.R.M.S., was delivered on December 6th, in the reading-room of the Society of Engineers, Victoria-street, Westminster. Mr. Marriott began by showing how every one was interested in and affected by changes of the weather, and how important a knowledge of meteorology was to the engineer. After describing the constitution of the atmosphere, he explained the methods adopted for measuring the temperature of the air, and exhibited and described the various forms of thermometers which have been used for this purpose. Instruments for registering the maximum and minimum temperature, as well as those for giving a continuous record, both by photography and electricity, were also explained. The proper exposure of the thermometers in a screen, to protect them from radiation, and also the necessity of having the instrument verified at the Kew Observatory, having been dwelt upon, the lecturer referred to the diurnal and annual range of the temperature of the air. The highest temperature in the day occurs between one and two p.m., while the lowest during the night takes place just before sunrise. In this country January is usually the coldest and July the hottest month in the year. Temperature was also shown to decrease with altitude, the rate of decrease being about 1° for every 300 ft. After having described the boiling-point thermometer for measuring heights, the lecturer concluded by giving an account of observations made in some remarkable balloon ascents.

Proposed Convalescent Fever Hospital at Winchmore Hill.—At the meeting of the Metropolitan Asylums Board on Saturday last, the General Purposes Committee recommended that, subject to the approval of the Local Government Board, a freehold property known as Chaseville Park Estate, Winchmore Hill, and comprising about 36½ acres of park land, should be purchased as a site for a convalescent fever hospital, at the sum of 380l. per acre. Sir E. Hay Currie moved a resolution approving the recommendation. He said the matter of an additional convalescent fever hospital had been under the consideration of the Board for a period of two years, and in March last the committee were authorised to look out for an available site. This they had been doing, and the result was the selection of the site in question. The land had been valued at 15,500l., and the Board had the refusal of it at 13,800l. As to the necessity for an additional convalescent hospital, the case of Homerton Hospital at that time was a sufficient answer. At Homerton there were 225 cases of fever, and nearly 70 cases of small-pox. Many of those patients, being convalescent, were occupying valuable beds on land worth thousands of pounds an acre, whereas they might, to their great advantage in point of health, be taken to a convalescent hospital, which would stand upon land costing only 200l. or 300l. an acre. After some discussion, the question was adjourned.

Large Shear-Legs at Clydebank.—The new steam shear-legs which have been constructed by Messrs. James Taylor & Co., of Britannia Works, Birkenhead, for Messrs. Jas. & Geo. Thomson, engineers and shipbuilders, Clydebank, have during the past few days been tested by weights varying from 50 tons to the maximum of 120 tons, and have (according to the *Glasgow Herald*) stood the test in a most satisfactory manner. These are among the largest and most powerful of their kind yet made, the two front legs being each 108 ft., and the back leg 145 ft. long, whilst the screw on which the back leg travels is 47 ft. long and 48 in. in diameter. The engine has two cylinders 2½ in. in diameter, with 18-in. stroke, the barrel or lifts over 50 tons being 5 ft. in diameter, and for lifts under 50 tons, 3 ft. in diameter. Instead of using chain for purchase, wire rope of special manufacture has been substituted, of which there are nine parts, capable of bearing collective breaking strain of about 600 tons. (To less than 700 tons of concrete have been used in forming the foundation, and the wharf has been well piled where the front legs step.)

Tall Chimney Construction.—At a meeting of the Civil and Mechanical Engineers' society, to be held on the 19th inst., Mr. R. M. Bancroft, Past President, assisted by his son, Mr. F. J. Bancroft, Assistant-surveyor to the Inchley Local Board, will read a paper on the construction of large chimney-shafts, illustrated by drawings of upwards of sixty examples built in brick, stone, concrete, and wrought-iron.

Fires in Theatres.—The number of theatres destroyed in the world from December 1, 1882, to December 1, 1883, was 22, with a loss of 575 lives. The theatres destroyed were:—December 2, 1882, Theatre of Point à Pitre in the Antilles. January 7, Buff Theatre at Moscow. January 13, the Berditschaw Circus, near Kieff, in Russia, causing the death of 300 persons. January 22, the Schrikenhofen Theatre, in Mitau, Germany. February 8, the Opera House, in Toronto. February 18, the Theatre of Arad, in Hungary. March 18, the Circus of New Orleans, with the death of 60 persons and 100 wounded. April 4, the National Theatre of Berlin. April 8, the Salomonky Circus, in Moscow. April 22, the Star Theatre, in Stockholm. April 25, gas explosion at the Ambigu Theatre, in Paris; 20 wounded. June 5, the Barnum Circus, in Chicago. June 9, the Gaiety Theatre, Manchester. June 11, the Variétés Theatre in Warsaw. June 24, the theatre at Dervio, near Como; 48 victims and 10 wounded. July 8, the Summer Theatre of Warsaw. August 28, the Katamocmora Kamada Theatre, in Japan; 75 deaths, 115 wounded. August 29, the Summer Theatre, in Chioi, Russia; 12 deaths. October 30, the Herzog Circus, in Pech. November 17, the Theatre Royal, in Darlington.

The Haswell Mechanical Coal-getter.—At a meeting of the members of the North of England Mining and Mechanical Engineers, held on Saturday last, in the Wood Memorial Hall, Newcastle, under the presidency of Mr. G. Baker Forster, a paper was read by Mr. W. F. Hall on "The Haswell Mechanical Coal-getter: an invention for working coal without the aid of gunpowder or other explosives." The following is an abstract of the paper:—

"This machine is for breaking down the coal after it has been kivered and picked, by means of a mechanical contrivance which may be described as a combination of three of the most powerful mechanical appliances,—the screw, the lever, and the wedge. A hole, some 3 in. in diameter, is first drilled in the coal, and the wedge, together with two pieces of steel which fit the wedge,—is intended to force asunder, and placed at its bottom of the hole. The two pieces of steel and the wedge are connected by means of bars to the outside of the hole, and fixed to four levers, jointed so as to form a rectangle, in such a way that the rods that are attached to the pieces of steel are fixed to the angle of the system of levers the farthest from the face, and the rod attached to the wedge to the angle nearest the face, so that when a screw that is attached to the two other angles of the system is so worked as to draw these together, the wedge is forced between the pieces of steel, which, after a few turns, become firmly secured in the coal and keeps the machine firm in its place while the wedge is being screwed home. This description of the machine will explain the immense multiplication of force which is possible out of this special combination of mechanical contrivances."

The Dobbs Testimonial Fund.—A meeting of gentlemen desirous of presenting a testimonial to Mr. Archibald E. Dobbs was held on Monday last at the Quebec Institute, Baker-street, under the presidency of Dr. B. W. Richardson, F.R.S. After a few remarks by the Chairman, in which he set forth the importance to the ratepayers of London of the decision obtained by Mr. Dobbs against the Grand Junction Waterworks Company, a resolution was unanimously passed appointing a central committee for the purpose of presenting a testimonial to Mr. Dobbs. The committee includes the names of several distinguished members of the medical profession, as well as two or three architects, viz., Mr. T. Chaffield Clarke, Mr. Arthur Cass, and Mr. Mark H. Judge. Mr. Vaisey, of 68A, Lincoln's Inn-fields, was appointed hon. sec. pro tem.

The District Railway "Blowholes."—At the meeting of the Metropolitan Board of Works on the 7th inst., a report was presented from the Parliamentary Committee recommending that the committee be authorised to enter into communication with the Metropolitan District Railway Company, with a view to seeing whether any arrangement could be come to which would obviate the necessity of the Board proceeding with the Bill for the removal of the remaining ventilating shafts formed under the powers of the company's Act of 1881. The recommendation was agreed to.

Workhouse Additions.—The Guardians of St. Giles's and Bloomsbury have formally appointed Messrs. Wm. & A. Baresford Pitts, of 5, Bloomsbury-square, as their architects to carry out the additions to their workhouse in Short's Gardens, Endell-street, W.C.

The Wolverhampton Sanitary Protection Association held its annual meeting on the 5th inst., when the secretary read a long and interesting report showing progress and setting forth a satisfactory balance-sheet. Lieut.-Colonel Thorneycroft afterwards spoke strongly in favour of compulsory sanitary inspection. Because of the want of this inspection he believed that more British subjects were killed annually than died on the battlefield, a theory which he supported by quoting the large number of deaths which took place annually from typhoid and kindred fevers. He pointed out that if compulsory sanitary inspection were the law, the houses occupied by the poor would be put into a healthy state. The Sanitary Protection Society was voluntary, and at the rate the work had been going on for the last year or two it would take about 100 years to inspect all the houses and have them put in order. A deputation had waited upon Mr. Staveley Hill, M.P., in London more than a year ago, for the purpose of being introduced to the Local Government Board, but the result was such as to lead them to the belief that they would stand a better chance of success if they tried a private Bill, and this would be their next step.

Reminiscences of an Old Rugbeian.—Mr. Matthew Holbeche Bloxam, F.S.A., the well-known antiquary, has read a most interesting paper before the Rugby School Natural History Society, on his personal reminiscences of Rugby School as it was in 1813,—seventy years ago. Mr. Bloxam stated that there were forty-seven new boys entered the same term as himself,—August, 1813,—but of that number only two besides himself survive, viz., Sir William de Capel Brook, bart., now in his 83rd year, and Mr. T. S. Kynerley, the well-known Birmingham stipendiary magistrate.

Stoppage of Work on a new Scotch Railway.—A dispute has arisen between the contractors and the Cathcart District Railway Company, relative to the matter of payment for work done, and the *Glasgow Herald* learns that the Railway Company have been served with a citation to the Court of Session at the instance of the contractors for payment of the sum of 18,000l.

Mr. and Mrs. German Reed's Entertainment.—On Monday next, December 17th, a new first part will be produced, entitled "A Moss Rose Rent," written by Mr. Arthur Law, the music supplied by Mr. Alfred Caldicott; and on Saturday Afternoon, December 22nd, Mr. Corney Graia will give for the first time his new musical sketch for the holidays, entitled "Master Tommy's School."

TENDERS.

For four workmen's cottages at the Goldstone Waterworks, and two at the Redhill Reservoir, for the Brighton Corporation. Mr. P. C. Lockwood, Borough Surveyor:—

Newham, Brighton	£4,100 0 0
Anscombe, Brighton	3,970 0 0
Garratt, Brighton	3,050 0 0
Bruce, Brighton	3,772 0 0
Barnes, Brighton	3,540 0 0
Holloway Bros., Brighton	3,595 0 0
Narcombe, Hove	3,554 0 0
Chappell, Hove	3,225 0 0
Marshall, Brighton	3,500 0 0
Lockyer, Brighton	3,470 0 0
Parsons, Brighton	3,399 0 0
Peters, Hoveham	3,275 0 0
Longley, Crawley	3,240 0 0
Hudson, Kearsley & Co., Brighton	3,138 0 0
Taylor, Brighton	3,008 0 0
Webber, Brighton	2,775 0 0

For rebuilding the White Hart public-house, Wigmore-street, W., for Mr. Alfred Crookford. Mr. W. T. Sams, architect. Quantities supplied by Messrs. J. & A. E. Bull:—

Reading	£2,760 0 0
Hall, Beddall, & Co.	2,587 0 0
Murray	2,595 0 0
Patman & Fotheringham ..	2,478 0 0
Anley	2,467 0 0
Hovell & Son	2,384 0 0
Toms (accepted)	2,348 0 0

For alterations to the Borough Tavern, London Bridge, for Mr. E. J. Reed. Mr. W. T. Sams, architect:—

Groombridge	£236 0 0
Heathly	385 0 0
Toms	353 0 0
Patman & Fotheringham ..	354 0 0
Anley (accepted)	330 0 0

For alterations to Holm Dene, Yateley, Hants. Mr. W. T. Sams, architect:—

Bunch (accepted)	£1,780 0 0
------------------------	------------

For alterations and additions at the Joiners' Arms Tavern, Westminster Bridge-road, for Mr. Wm. Leley. Mr. Alfred Wright, architect:—

J. Beale (accepted)	£269 0 0
---------------------------	----------

For Folkestone Borough (North) Board Schools, for 700 children. Mr. Joseph Gardner, Folkestone, architect.

Quantities supplied by the architect:—	
H. B. Mercer, Folkestone.....	£8,942 0 0
Hutton & Co., London.....	6,890 0 0
H. Unwin, Folkestone.....	6,238 0 0
R. Marriott, Walsingham.....	6,083 0 0
D. Baker, Folkestone.....	5,995 0 0
Foster & Dickson, Rugby.....	5,960 0 0
W. J. Adcock, Dover.....	5,850 0 0
H. Clemmans, Folkestone.....	5,779 0 0
G. Denon, Deal.....	5,694 0 0
W. Brooks, Folkestone.....	5,649 0 0
J. T. Potts & Son, Folkestone.....	5,630 0 0
J. Webster, Folkestone.....	5,580 0 0
R. Webster, Folkestone.....	5,550 0 0
H. Stiff, Dover.....	5,531 0 0
Willis & Co., Dover.....	5,500 0 0
Whelsh & Co., Dover.....	5,489 0 0
G. Prebble, Folkestone (accepted).....	5,360 0 0

For alterations and additions to Ashley Grange, Ashley-hill, Bristol, for Mr. Francis W. Gedde. Mr. Herbert J. Jones, architect:—

J. E. Davis, Bristol.....	£1,470 0 0
J. Bastow, Bristol.....	1,367 0 0
Eastbrook & Sons, Bristol.....	1,321 0 0
W. Church, Bristol.....	1,284 0 0
T. R. Lewis, Bristol.....	1,283 0 0
Wilkins & Sons, Bristol.....	1,215 0 0
Edkins & Sons, Bristol.....	1,183 0 0
G. H. Brown, Bristol.....	1,143 0 0
A. Saxe, Bristol.....	1,136 0 0
T. Humphreys, Bristol.....	1,119 0 0
E. & T. Hatherley, Bristol.....	1,087 0 0

Accepted for Wesleyan House, at Clevedon, Somerset. Mr. Herbert J. Jones, architect:—

W. A. Green, Clevedon.....	£831 0 0
----------------------------	----------

For farm-house at Chew Stoke, near Bristol, for Mr. Jas. Britton. Stones for main walling supplied. Mr. Herbert J. Jones, architect:—

G. Humphreys, Bristol.....	£454 0 0
A. Britton, Chew Stoke.....	448 0 0
W. A. Green, Clevedon.....	430 0 0
T. R. Lewis, Bristol.....	394 0 0
G. Wilcox, Clevedon.....	385 0 0

For alterations, &c., to No. 3, King's Parade, White-ladies-road, Bristol, for Mr. Wm. Bennett. Mr. Herbert J. Jones, architect:—

Eastbrook & Sons, Bristol.....	£260 0 0
G. Humphreys, Bristol.....	250 0 0
T. R. Lewis, Bristol.....	185 0 0
J. Bastow, Bristol.....	189 0 0
E. & T. Hatherley, Bristol.....	187 0 0

* Accepted, exclusive of garden steps.

For repairs, painting, &c., at No. 62, King William-street, E.C. for the Municipal Building Society. Mr. Thomas Ward, architect:—

Hatfield & Son.....	£345 0 0
Scharen & Williams.....	345 0 0
Colls & Son.....	299 0 0
Harrison & Wood (accepted).....	237 0 0

For alterations to the premises, and new bar-fittings, at the Royal Oak Hotel, Hastings. Mr. Arthur Wells, architect, Havelock-road, Hastings:—

J. Reid, Streatham.....	£885 10 0
J. Howell & Son, Hastings.....	720 0 0
J. Walker, Limehouse.....	698 0 0

Printer's Work.

J. Wane.....	120 0 0
J. Browning.....	111 0 0
W. Helling.....	106 0 0
Sanders & Sons (accepted).....	92 15 0

For factory for Messrs. Sproston Bros., Dudley.

Mr. J. G. Wright, architect:—	
Love & Pinst.....	£1,384 0 0
Webb & Round.....	1,133 0 0
Pitaway.....	1,079 0 0
J. H. Bate (accepted).....	1,060 0 0
Harvey.....	1,011 0 0

Accepted for the erection of Board Schools at Wordsley, to accommodate 400 children, for the Kingswinford School Board. Mr. T. Robinson, architect. Quantities supplied:—

J. H. Bate, Dudley.....	£2,900 0 0
-------------------------	------------

For making Margets-road, Kempston, Beds. Mr. F. T. Mercer, surveyor, Bedford:—

Haywood.....	£176 0 0
Freeborough.....	140 0 0
Thorpe.....	115 8 0

For rebuilding the Blue Last Tavern, Broadway, Ludgate-hill, for Mr. Wm. Gabb. Mr. Geo. Treacher, architect. No quantities supplied:—

Marr, Hackney.....	£4,999
Lidstone, Parkborough.....	4,320
J. Beale.....	3,897
Turtle & Appleton.....	4,800

* Accepted.

For bar-fittings, &c., at the Coopers' Arms Tavern, Tower-street, S.E., for Mr. F. Broughton. Mr. Geo. Treacher, architect:—

J. Beale (accepted).....	£348 0 0
--------------------------	----------

For erecting stable to Christchurch Lodge, Broadbury Park, N.W., for the Rev. J. L. Henham. Mr. Stanley Parker, 427, Edgware-road, architect:—

Stevenson.....	£862 0 0
Patchy.....	618 10 0
Rogers.....	630 0 0
Evans (accepted).....	491 0 0

Accepted for completing two detached residences, Gerrards Cross, Buckinghamshire, for Mr. C. Gover. Mr. Stanley Parker, architect:—

Kearley, Uxbridge.....	£239 11 0
------------------------	-----------

Accepted for building seventeen houses at Sudbury. Mr. Gard Pye, architect:—

W. H. Rowland.....	£8,500 0 0
--------------------	------------

Accepted for the erection of an infectious diseases hospital, West Bromwich, for the West Bromwich Town Council:—

C. A. Horton, Brierley Hill.....	£3,598 0 0
----------------------------------	------------

SPECIAL NOTICE.—Correspondents are desired to send full lists of persons tendering, with the amount of each tender. In future, no single name will be given without the amount of the tender, and not then unless we have the assurance of the sender that there was no competition.

To Contributors and Correspondents.

All LETTERS and COMMUNICATIONS referring to LITERARY and ARTISTIC MATTERS must be addressed—

"To the Editor of THE BUILDER,
46, Catherine-street,
Covent Garden, W.C.,"
And not to any individual by name.

C. R. A. (received).—W. P. B.—W. Y. P. (cannot re-open the subject).—B. C. M. (shall have attention).—H. B. B. (we cannot publish statements as to what the executive body are going to do, except on official intimation).—F. B. L. (best week).—B. & D. (drawing received).

Correspondents should address the Editor, and not the Publisher except in cases of business.

All statements of facts, lists of tenders, &c. must be accompanied by the name and address of the sender, not necessarily for publication.

We are compelled to decline pointing out books and giving addresses.

Note.—The responsibility of signed articles, and papers read at public meetings, rests, of course, with the authors.

CHARGES FOR ADVERTISEMENTS.

SITUATIONS VACANT, PARTNERSHIPS, APPRENTICESHIPS, TRADE, AND GENERAL ADVERTISEMENTS.
Six lines (about fifty words) or under..... 4s. 6d.
Each additional line (about ten words)..... 0s. 6d.
Terms for Series of Trade Advertisements, also for Special Advertisements on front page, Competitions, Contracts, Sales by Auction, &c. may be obtained on application to the Publisher.

SITUATIONS WANTED.
Four lines (about thirty words) or under..... 2s. 6d.
Each additional line (about ten words)..... 0s. 6d.
PREPAYMENT IS ABSOLUTELY NECESSARY.
* Stamps must not be sent, but all small sums should be remitted by Cash in Registered Letter or by Money Order, payable at the Post-office, Covent-garden, W.C. to
DOUGLAS FOURDRINER, Publisher.

Addressed to No. 46, Catherine-street, W.C.

Advertisements for the current week's issue must reach the Office before THREE o'clock p.m. on THURSDAY.
The Publisher cannot be responsible for loss or damage to drawings, testimonials, &c. left at the Office in reply to advertisements, and strongly recommends that of the latter COPIES ONLY should be sent.

TERMS OF SUBSCRIPTION.

"THE BUILDER" is supplied gratis from the Office to residents in any part of the United Kingdom at the rate of 12s. per annum. PREPAID. Remittances payable to DOUGLAS FOURDRINER, Publisher, 46, Catherine-street, W.C.

NOTICE TO ADVERTISERS.

Persons advertising in the *Builder* may have REPLIES ADDRESSED TO THE OFFICE, 46, Catherine-street, Covent-garden, W.C., FREE OF CHARGE.

Letters will be forwarded if addressed envelopes are sent, together with sufficient stamps to cover the postage.

Best Bath Stone.

WESTWOOD GROUND,
Box Ground, Combe Down,
Corsham Down,
And Farleigh Down.
RANDELL, SAUNDERS, & CO., Limited,
Corsham, Wilts. [ADVT.]

SUMMER-DRIED

Corsham Down Stone
For Winter Use.

PICTOR & SONS, BOX, WILTS. [ADVT.]

Douling Freestone and Ham Hill Stone of best quality, in blocks, or prepared ready for fixing. An inspection of the Douling Quarries is respectfully solicited; and Architects and others are CAUTIONED against inferior stone. Prices, delivered to any part of the United Kingdom, given on application to CHARLES TRASK, Norton-sub-Hamdon, Minster, Somerset.—Agent, Mr. E. WILLIAMS, 78, Charlotte-street, Portland-place, W. [ADVT.]

Douling Freestone. Of best quality, supplied from their own Quarries and Kils by STEVEN & HAWK, Stoke, Minster. Agent, Mr. H. MITCHELL, 8, Augustine-road, Hammersmith, London, W. [ADVT.]

Asphalte.
Seyssel, Patent Metallic Lava, and White Asphaltes.
M. STODART & CO.
Office:
No. 90, Cannon-street, E.C. [ADVT.]

Asphalte.—The Seyssel and Metallic Lava Asphalte Company (Mr. H. Glenn), Office, 38, Poultry, E.C.—The best and cheapest materials for damp courses, railway arches, warehouse floors, flat roofs, stables, cow-sheds and milk-rooms, granaries, tun-rooms, and terraces. [ADVT.]

Immense quantities of
DRY WAINSCOT,
DRY MAHOGANY,
DRY WALNUT,
in all thicknesses.

B. J. HUDSON & SONS,
Whitfield-st., W., and Great Peter-st., S.W.
London. [ADVT.]

MICHELMORE & REAP,
Manufacturers of

CHARLES COLLINGS' PATENT.
COLLINGS' PATENT HINGES,
L.F.ER, SCREW, & BARREL BOLTS,
Self-acting "FALL-DOWN" GATE STOPS,
and IMPROVED GATE FITTINGS of every description.
36A, BOROUGH ROAD,
LONDON, S.E.
DISCOUNT TO BUILDERS.

ZINC ROOFING.

F. BRABY & CO.,

LONDON, LIVERPOOL, GLASGOW.

VIEILLE MONTAGNE BRAND.

N. SORDER.

NO EXTERNAL FASTENINGS.

PARTICULARS ON APPLICATION.

CHIEF OFFICE: 360, EUSTON ROAD, LONDON.

The Builder.

Vol. XLV. No. 2123.

SATURDAY, DECEMBER 22, 1903

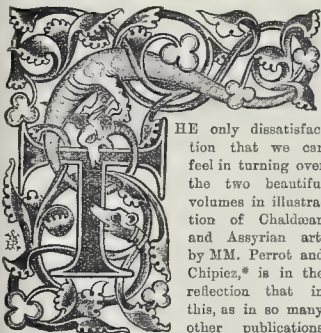
ILLUSTRATIONS.

London Fever Hospital: Elevations and Plans of New Isolation Block.—Mr. Keith D. Young, Architect	622
Examples of Old Wrought Ironwork (Double-page Lithograph)	626
The "Casino Mercantile," Barcelona (Double-page Engraving).—Señor Don Tiberio Sabater, Architect	628, 629
Illustrations of Chaldean and Assyrian Art	624, 633
Baptist Chapel, Sunday Schools, and Young Women's Christian Institute, West Brighton.—Mr. John Wills, Architect	635

CONTENTS.

Chaldean and Assyrian Art	611	The London Fever Hospital	620	The Clock and Bells at the New Law Courts	841
The Agnostic Spirit in Modern Architecture	612	Modern Street Architecture, Barcelona; The "Casino Mercantile"	620	New Buildings in Fetter-lane	841
The Influence of Every day Life on Art Teaching	613	Wrought Ironwork	626	New Buildings in and near the Victoria Embankment	841
The Earthquake, the Architect, and the Marine	614	Baptist Chapel and Schools, West Brighton	637	Building Patent Record	842
Indian Art and English Officials	615	Anglo-Saxon Antiquities	638	From and Concrete	842
The Pre-Historic Art of America	615	The Metropolitan Board of Works and London Theatres	639	"Party Walls"	842
English Architecture and Monuments of the Sixteenth and Seventeenth Century: Royal Institute of the British Architects	616	A New Building in Edinburgh	640	"Quarries"	842
Confidential Notes	617	The Disposal of the Age	640	Thin Block Floors	842
The West Side of Westminster Hall	618	London and the Season of 1903	640	Circulars	842
The Institute of Painters in Oil-Colours	619	The Bell-Land Case	640	The Housing of the Windsor Poor	843
Two Exhibitions of River Paintings	620	The Institution of Civil Engineers	641	Lept Cases: Lloyd's Office	843
The Development of Railway and Tramway Communication in Ireland	620	The Development of Railway and Tramway Communication in Ireland	641	Church Building News	843
The Terminations of the Fugate at Florence	620			Miscellaneous	844

Chaldean and Assyrian Art.



HE only dissatisfaction that we can feel in turning over the two beautiful volumes in illustration of Chaldean and Assyrian art, by MM. Perrot and Chipiez,* is in the reflection that in this, as in so many other publications

of a similar scope and nature, it is a foreign name that we see on the title-page, and a translation only which we can lay to our own national credit. That we borrow our plays "from the French" has become a stereotyped reproach against us, the weight of which, however, is in one sense lessened by the fact that a good deal of this kind of plunder has not been worth appropriation, and might better have been left to bloom unseen, or unborrowed, in its native atmosphere. But in the case of works on such subjects as the history and critical appreciation of ancient art, we can seldom lay any such flattering unction to our souls. The predominance of really important works on archaeology which have to be translated for the larger reading public of England, and the comparative scarcity of original English works of a similar calibre, is a reproach to us which we would fain see removed. We have Mr. Murray's learned work on ancient Greek sculpture; the second volume of which has just reached us, and which is an example of the type of work we are speaking of; but such works are exceptional in English literature, and it is most frequently to French and German writers that we are indebted for the best light and the most interesting criticisms on the arts of antiquity. Mr. Armstrong's translation is very well done; our regret is that it is a translation.

The authors regard the phrase "Chaldean" as really including Assyrian art, as the greater includes the less, Assyria having been in fact an offshoot of Chaldea, carrying on into some further developments the arts which had risen into eminence under the older and half pre-historic kingdom which first flourished in the plains adjacent to the Tigris and Euphrates. The differences are rather those of detail than of general style and spirit. The resemblances

or coincidences in art which attract our notice in these profusely-illustrated pages, extend, however, a great deal further than the region of Mesopotamia. A certain similarity in the broad course of artistic development and civilisation between Egypt and Mesopotamia is noticed by the authors at the outset. "In the valley of the Tigris and Euphrates, as in that of the Nile, it was in the great plains near the ocean that the inhabitants first emerged from barbarism, and organised a civil life. As the ages passed away this culture slowly mounted the streams, and, as Memphis was older by many centuries than Thebes, in dignity if not in actual existence, so Ur and Larsam were older than Babylon, and Babylon than Nineveh." Significant is the expression "slowly," used in the above passage in regard to the course of art and civilisation on those old-world plains. It is only when we endeavour to realise to ourselves the immense difference between the slow movement of the current of life and thought in early ages, as compared with the haste and restlessness of modern life, that we can understand the extraordinary fact which meets us more and more the more we study the remains of antique art, of the perpetual recurrence of the same leading forms and motifs in the art of ancient times, in countries which the then conditions of transport and travelling placed so widely apart from each other. In the modern era a school of art or architecture may rise and decline in a century, or even half a century. But in the days when travel moved slowly, and printing was not, and even writing was put on record often through the long and laborious process of carving letters and symbols in marble or granite, it would seem that all development of mind and arts and manners moved with corresponding deliberation. Even the comparatively long course of Mediæval architecture seems like a passing efflorescence of artistic zeal and genius, compared with the slow maturing, century after century, of the arts and civilisation on the banks of the Nile and Euphrates. And it is only in keeping this idea of slow development before our minds, that we can understand the constant recurrence of the same forms, the same ideas, sometimes with almost identical treatment, all over the ancient world. It is easy now for American painters, for instance, to take up the new French ideas in art; but how long must it have taken, in the pre-Grecian period, for the same ornamental forms to have permeated the then existing world so as to meet us in Egyptian, Chaldean, and Etruscan art, at Cyprus, at Mycenæ, so that in wandering through museums or in turning over the leaves of illustrated works, we are so constantly reminded that we have "seen that learning before." We say "the pre-Grecian period" advisedly, for the more one studies the art of the countries of the ancient world the more they seem, in regard to ornamental art at least, to stand to

Greece as a vast reservoir, from which her quick-witted artists drew the raw materials, to be refined to the highest finish they were capable of; and idea of which many illustrations in the present volumes furnish instances.

In the case of architecture in the larger sense, regarded as a system of building construction there is, however, little affinity between Chaldean and Greek, though much between Chaldean and one portion of Egyptian architecture, viz., the pyramid, if we are to call the pyramid architecture. The authors of the present work are inclined to deny it that rank and title, and draw the distinction between the form of the pyramidal building in Egypt, a mere gigantic expansion of the sarcophagus, with no architectural purpose in its height and predominance, no way even up to its summit, and the Chaldean pyramidal building, somewhat analogous, but in which the summit was a shrine with sides built with sloping ramps forming an easy access to the top. Messrs. Perrot & Chipiez give numerous conjectural restorations of this and other forms of Chaldean architecture, which are, to say the least, very interesting and very well illustrated; for the study of which we refer the reader to their pages. In the illustrations from the book which we have been enabled to reproduce to accompany these remarks, we have preferred to choose the representations of actual objects unaltered, rather than those which are more or less conjectural. When we compare Chaldean architecture with Greek, or with the Egyptian columnar architecture, which was in many respects its prototype, we find that, though there are some most interesting suggestions of detail which seem closely connected with Greek detail, in the main the column is a very minor feature of Chaldean architecture; the arch was largely used, and there is much more affinity to be found with Early Romanesque and some forms of late Roman building than with anything in Greek architecture considered as a whole. The most marked and distinctive feature of Assyrian architecture, as observable in the better-preserved remains, is the long vertical grooves, rectangular in section, by which the expanses of brick wall are striated. Messrs. Perrot & Chipiez are disposed to regard this feature, and we think with good reason, as evidence of a timber origin, the result of something like a chamfer at the meeting edges of adjoining planks; it has all that appearance, and the idea is in accordance with what increasing evidence and investigation seem constantly to lead us to, the generally prevalent influence of timber as a precursor of stone in ancient building styles. On the brick-work the authors make the following observations:—

"The Assyrian brickwork, in which so many vast undertakings were carried out, consists of units all of one dimension, and bounded by the simple alternation of their joints. Supposing a lower course to consist of two entire bricks, the one above it would be one whole brick flanked by a half brick.

* A History of Art in Chaldea and Assyria, from the French of Georges Perrot and Charles Chipiez. Translated and edited by W. Armstrong, B.A. London: Chapman & Hall, New York: A. C. Armstrong & Son, 1894.

An Assyrian wall or building consists of the infinite repetition of this single figure. Each whole brick lies upon the joint between two others, and every perpendicular wall, including parapet or battlement, is raised upon this system."

This simple form of brickwork, with rather large bricks, seems almost naturally to suggest the peculiar finish of the Assyrian buildings, that of a series of crenellated or "corbie-step" battlements, assuming the stepped form which must have been constantly recurring before the eyes of the builders in the process of brick-laying. The authors give a restoration of the crowning feature of Sargon's palace at Khorsabad (vol. i, p. 255), after materials compiled by M. Place; it consists of an oversailing course of brick, making a dark line of shadow, above which the brickwork is carried up a few courses on the same oversailing face, ending in the crenellated battlements before referred to, and with a line of polychromatic ornament between the first oversailing course and the battlements. Although, observe the authors, "this method of crowning a wall may seem poor when compared to the Greek cornice, or even to that of Egypt, in view of the materials in which he had to work, it does honour to the architect. The long line of shadow near the summit of the façade, the bands of brilliantly coloured ornament above it, and the rich play of light and shade among the battlements, the whole relieved against the brilliant blue of an Eastern sky, must have had a fine effect. The uniformity from which it suffered was a defect common to Mesopotamian architecture as a whole, and one irreparable from the absence or comparative disuse of stone." This, as a critical point, we do not quite concur in; it is possible to make a much bolder and more effective cornice than the Assyrian, even with brick alone, and especially with the large Assyrian brick; but the feature has the merit of very marked character. The moulding, it is observed, borrowed by Assyria from Chaldaea, is a brick one, and is almost identical with the usual cornice mould of Egypt, a small torus moulding, with a large shallow cavetto over it. It seems extraordinary what an immense acceptance this simple but very effective moulding (for a strong sunlight) obtained in ancient architecture, both in regard to extent of country and length of time during which it was prevalent; and in a smaller and more refined form, it is almost undoubtedly the parent of one of the commonest forms of Greek crowning moulding.

There are other forms in Chaldaean and Assyrian architecture which bear in a more interesting manner on Greek architectural detail. One of the most noteworthy illustrations of this in the book is that figured No. 1 on our page of illustrations, which is a representation of a bas-relief on a small piece of stone about a foot long, which was found at Abu-Abba, about sixteen miles west of Bagdad, one of the oldest Chaldaean sites, and a great centre of the worship of the Sun-god. It is this worship on the part of a certain king who is seated under a canopy supported by a column, which is the subject of the sculpture. The line formed by the back of the canopy, a curve of no special geometric description, is, as the authors seem to admit, somewhat of a puzzle, in regard to the mode of construction which it is intended to represent. They suggest that it represents a metal frame, as such a curve would not be easily executed in wood, and a brick arch resting on a column is not a probable explanation. We should hardly base any conclusion on the irregular nature of the curve, which may be merely the result of the carelessness or inability of the carver in regard to making a true curve. But the column is of great interest, as in it we seem to see a primitive form of the Ionic capital. In this representation the column is not only wooden in proportion, but appears like a representation of a palm-tree trunk. Messrs. Perrot & Chipiez's comment is to the effect that "the markings upon it suggest the trunk of a palm, but it seems doubtful whether this was allowed to remain in its natural uncovered state. Even in the climate of Chaldaea a dead tree-trunk exposed to the air would have no great durability. It is probable, therefore, that the wood was overlaid with plates of gilded bronze, fastened on with nails. This hypothesis is confirmed by one of M. Place's discoveries at Khorsabad. There, in front of the harem, he found large fragments of a round cedar wood beam almost as thick as a man's body. It was cased in a bronze sheath, very much oxidised, and resembling the scales of a fish in its arrange-

ment. The metal was attached to the wood by a large number of bronze nails. Comparing these remains with certain bas-reliefs in which different kinds of trees occur, "we can easily see that the Ninevite sculptors meant to represent" (by these scales of metal) "the peculiar roughness of palm bark." An enlarged drawing of a portion of these bronze scales, which is given in the book, bears out this view, when compared with the drawing we are immediately alluding to, and seems like a reduction to conventional form of the palm-tree bark, in a spirit in itself quite Greek; and the column in the bas-relief is a rude representation of such a surface decoration. Following out this limit, the authors suggest that the curves or volutes, which, as will be observed, occur both at the capital and base, were also of copper, which would lend itself so easily to being hammered into such forms. It is, perhaps, to this bas-relief that Sir F. Leighton was partially referring in his address to the Academy students last week, in the course of which he mentioned the artistic power of the Greeks in producing so refined a form as the Ionic column, out of what was originally "but a post of wood and a curl of copper." It must be remembered, however, that, as we see in the Lycian tombs, the detail had made some progress in its refined form before the Peloponnesian Greeks took it up and completed it. The occurrence of the feature both at the foot and head of the column, suggests that it had originally no special function as a detail of the capital, but was simply an ornament easily formed and which might be introduced at pleasure independently of constructive expression. There seems to be a reference to this ornament in the stele found at Khorsabad by M. Place, fig. 2 in our plate. This is a much later detail, and bears much more direct relation to Greek forms, in the fitting, in the arrangement of the spiral or volute forms, and in the crowning ornament over them, so plainly a large and rather clumsy anticipation of a well-known Greek ornament. "The grace and slender proportion of this stele," the authors observe, "are in strong contrast to the usually short and heavy forms affected by the Assyrian architects, especially when they worked in stone. It is difficult to say what its destination may have been. It was discovered lying in the centre of an outer court surrounded by offices and other subordinate buildings; it has neither figure nor inscription. The base was quite rough and shapeless, and must have been sunk into the soil of the court, so that the flutes began at the level of the pavement." A form of ornament found in late Assyrian work, in the eighth and seventh centuries B.C., is shown in fig. 4,* and is to all appearance distinctly Egyptian in character, except in regard to the introduction of more gracefully curved lines instead of the stiff straight lines of the Egyptian ornament. The more distinctly Assyrian form of radiating ornament, with the round-ended lobes, is found frequently in a painted form, with the lobes alternately light and dark, or sometimes chevroned; there are some very interesting fragments of painted Assyrian pottery in the British Museum, showing this class of work, of one of which the authors give an illustration. Attention was drawn to this in some articles on "Ornament" by Mr. Statham in the *Portfolio*, two years ago, where it was sketched among other examples of types of archaic ornament. The comparison of this round-ended ornament, and the rosette flower in fig. 4, with Greek ornament, suggests the idea that there are really two derivations for the class of form in Greek work usually called the honeysuckle ornament; the painted forms, especially the alternating ones, seem like a Greek refinement on the type of form of figure 4; the carved acroterial ornament, so familiar in Greek architecture, seems rather traceable to such a detail as that on the head of the stele just spoken of.

In speaking of the short and thick forms which the Assyrian sculptors habitually employed in their architecture, it must be borne in mind that this applies only to Assyrian, not to Chaldaean, architecture, and that the difference between the two is the difference between stone and brick. The Chaldaean is a brick style, with stray traces of timber origin, a very unusual combination of elements, but one which is amply illustrated in the book. A succession of semi-circular half-columns of brick, bonded into the walls, and very thin in proportion, was a constantly-recurring feature; and those who have attributed this to a survival of the idea of logs

or trunks of trees placed upright in contiguity are probably not far wrong. The peculiarity is in the fact that such a form, as well as the wall-panelling or striation which was another common source of surface decoration for the exterior of a wall, should have been worked out in a material such as brickwork, presenting naturally so little facility for imitation of woodwork. The translation of wood forms into stone is a common phenomenon; that they should be translated into brick may be cited as a striking example of the inherent tendency of architectural design to imitation and precedent.

Of the sculptural art of the Assyrians we have among us familiar examples in the grand human-headed lions and bulls which are among the finest acquisitions of our national museum. These represent what we may call the specially architectural sculpture of Assyria. They are works the obvious intent of which is architectural decoration, and they seem to lose much of their meaning and suitability when regarded in a separate light as mere sculpture. They are among the grandest and most successful examples of this class of semi-architectural sculpture; but they do not represent properly Assyrian sculpture either in its shortcomings or in its real power. The weakness of the Assyrians was in the delineation of the human figure in its proper guise and as sculpture independently considered. In such work they were nearly as stiff and conventional as the Egyptians, without Egyptian grandeur. The nude figure they hardly attempted; a grotesque example is indeed given by our authors, a figure representing the demon of the south-west wind, which was to Mesopotamia what the east wind is to us, and which is at least made to look sufficiently repulsive. But the Assyrians, in common with other peoples eastward of Greece, saw little of that nude form which the Greeks worked out in sculpture with such magnificent success; their social habits and feelings stood in the way of their love of sculpturesque study, and they give us only stiffly-posed draped figures in a conventional attitude. In their human statues, however, or in some of them, there is a considerable resemblance in manner to the art of Branchidae, most noticeably so in one which is given by the authors in a separate plate, in vol. ii. (p. 126), an example now in the Louvre, and called here a royal statue. In the straightforward attitude, the stiff lines, and regular folds of the drapery, this strongly reminds one of archaic Greek work. The one which we have selected for illustration was one of several statues found in the great edifice at Tel-lo, almost all on the soil of the central court. In this, which is probably later than the one just referred to, there is considerable power of modelling displayed, in the same kind of way in which some of the later Egyptian statues are treated,—an indication of the outline and contours of the body through the veil of a large enveloping drapery. As in so much other Assyrian sculpture, the form of the seat is very carefully given; the Assyrian sculptures offer a fund of archaeological suggestion in the matter of furniture. All these statues have one attitude: all have their hands folded within each other, and placed against their chests,—"an attitude still used in the East to mark the respectful attention of the servant awaiting his master's orders." It would seem, probable, then, that these statues represented the idea of submission or veneration, probably directed towards some superior being.

But when we come from human figures to animal life, the case is very different. The Assyrians were mighty hunters; and just as the Greek sculptors portrayed with such power and realism the human figure which they saw in the gymnastic contests of their time, so the Assyrian sculptors, who were doubtless constantly assisting at lion-hunts and other such sports, portrayed the king of beasts with a power and general fidelity which, allowing something for convention, has seldom been surpassed. Even the conventionality is an element in the artistic excellence of the reproduction; it shows so much of the essential qualities of a broad style of bas-relief in stone, and such a power of seizing and reproducing the salient points of animal action and anatomy, that the figures impress us with the idea of fossilised animals, which have lost some of their variety of detail and mobility of action, but retaining all that can adequately be expressed in a broad style of stone bas-relief. One or two of the finest examples, such as the wounded lioness

* See Illustrations in present number.

dragging her crippled hind limbs after her, are too well known now to need more than a reference. One example which we reproduce* (fig. 6) is equally striking in its grand delineation of the couchant lioness, whose massive framework is indicated in a manner that is formidable to look at, and shows how keenly the artist had observed the salient points of his model. It may be observed that there is considerable similarity in the style and manner of this work to some of Blake's powerfully-drawn outlines or "side elevations," as they may be called, of animals, introduced in the borders of his illustrations to the Book of Job and elsewhere. Through all their representations of the chase, either the pursued animals or the pursuing hounds, there is the same powerful expression of animal action and animal character, taken direct from life; the wounded lion pouring blood from his mouth, stiff with the spear that has gone through his lungs; the aching lion springing against the occupants of a chariot, with both claws wide distended, ready to grasp his prey; these are points which show just the same spirit that marked the Greek treatment of human figures and often of animals; a realisation of the most salient features of the model, from actual every-day observation.

The favourite hunting scenes of the Assyrian bas-reliefs convey to us something else besides the points of animal action as displayed in the lion. The horses and chariots are more stiffly and conventionally depicted; the sculptor's "soul was among lions," and in them he put forth his best powers. Even in purely ornamental work, how powerful is the style of the scabbard termination (fig. 3), with the two lions in deadly grip. But the grim earnest of the scenes, and some of the details of the methods employed, give us a vivid idea what a physically remarkable people these Assyrians must have been; a people who were given to splendour of dress, who covered their buildings with bronze and gilding, who arranged their hair and beards in laboriously fancied curls, and went out to shoot lions with bows and arrows. We can feel no doubt about the literal truth of the incidents of the hunting-field which are represented. What must have been the average muscular development of the forearm among people who could draw a bow that would send an arrow right through the body of a lion? The immense muscular development of the arm in the Assyrian statues, which is observable everywhere in the bas-reliefs, must be from life also; it is the only possible explanation of the feats of shooting which they are represented as having performed. Semi-barbaric as they were on one side, they were a people possessed of wonderful power and vital energy, both of body and character, and well deserved to have their doings and the relics of their art, more than three thousand years afterwards, commemorated and illustrated in so admirable a book as that of Messrs. Perrot & Chipiez, the manifold interest of which we have only been able briefly to indicate.

THE AGNOSTIC SPIRIT IN MODERN ARCHITECTURE.

THE impending competition for the new Government Offices, and the speculations to which it has already given rise as to the style likely to be adopted by the majority of the competitors, and the grounds upon which their adoption of it will rest, bring into fresh prominence the disorganised condition of architectural taste in this country. We appear to be at the present moment wholly without any architectural convictions, and to have no accepted artistic creed. To estimate approximately the chaotic nature of the art around us it is only necessary to cast a look at the previous competition for similar public buildings. The world of art was then divided into warring hosts, each filled with an inspiring faith in the merits of special forms of art and their universal applicability. There were Gothic men convinced of the demonstrable superiority of Mediæval principles of design. Of this section Mr. Beresford Hope was a conspicuous type. His party was confronted by an opposing section,—men who scouted the Mediæval styles for any but quasi-Mediæval uses, who held fast by Classic art and its modifications as founded upon common

sense, suitable to our climate, conformable to modern requirements, and sanctioned by the preference of all the more civilised European nations. At the head of this section Lord Palmerston occupied a prominent place, an unyielding and uncompromising Pagan. A third school sought to revive the Gothic of Southern Italy, and of their aspirations Mr. Ruskin was the eloquent leader and exponent. The school which had no long time before sought to revive our only distinctively national manner, viz., that which marked the reigns of Elizabeth and James I., failed to produce a mind of sufficient calibre to render the attempt successful, and it left the field in possession of the architectural parties above enumerated.

But the distinguishing characteristic of each was an earnest belief in its own excellence, and it was but as a matter of complaisance that each allowed a qualified merit in its rivals. The architects of thirty years ago were animated by an unquestioning faith, and they defended the systems they severally espoused with all the proverbial energy of zealots.

The feeling which actuated them would appear now to have entirely evaporated. The sense of perplexity and dismay which, in all matters pertaining to religion, has fallen like a bright upon the whole family of European nations, is reflected in their art, and the phenomenon is for the first time brought home to us in all its force by the problem which is now presented to all the architects of Europe, in what will probably be the greatest opportunity of the century.

One cannot but hear something of the questions which are just now upon so many lips. Will a Gothic building have a chance? Must the style be some form of Classic? Would some variety of round-arched architecture, with a spice of Byzantine detail, be looked at? The decision rests practically with the Office of Works, since it will eventually lie with a committee nominated by that department; and the Office of Works is a department of architects who have adopted one almost unvarying style. When local conditions suggest a Gothic building the concession is made. When no such conditions exist a Classic manner is employed. There are no conditions to impose a Gothic structure on the Spring-gardens site; it is therefore probable that a Classic design will for every reason be most likely to find favour in the eyes of the judges, and therefore it is thought almost all the designs submitted will be Classic in motif. One thing only can be predicated of them. They will none of them be altogether pure in style. The Gothic men, if any such there be, will spice their designs with alien feeling; and the designs which emanate from Classic authors will be more or less, and probably more rather than less, free in treatment. The present men have neither the faith nor the learning of their predecessors. The last "Goth" who had the courage of his convictions died in sight of the completion of his greatest work, and he has left no successor, no one who will rise up and say as he said, "I believe in Mediæval principles and in them only; I have studied them with a life-long singleness of purpose. Here I show you of what those principles are capable. If you reject my design you are both blind and ignorant."

The Queen-Annists do not pretend to a belief in the rationale of the manner they practise: they cut in between an expiring Gothic and an incipient Classic. Some of them are very clever artists, and they succeed, as a rule, in imparting to an irrational and inconsistent system of design all the grace and interest of which it is susceptible. Like their brethren, they have been suckled in a creed outworn, and are merely an assemblage of clever and agreeable architectural agnostics.

It is, on the whole, a serious question whether this great competition delayed as it has been, has not come upon us too soon. The negation of all principles of architectural rectitude is not likely to result in a noble building. If, as is thought by some qualified judges, we are working our way through the mixed or bastard styles to an era of pure "Classic" art, it is to be regretted that the wholesome change had not been completely effected before so great a work had been undertaken. No great work has been effected without enthusiasm and every great work reflects the personality of its author. The contagious enthusiasm of Pugin is seen in every line of the Houses of Parliament. The enthusiasm of a whole school is stamped on St. George's Hall at Liverpool; and the refined and scholarly Taylor

Institute at Oxford reveals a burning page of architectural history. It remains to be seen what is in store for us at the hands of fashion-ministering and time-serving architects, who have no enthusiasm and no faith in the principles of their art, but are ready to adopt any style with cynical sangfroid at the dictates of expediency.

The irreligious, or rather "non-religious," tendency of modern "thought," is modified by the momentum imparted by centuries of Christianity, and a similar effect on the architecture of the day, and that of the near future, may be due to the habits of study of our forefathers, the virtues of which we, in a measure, inherit. But as a day must come when the negative principle in religion will be brought unsupported face to face with the eternal problems of humanity and its needs, so a day is at hand when a race of young architects brought up without reverence for the higher principles of art will be unprepared and helpless, in presence of the demands made upon them. As we observed a week or two ago, in speaking of the Fitzwilliam Museum, there is so little study of Classic design now that it would really be difficult to find any one competent to add to Basevi's building in a manner evincing anything of the learning and refinement of the original; and matters will soon be little better in regard to Gothic work, properly so called. It may be that in both cases a brighter era is in store for us; that we are moving through decaying systems to a purer faith and a clearer view of social duties, and that through the destruction of the husk and shell of art we are journeying on to a better appreciation of its undying principles. But this is at present mere speculation. We have no warrant for the assumption. There have been times, as in the Middle Ages, when we were untroubled by any questions as to the soundness of the art we practised almost intuitively. And there have been times when we were untroubled by doubts as to the perfection and sufficiency of an adopted antique ideal. But there was never until now a time when all art was alike to us, and we had no exclusive faith in the special excellence of any; declining to pronounce any true, and by implication challenging the truth of each. "Unfaith in aught is want of faith in all." And the want of faith is Agnosticism in art,—as in religion.

THE INFLUENCE OF EVERY-DAY LIFE ON ART TEACHING.

ELIZA METEYARD, whom Douglas Jerrold so gracefully named "Silverpen," and whose subsequent contributions to the literature of art, have made her name widely known, in one of her suggestive stories, which led up to many of the social reforms of the present generation, pointed out that the artist received his inspiration from various sources,—some unexpected and some laboriously sought for. Some thoughts were born of study, others came like angels' visits from the unknown. The writer works this out very pleasantly when she pictures the dreamy designer seeking the spirit of beauty for which he yearned in the observatory of the astronomer, and finding it in the contemplation of the far-off bell-shaped nebula, with its stupendous suggestiveness of a thousand unknown worlds, whilst another found an ineffable grace and perfect symmetry in a many-hued leaf blown by the autumn winds from the hedgerow tree. The lesson sought to be indicated was that there was no object so vast, and none so minute, in Nature, as to be destitute of beauty applied to a given purpose: therefore everything that Nature produces ought to be a lesson to the student, to be adapted and combined for the use and enjoyment of man. Nothing is produced in vain, everything has its special suggestiveness, if only studied in a spirit of intelligence, and worked out with care.

Miss Meteyard, who was an art-writer when Ruskin was a young student, and the Exhibition of 1851 was yet in embryo, did not confine her suggestions to the shaping of a teapot, or designing an inkstand. She pictured forth marvellous buildings in iron, and metal, and crystal, some of which have been, and others may be, amongst the novelties of the age. It is the fault of the present day to look at artistic productions through the medium of others' eyes. We do not think for ourselves, observe for ourselves: hence we are copyists, not originators. We adapt, not create, things of beauty.

Have passing events,—the show of yesterday,

* See Illustrations in present number.

or the possible circumstances of to-morrow,—any influence on the taste of the age? Take, for example, a mass of diverse objects like those so recently gathered together at the Fisheries Exhibition; though diverse they were congruous. They represented, as it were, a world apart, of which traces may be found in the objective treatment of art and architecture in the past. This has been a question discussed in artistic circles where decorator and architect meet. To many, perhaps to the majority, of the bustling crowds who thronged the galleries and halls at South Kensington, it was nothing more than an agreeable lounge amongst a collection of strange fishing gear. It is allowed that it may have a beneficial influence on the fisher-folk on the coast, and on the industry they pursue in so toilsome and dangerous a manner. The exhibition may have familiarised those who are inland bred with the appliances used by those who supply the soles and herrings, the cod and the salmon, to our breakfast or dinner tables; but it ought to have a wider and more enduring influence than this, if it has to maintain its excuse for being anything more than a sight and a show. It is true we know something more of the habits of the lobster and the oyster than before. We have learned to appreciate the difference in bulk between the mammoths of the ocean and the pert little stickleback which bites so greedily at the bait of an idle schoolboy. Apart from this, and granting the possibility of an occasional thought of how it illustrated the adaptability of many means to a given end, has it produced anything or suggested anything beyond the material idea of the unlimitable riches of the sea, and how readily and cheaply they can be obtained for the food of man?

It is true that the art-lover may have treasured up the delicate and varied hues of the sea-anemone, and the intricate tracery of those marine plants which, we are told in plaintive language, "are not weeds, but flowers of the sea." The curves, volutes, and flowing lines of the univalves and bivalves have probably suggested the idea that the patient study and loving hands of the ancient sculptors and potters have not exhausted all the graceful and fanciful elegances of what bluff William Hogarth could see and denominate as "the line of beauty." The minutest forms of life dredged from the ocean's bed are found to have hues as varied and delicate as Orient pearls, when the deep sea plummet and the microscope have brought them within the ken of human vision. These contrast strongly with the fantastic contortions of the coral, yet each has its special purpose to serve in the economy of Nature,—each has some special beauty of its own to the eye of the art-student, and not to him only. The civil engineer who has to combat the forces of the wide and fierce wastes of waters and of the tempest may have found in these specimens of sea-growth models enough to suggest some fresh combinations of form and structure to withstand the force of the storm and the destruction of the elements. The marine engineer might find many valuable suggestions in the cumulative treasures of the deep.

Nor have these been altogether neglected in the past. The architectural student will not forget that the seafarers of the North largely influenced the life, manners, and customs of the British Isles. When they came hither they found the relics of Roman colonisation. There were buildings existing which partook in some degree of the majesty of those edifices which even yet adorn the banks of the Tiber. Our Saxon forefathers were not renowned as builders themselves; but they left the impress of their thoughts and habits on their monumental stones, on the crosses, and the structures they raised to glorify the new religion of the cross, and to shelter the holy recluse from the inclemency of the weather. In the regular coils of rope, in the twistings of the cable, and in the "serving" of their masts and yards, they found appropriate models for their piers and pillars as well as the ornamentation of their doorways and windows. They rudely carved the curves of the storm-lashed sea on their brooches and fibules. The monsters of the deep were shown in their midst, and the cordage with which they were so familiar was twined and turned, alike in their delicate filagree work as in the larger buildings. The reason of this was obvious to those who closely examined the exhibits of Sweden and Norway. A distinguished archæ-

ologist pointed out that an exhaustive lecture on the germs of Saxon art could have been illustrated in those courts, for there were the crude ideas which the old carvers and artisans worked out and left as a legacy to posterity plainly visible. They could be discerned in the hanging-nets, in the knots of the cordage, and in the "laying" of the spare rope in the long-buried Vikings' ship. It was astonishing, when pointed out, how universal and widespread was the model of the fishing-net in ancient ornamentation by the maritime nations. It can be traced in the perforated timber work of the Chinese, and in the plastic ware of the Japanese. The Venetian glass-workers revelled in it, and the Mediæval architects used it in their diaper-work, in their groings, and in their string-courses, frets, and guilloches to give a connexion and a completeness to work which, without it, would appear fragmentary and disjointed in detail. These examples show that the old art-workers took for their models the objects around them, and with which they were familiar. They did not adopt them in a merely conventional method. They used and adapted them as the need arose, and left them to show how much of the admired beauty of the art productions of the past are derived from an intelligent study of the objects around the everyday life of mankind. The old models, suggestive as they are, need not be imitated. Let them urge the student to fresh combinations and newer forms of beauty.

Whilst touching on these maritime productions and their relation to art teaching, it is remarkable how little the marvellous combinations of tint and colour in sea-shells have influenced our taste for colour in decoration. We have had symphonies in many hues, but the resplendent iridescence of many of the shells from the tropics and the Anipodes out rival the finest opal, and place the proverbial gorgeousness of the peacock in the shade. They show the chromatic scale in an almost infinite variety, and show those who are fond of colour-harmony what undreamed-of scintillations of beauty may yet be placed before an admiring and a critical world. As a school of form our sea-shells have been neglected. Too frequently they are hidden away in cabinets, or lie neglected in dusky cases in our museums. Skilled experts have not done justice to their elegant curves, or to their brilliant and delicate hues. We see them sometimes stuck together to make a tasteless wall ornament, where half their beauty is hidden and their loveliness dimmed by each other's attractions. These are amongst those objects that ought to be brought more frequently into our art-life, so that we may found a school which shall be to the future what Grecian, Roman, and Mediæval builders and art-workmen are to the present. We are hardly free from the leading-strings of childhood yet. We shall have to utilise our passing chances of becoming acquainted with the varied common objects of the world, and we eliminate from the incongruous mass that beauty which is said to exist even "in the darkest night that clouds the sky," and to permeate the depths of the fathomless sea. It would, indeed, be pitiful if, in our absorption of art teaching in the schools, we neglected the passing and ever-varying objects in the kaleidoscope of every-day life.

THE EARTHQUAKE, THE ARCHITECT, AND THE MARINER.

We have on more than one occasion called attention to the influence exercised on local styles of architecture by the frequency with which earthquakes occur in the various localities described, and have spoken of the principles on which the architect has endeavoured to resist, or to minimise, the effect of the shocks. These have been mainly three. In some countries, as in Southern Italy, great massiveness has been given to all important buildings, and the term of a century has been regarded as that for which to build, without incurring need of serious repairs. More to the south and east, in regions yet more haunted by the terrible scourge, the opposite plan has been adopted; and we find cities of reeds or of mats, that might almost spring up in a night, and that can overwhelm no inhabitants by their fall, if shaken down; although they are perilously exposed to conflagration, in case of overthrow. In Japan, again, the attempt has been made to provide in the structure of a building a sort of safety-

valve in case of great agitation of the earth. Such was the intention of the "assimilating joint," suggested by Mr. David Stevenson in the table supporting the lighting apparatus for the light towers which, in 1867, Messrs. D. & T. Stevenson were commissioned to erect in Japan. Of this contrivance—the experience of Mr. Brunton, who was appointed chief engineer in February, 1867, was not altogether favourable. The French naval officers reported that the frequency of earthquakes in Japan was such as to forbid the use of stone structures for light-houses. Some very interesting details as to earthquake shocks are to be found in volume xlvii. of the Minutes of Proceedings of the Institution of Civil Engineers, in the report of the discussion, on November 14th, 1876, of Mr. Brunton's paper on the Japan lights. In the native architecture of Japan, what we should call a foundation is conspicuous by its absence. A Japanese house is essentially a large framed box, standing on a series of logs, which are not fixed to the ground, and often rest upon round-topped stones. Thus it is only by the fall of the heavy tiles with which the houses are covered that much damage is ordinarily caused by earthquakes in Japan. Dr. Dresser, indeed, in his book on the architecture, art, and manufactures of Japan, describes the construction of a sort of solid wooden pendulum in the centre of a wooden pagoda, which, he says, "by its clever construction is enabled to retain its vertical position even during the continuance of earthquake shocks," but this theory has been so severely criticised, and so little defended or discussed, that we only mention it for the sake of reference, and as matter for further inquiry. Some of the Japanese buildings,—such, for example, as an Aino temple (figured No. 89 in Dr. Dresser's book), look to us more like the survival of nests, or platforms built in trees (of which we have a curious example in the neighbourhood of Cheltenham); than anything else.

Even those of our readers, however, who may have personal experience of the shock of earthquake, or who are aware with what extraordinary nonchalance the residents of Resina, of Torre del Greco, and of Casa Micciola, set themselves to work to repair the ruin wrought by the sudden and terrific energy, must feel that there is a limit to the resistance which can be offered by human skill and human resolution to the mighty wrath of nature. We have recently seen extracts from an account written by Captain Watson (of the *Charles Ball*) of the volcanic eruption in the Straits of Sanda, on the 20th August last, which appears to us to give a more vivid impression of the terrors of the scene than anything extant in literature, not excepting the well-known account by Pliny of the destruction of Pompeii. The perfect simplicity of the language and the quiet noting of technical details, such as the direction of the wind, and the angle of bearing of different points, gives a graphic vigour to Captain Watson's story that no rhetorical art could better. Having been personal witnesses of phenomena of alarming character,—such as the ink-black sky and the thick fall of ashes accompanying an eruption of Vesuvius, when no light was visible but the lurid glow of the mountain; and, again, such as a storm on the Mediterranean, when the lightning continued in one sheet of flame for many seconds together, and when navigation was arrested by the blinding light and the no less blinding darkness of the few intervals between the flashes,—we must yet admit that no European experience of the power of nature seems to us to come near the fury of Krakatoa. "The blinding fall of sand and stones," says Captain Watson, "the intense blackness above and around us, broken only by the incessant glare of various kinds of lightning, and the continued explosive roar of Krakatoa, made our situation a truly awful one. . . . At noon the darkness was so intense that we had to grope our way about the decks, and, although speaking to one another on the poop could not see one another. "At 11:15 there was a fearful explosion in the direction of Krakatoa, now over thirty miles distant. We saw a wave rush on to the Button Island, apparently sweeping right over the south part, and rising half way up the north and east sides. This we saw repeated twice, but the helmsman says he saw it once before we looked. The same wave seemed also to run right on to the Java shore. . . . Passed Anjer at 8:30, named still hoisted, close enough in to make out the houses, but could see no movement of any kind; in fact, through the whole Straits we have not

seen a single moving thing of any kind, on sea or land." The accounts of the obscure halls of Plato, as described by Virgil, and of the lurid glare of the "Inferno" of Dante, fall short of the terrible poetry of this seaman's log. We look in vain on the pages of either history or fiction for a counterpart of the passage of the *Charles Ball* through the Straits of Sunda during the eruption of Krakatoa. Involved at noon in impenetrable darkness varied only by the lurid glow of the volcanic flames, or by the rose-coloured "St. Elmo's Lights" that at times danced on the masts and yards; scorched at one moment by falling cinders; beaten, at another, by a fierce rain of tenacious mud; with her unanswered signals flying, and her crew hidden from one another as the gloom increased, the gallant little vessel bore all that told of life through the dense scene of the conflicts of earth, and sea, and sky; the one single moving spot, for miles of obscured course, in which human endurance held out against the wrath of nature.

INDIAN ART AND ENGLISH OFFICIALS.

The announcement has been made that there will shortly be published a journal of Indian art. It is scarcely creditable to us, who have been now the undisputed owners of the Great Dependency for over a century, that it should have been practically left to this generation to interest itself in any special degree in the wide field of the artistic history of our Eastern Empire. Till within a few years the East India Museum was one of the familiar old-fashioned types of collections of "curiosities" brought together without apparently any direct aim, and arranged without method. Now, however,—and in a great measure, we owe the change to Sir George Birdwood,—the Indian Museum at South Kensington has become one of the attractions of the metropolis. Interest has gradually been awakened, and much invaluable information has been of late years gathered on the subject of the art and archaeology of Hindustan, information which, however, has only proved how sadly deficient is our acquaintance with the curious chapter in the history of art which is revealed not alone by the existing monuments scattered over India, but also by the many industrial arts which still flourish in the peninsula.

It cannot be said to be to the credit of the officials whom year after year we have sent out from our country for now over a century, that it has been left to this generation and to other hands than theirs to explore a field of study which in itself offers so many features of interest. The names of Lieut.-Col. Cunningham, Lieut.-Col. Vansay, and Sir George Birdwood stand out prominently alone, where they should have had at their side a community like the Anglo-Indian,—enjoying such a singular amount of leisure,—a host of emulators and assistants. It is to be regretted that the Anglo-Indian as a whole should possess in so marked a manner one of the characteristics, we are afraid, of all our countrymen, a decided indifference to matters of art. How many of the crowds who yearly return after their regulation stay, and who are to be met with in every direction, bring home no acquaintance respecting the wonderful art of the Indian peninsula, or any other relics but perhaps some ill-chosen, ill-designed native imitations of debased European objects, or a collection of badly-selected photographs. The familiar discontent of the Anglo-Indians at their position on their return home would, we suspect, be largely compensated did they bring with them some slightly more satisfactory and creditable knowledge of the peninsula than what seems so invariably to consist in an acquaintance with certain social aspects of our English colony in the Great Dependency.

With the privileges and advantages at the disposition of the Indian official, be he civil or military, the smallest research could not fail to have discovered, at a time too when such objects were not so scarce as now, treasures of native art that can never again be produced. But it would appear,—only made, however, evident by recent exhibitions,—that the industrial arts of India are in a most flourishing condition, and still produce objects of the greatest beauty. These the mass of our mercantile, uncultivated Anglo-Indian residents would seem but in a very few instances to have appreciated.

Such a show,—small as it is,—made by the

authorities of the South Kensington Museum in the new department lately opened, and among the "Recent Indian Acquisitions," reveals a singular wealth of active art industries still in existence in India, together with the natural accompaniment of a large number of specimens of antique art, which research has brought forth. It is not, of course, in the power of the ordinary resident to bring away such a treasure as the exquisite façade of the two Ahmedabad houses, which gems of polychromatic architecture form so choice a decorative feature in the new Indian Court; but the collection of photographs which the Indian Museum has gathered together forms a singular contrast in its artistic character with the usual show of photographs which our ordinary Anglo-Indian friends display on their return home. With the singular social views which in their mistaken research after refinement, it seems, are the sole subjects of interest among Anglo-Indians, such active and beautiful art-industries as those of the natives remain, of course, unperceived by all but the more appreciative, and by them too often, as we see in the case of the Indian wood-carvers, directed unfortunately in the doubtful paths of European example.

It has been, it may be said, left to the present moment for those at home who have not enjoyed the still rare privilege of a visit to India to become aware of the existence of numerous native art-industries which merit the warmest encouragement. Among the "Recent Indian Acquisitions" now exhibited at the South Kensington Museum, the mass of textile fabrics and the richness in many cases of their design reveals a wealth of long and unsuspected decorative beauty still alive in the world, and the curious means of comparison afforded by the accidental juxtaposition at the Museum of the antique European fabrics and these modern Indian stuffs is most instructive. The embroideries from Chamba and numerous other districts of the huge peninsula, the peasants' costumes from the Punjab, all these, and innumerable other objects, are such as we should long since have been made thoroughly familiar with in our country. The rich yet simple native jewelry from Hyderabad, from Bombay, from Lahore; the anklets, chains, belts, earrings and toe-rings, amulet-cases, and chateaines, reveal a further wealth of artistic objects of the most interesting nature, some ancient, some modern, while the native pottery offers forms of beauty, design, and colour which should not have been left till now unknown to our country, or rather alone known to the few. It is satisfactory to see that the recent productions of the Bombay school of art are most creditable and characteristic productions, quite worthy of the models on which they are formed, nor should the curious, and in many cases beautiful, if somewhat coarse specimens of native glasswork,—much resembling the ancient Roman,—be passed over in silence.

As for the wealth of old art,—industrial art that is, apart from the wonderful architectural relics,—still remaining in the peninsula, the richly-illuminated MSS., the jewelry, the carvings in wood and ivory, the staffs, the pottery and metal-work, we leave it to those to judge what might be done who know what the artistic energy of this century has done to fill the museums of Europe and the New World; in this direction our resident officials might do wonders, armed as they are with so many powers denied to the ordinary traveller. As long, however, as the education they receive previously to their departure from home embraces no single element of respect for art,—still less of the art of the natives they are called upon to govern or protect,—as long as the decided tone of narrow-minded respect, or at the best, indifference for the customs and the art of the Hindoos, which is too often observable among Anglo-Indians, continues to exist, we shall remain ignorant of one of the most interesting phases of the development of classic art.

With the vast amount of leisure left to our army of officials out in India, those at home interested in the history of art cannot but be surprised at the indifference of those who are thus privileged to pursue an almost untried field of research, one too in which national pride should largely enter. To all in any manner familiar with the strange and interesting history of India, it must ever remain a matter of the profoundest regret that so little is yet known of the past and present civilisation of a country, of which we are the absolute masters,

and which modern research has shown us to have been the cradle of a large part of the human race.

THE PRE-HISTORIC ART OF AMERICA.*

In the Old World the line of architectural development can easily be traced from the primitive cave to the rough-hewn stone habitation eventually perfected in the art of Greece and the so-called Gothic days. Curious to say, in America, the oldest known architectural creations show no use of stone. From Canada to the Gulf of Mexico, from the Pacific coast to the Atlantic, the great races of the past have left us the evidences of their existence in a series of singular earthworks, fortifications, tombs of chiefs, and temples. Of the history or the origin of the "Mound Builders," as they are termed, nothing positive is as yet known. Their civilisation was an advanced one; they cultivated the soil, they worked mines, they were traders, as objects from most distant districts are found in their tombs; a canal of their construction, seventy miles long, connects the Missouri river with the great chain of the Lakes. Their mound buildings are planned on definite principles; the knowledge of measurement, of geometry, and of astronomy is clearly proved. The whole region which extends from the Alleghanies to the Rocky Mountains was covered with a series of fortifications, of redoubts and retrenched camps; each coign of vantage was carefully strengthened on the most approved military principles, casemates even having been built for protection against the only weapons used,—flint-headed arrows. Some of the mounds are gigantic, that of Cahokia being no less than 91 ft. high, with a base of 720 ft. by 560 ft.; and it is clear that these constructions must have required no small amount of architectural acquirement to plan and carry out. In Wisconsin, we meet with a most singular phase of this civilisation, mounds formed in the shape of wild beasts and birds whose wings reach 100 ft. apart; the Granville alligator is no less than 103 ft. long; the folds of the Brush Creek serpent in Ohio measure 700 ft. The pottery found attests the artistic development of the "Mound Builders," cups, ewers, plates, and vases of the most varied nature having been brought to light, the ornamentation in every case being of a regular and graceful nature; the handles sometimes represent animals, often human masks, but here we see betrayed the utter absence of a feeling for beauty.

Contemporary with the mound-builders lived, as far as we can judge, another very different race, who from the nature of their habitations have been termed the "Cliff Dwellers," occupying New Mexico. Their homes can only be compared to nests, perched as they are on the most inaccessible mountain-peaks; each platform being occupied and further protected by a series of stone-built dwellings cemented with clay, though occasionally sun-dried bricks are met with. Sometimes we find these dwellings grouped together into cave-towns, where the architectural dispositions are most curious; the rooms are very low, the windows small, the means of reaching the upper-story being by Robinson Crusoe's familiar method of the ladder, a precaution dictated by a similar fear of attack; indeed, as in the case of the inhabitants of Southern Madagascar (described not long since in these pages†), the same necessities led to the same means of defence. In the valleys under the protection of their towers rose, evidently at a later epoch,—the "pueblos," some of which were still occupied when the Spaniards arrived in the New World.‡ Composed of a large rectangular space, the houses in the "pueblo" were sometimes built of stone, sometimes of sun-dried bricks, sometimes of a species of concrete formed of small flints, but always covered with clay. Sometimes we find the walls strengthened with timbers; clearly, as in the case of the homes of certain islanders in the Greek archipelago,—for protection against earthquake. The "pueblos" were important cities; one, near Aztec Springs, covering a superficies of some half a million square feet, and others even larger are known to exist. But the work of excavation and re-

* See p. 713, ante.

† See p. 110, ante.

‡ An interesting account of a *Zuni pueblo* still inhabited recently appeared, it may be remembered, in the pages of the *Century Magazine* (Jan.—Feb., 1883).

search has so far been but very imperfectly conducted; much of the country where the ruins of this past civilisation strew the soil is occupied by warlike savage tribes, singularly opposed to the presence of the "pale face" among their wilds; the few explorers report, however, much of interest, "carloada" of pottery are spoken of, and masses of flint arrow-heads; the ceramic art of the cliff-dwellers was even superior to that of the mound-builders, offering a surface covered with a silicated varnish of blue, black, and brown, occasionally red and white, the ornaments standing out in relief accompanied by decorations strangely resembling the conventional patterns of the Greeks.

From the cliff-dwellers we pass to the people who from the North swept southwards towards Central America. The Mayas, the Toltecs, and Aztecs, all belong to the one Nahuatl race, which has left in Mexico and Central America such a striking series of relics of its existence. What may be the link between these and the mound-builders it is impossible to say, but strong analogies exist in their architecture; but in the wonderful temples and palaces of Guatemala and Yucatan a great advance has been made. There, in these now fever-stricken, swamp-infested districts, lie prone the relics of a singular civilisation which has more than once aroused the awe and the inquiry of travellers and antiquaries. Stephens, among many other writers, long since described the marvellous and mysterious architecture of Central America, which still continues to mystify the archaeologists; until within a few months a French explorer, M. Charnay, to whose researches reference has on several occasions been made in these columns, has returned from an expedition, a great portion of the expense of which was defrayed by Mr. Lorillard, the wealthy American, and has opened at the Trocadéro Palace in Paris a most interesting museum. But still the clue to the origin of this art remains unfound; some would see in it an outcome of the art of Java, which it singularly resembles,* others the creation of a state of civilisation similar to our own in many features, producing similar results; be this as it may, the huge and now ruined palaces and temples of Uxmal, Palenque, and Mitla, with their weird analogy to the art of Egypt, Assyria, of India, and of Greece, offer a field of inquiry which only further research can satisfy. The space at our disposal,—already so largely encroached upon,—forbids our entering more fully into any description of this comparatively familiar phase of American art; suffice it to have mentioned it as bearing on the gradual development of that art from the period of the cave-dwellers. Of beauty, we may in a measure say that the art of Central America, of Chili, and Peru—with which it bears close analogies,—possesses little or no trace; yet recent research has none the less revealed,—as if to further puzzle the inquirer,—some few works of no small sculptural refinement.

Thus we see the imperfect chain of the artistic development of American art, following, as in Europe, each advance of civilisation; the same causes producing the same effects, with one feature, however, observable, the earlier development in Europe of a marked artistic taste. This and the facts so far gathered are all we know; for with the relations between the Old and New World prior to the so-called "discovery" of America we have but the vaguest acquaintance. In such a position theory can only offer its explanations. One of these was offered not so long since by, we believe, an American authority, in the suggestion that the classic Atlantis lies buried beneath the ocean which bears its fabled name, and that thence spread, east and west, a civilisation which would explain the analogies between the native art of America and the Old World. All, however, is conjecture, and must still so remain, till further investigation places fuller materials within the reach of the many earnest students pursuing this branch of inquiry on the further side of the Atlantic.

Stains for Wood.—In the revised list of the Jury Awards of the Amsterdam Exhibition, we notice "Stephens's Stains for Wood" have received a gold medal. This is the third gold medal awarded to Mr. Stephens, and the thirteenth highest International award received by him.

* See pp. 410 and 612, ante.

ENGLISH ARCHITECTURE AND MONUMENTS OF THE SIXTEENTH AND SEVENTEENTH CENTURY.

ROYAL INSTITUTE OF BRITISH ARCHITECTS.

At the fourth ordinary meeting of this Institute for the present session, held on Monday evening last, Mr. Horace Jones, President, in the chair,

Mr. E. J. Tarver, Associate, read a paper on "English Architecture and Monuments of the Sixteenth and Seventeenth Centuries." He said he had been led to the consideration of this subject by the course of lectures on the history of architecture which he is now giving for the third session to the students of the Architectural Association, with the object of helping them to prepare themselves for the Examination of the Institute, and for admission as Associates. He had found, when coming to the lecture on English Renaissance, a difficulty that always existed in pointing out a successive development of the features of this style,—if style it might be called, which combined the elements of two such antagonistic principles as were implied by Classic and Gothic design. At all former periods, after making due allowance for local varieties, the style throughout most countries,—or at all events, large districts,—was more or less uniform, having been arrived at by a system of natural selection of obvious improvements as the need for them arose, and by a corresponding system of discarding such features and treatments as had been thus improved upon. In the period under consideration, on the contrary, architectural style was as much a matter of fashion as the literature of the day, and it had since then gone through more astonishing changes than were ever dreamed of even in the most fanciful days of James I. It would be admitted by most, though not by all architects, that the Gothic style as it existed at the beginning of the sixteenth century was capable of improvement,—at all events, in its details. Whilst recognising the great merits of the general designs of a building as a whole, and the care and forethought exercised in arranging the various threads that were to spread over a church interior from floor to roof without a single breach of continuity, it would be found that this system was the result of calculation rather than imagination, whereas both these elements are necessary to good architecture. Sense appeared to have been neglected in detail even more than in mass, as might be seen by the heavy and "lumpy" treatment of the canopy-work of Bishop Alcock's Chapel at Ely Cathedral. Whence was the improvement to come? A comparison of this chapel with the companion chapel at the opposite side of the cathedral, erected by Bishop West, would prove that it certainly had come, in the course of thirty years, and in the shape of a finer sense of form acting upon the very same Gothic features that were then in vogue. The very plan of the pedestal was poetical as compared with those of its neighbours, and this feeling seems to have been carried throughout the whole treatment, even to the section of the mouldings. The explanation was that a new influence had been at work in the meantime, as might be learned from the late Sir Digby Wyatt's paper, read before the Institute in May, 1868, entitled, "The Foreign Artists employed in England during the Sixteenth Century and their Influence on British Art." * This employment of foreign talent was a luxury indulged in chiefly by the rich; so it was not surprising to find that it escaped the architecture of out-of-the-way places, and that a style which cannot be called anything else than Gothic, however debased, survived in such places even up to the last century. Amongst the works which might be classed as luxuries are sepulchral monuments, and it appeared to the lecturer that, if any successive fashions were followed, they would be recognisable in these, which are, in many cases, architectural compositions; and further, that the headquarters of such fashions would be in London, and especially in Westminster Abbey. He had, therefore, looked about for a chronological list of these monuments; but, not finding one, compiled such a list from the little guide-book which is said to have received the approval of the late Dean Stanley, and then went steadily through the list, and visited each monument in order, noting the fresh features, not of the figures, but of the architecture, as they appeared to have been introduced. In doing this, a fair

margin had to be allowed for the time that elapsed between the death of the individual and the erection of the monument. Thus, when copying the date of a building, you know where you are, but the date of a monument is not conclusive evidence. In this dilemma, the lecturer applied to Dean Bradley for permission to see any register that might have been kept of the erection of the monuments, and was referred to the chapter clerk, who, however, was unable to help him. Assuming, however, that the monuments followed, on an average, within a few years of the death of the individuals, there was a fairly consecutive series to judge from. Mr. Tarver then proceeded to enumerate the monuments and their particulars, and afterwards compared them with the architecture of the period with which they were contemporary. Mr. Tarver incidentally expressed his indebtedness to Mr. Wyatt Papworth's useful compilation, "The Renaissance and Italian Styles of Architecture in Great Britain," &c., reviewed in our last number (p. 806).

Mr. Wyatt Papworth, in moving a vote of thanks to Mr. Tarver, said the collation of monuments which he had made was very novel and most interesting. He (Mr. Papworth) had often thought that the subject might be so treated, but he had never attempted to enter upon the task. While, however, Mr. Tarver had described the monuments of the period very fully, he had scarcely devoted a sufficient portion of his paper to a comparison of them with the architecture, and, indeed, he had hardly done justice to the latter, for he had not referred to buildings enough of sufficient importance or rank to be classed with the most important of the monuments which he had described. Whilst he (Mr. Papworth) was compiling the little work of which Mr. Tarver had made mention, he found no traces of the names of the designers of the monuments, although in some few cases he had come across a supposititious name. Not that all the works attributed to a man were rightly attributed, for John Thorpe and Inigo Jones were erroneously credited with many buildings in which they had no hand. As to the authorship of the monuments which Mr. Tarver had described, he thought they were all done by carvers, or sculptors, as they would now be called; he did not think they were designed by architects.

Mr. E. C. Robins seconded the vote of thanks, observing that Mr. Tarver had remarked that he only knew of one specimen of domestic architecture in which mullioned windows were used by Inigo Jones; but he (Mr. Robins) could name another, viz., Bibury Court, in Gloucestershire. The plan of this building resembled the letter E, the central limb forming the porch. One wing was left as it was built in the Tudor period, but the other wing and the centre had been rebuilt by Inigo Jones, and it was curious to see how he had adhered to the main lines of the older portion of the building, using, in fact, identically the same features, but Classicising them.

Mr. F. T. Dollman said that one point to be remarked in reviewing sepulchral monuments was the various changes of posture which occurred in the figures or effigies. Up to the time of the great religious convulsion of the sixteenth century the effigies were always recumbent, with the hands in the attitude of prayer. After that period the figures began, as it were, to move, and were found lying on their sides. Later on, and before the idea of devotion had disappeared, family monuments were made with the figures kneeling,—the father in the midst of his sons and the mother with her daughters. The kneeling attitude subsequently gave way to that of figures reclining in an attitude of what was meant for meditation, but which (with the hand held up to the face) was rather suggestive of toothache. Then we came to the period of the long-flowing wig and the Roman toga, and to figures in a sitting posture, as in the monuments of Lord Mansfield and James Watt, until at last the figures rose up and became erect statues. In connexion with this subject he had often thought that the gradual change of the inscriptions on monuments from the brief and simple earlier ones in Norman-French and Latin to the later, longer, and fulsome ones in Latin and English, and to the ribald effusions of the last century, would afford an interesting study from an archaeological point of view.

Mr. C. F. Hayward said Mr. Tarver had by his researches among the tombs well qualified

* See *Builder*, vol. xxvi., pp. 423, 443, 568, 628.

himself for the membership of the society lately established in Norwich for the preservation of the memorials of the dead. The neglect of important sepulchral monuments, even in churches which had been restored, was very much to be regretted, for the inscriptions on them were often of great value and importance in clearing up doubtful points of history or genealogy. The neglect of these monuments was nowhere more apparent than in churches which had been left stranded and isolated, so to speak, by the receding from them in modern times (chiefly owing to the influence of railways) of the towns or villages of which they had formerly been the centres. He could have wished that Mr. Tarver had said a little more about the use of terra-cotta for the effigies of the sepulchral monuments of the Renaissance period in this country. One remarkable instance of the use of terra-cotta as a material for architectural detail during that period was to be seen in the remarkable tower at Layer Marney, in Essex, and another instance was Sutton Place, near Woking, in Surrey. In the tower at Layer Marney the windows were all mullioned, but instead of being of Gothic form the mullions consisted of terra-cotta pilasters with arabesques running up the sides, and the tracery was formed of dolphins and other things instead of the usual forms, whereas at Sutton Court the Tudor cinquefoil heads were correctly moulded in terra-cotta. The pinnacles also at Layer Marney were very peculiar, being formed of dolphins. He had been very much struck during the last few months by seeing the mixture of Italian detail with Gothic forms in the tombs of Prior Draper and the Countess of Salisbury in Christchurch Priory, Hants, which were both dated within the first quarter of the sixteenth century. He should be glad of any information as to whence the terra-cotta used at Layer Marney had come. Was it produced in the neighbourhood, or was it imported from Italy? He and a few others had been for some time seeking for evidence of the local production of the material, but without any success.

Mr. McLachlan remarked that the introduction of Renaissance architecture into Scotland was rather earlier than its introduction into England, and Heriot's Hospital, Edinburgh, might be cited in support of this view.

Mr. Ewan Christian thought it most probable that the terra-cotta used at Layer Marney was produced in the immediate neighbourhood, because the district had always been a noted one for moulded brick and terra-cotta work from the thirteenth century down to the seventeenth. He (Mr. Christian) had found, quite perfect, terra-cotta mullions and other details in old churches; and in the ancient Church of Coggeshall, particularly, there were some beautiful details dating from the thirteenth century in terra-cotta. Whether artists had been brought to the district from Italy to execute some of the finer work mentioned by Mr. Hayward he could not say. Mr. Tarver's paper only afforded another proof of the great variety and interest of the architectural and monumental remains of this country, which, although a mere spook in extent when compared with the vast Continent of the West, contained so much that was of interest to the architect that, although he had been travelling up and down the country in every direction for the last forty years, he was perpetually lighting upon something new and interesting. The examples of sepulchral monuments to which Mr. Tarver had referred were necessarily only taken from a very limited district, but such monuments, many of them of great beauty and interest, abounded all over the country, and it was very greatly to be desired that they were more generally properly cared for than was found to be the case in his experience. The fact was that even where the representatives of the family of the persons commemorated by the monuments were accessible, the churchwardens often found it a very difficult matter to get them to keep the monuments of their ancestors in repair, and the consequence too often was that the monuments were left to crumble away by degrees.

Another speaker said he understood Mr. Tarver to raise a question as to the authorship of the monument to Thomas Richardson in the north aisle of Westminster Abbey. It was by Lessner. As to the terra-cotta effigy of the monument in the Rolls Chapel referred to by Mr. Tarver, there was reason to believe that the features and drapery were coloured.

Mr. R. Phené Spiers suggested that a com-

parison of the monuments referred to with the large and stately marble chimney-pieces in some of the chief domestic buildings of the period under review would be very instructive. Such a comparison would, he thought, raise the question whether the tombs and the chimney-pieces were not the work of the same set of men, "carvers," as they were then called. He was afraid that there were very few of the architectural sculptors of the present day who could turn out such work, for the men who executed these monuments were evidently men of good architectural knowledge. As to Long-leat, he believed that when some members of the Institute visited it a few years ago, it was suggested that although the drawings from which the building was erected were by John of Padua, they were really intended for some other building, but that, being acquired by the Marquis of Bath, he employed John Thorpe to carry them into execution. He believed it was now admitted that something of the sort took place.

Colonel Prendergast, Hon. Associate, in supporting the motion, said he thought the statement which had been made that the monuments described were not the works of architects was open to very serious question. If they were not by architects, they were certainly designed by men who had very good architectural knowledge. There was no question about it that those who gave orders for these monuments were deeply imbued with the Classic science and education of the time. We in the present day were gradually beginning to go back to studies of that description, and therefore the time of the meeting had been profitably occupied in listening to and discussing Mr. Tarver's paper.

The Chairman, in putting the vote of thanks (which was carried with much applause by the meeting), said it had been stated to be the case with regard to Longleat that the plans were obtained by the Marquis of Bath from John of Padua, and that they were carried out by John Thorpe. That was a very curious circumstance if true. It had been suggested that John of Padua and John Thorpe were one and the same person. Probably this suggestion was due to the fact that Thorpe had travelled to Italy, and obtained employment as a workman in Padua. Mr. Phené Spiers had with justice pointed out the resemblance of many of the monuments which Mr. Tarver had described to the chimney-pieces of some of the great houses of the period. With regard to the manufacture of terra-cotta in this country, he might say that there was a brickfield near Kingston which belonged a great many years ago to a man named Waghorn, who used to claim that the terra-cotta used at Hampton Court was obtained from that field.

Mr. Tarver having said a few words in reply, the meeting terminated.

CONTINENTAL NOTES.

WITHIN a few days of each other, while one great European capital, Vienna, has added to its already long list of public buildings Herr Hansen's superb Houses of Parliament, another capital has seen its monumental Parliament-house burned almost to the ground. The nearly total destruction of the Belgian Palais de la Nation, overlooking the pleasant little Park, will be regretted by all who know Brussels, not perhaps as an irreparable artistic loss, such as would have befallen Belgium and the world by the disappearance of the quaint Hôtel de Ville, but still as a characteristic feature of a very characteristic city. Godecharle's reliefs in the pediment of the monument, — not so much injured as was at first believed, — just a century old, like the palace which they adorn, — erected by Maria Theresa, — are typical works of the eighteenth century, which, though it is now so much the fashion to admire it, was not exactly admirable in all its creations. The injury to many of the interesting pictures, portraits, and statues with which the Belgian Chambers have been most generously adorned within the short half-century of Belgian existence, is, perhaps, the most to be regretted, though we learn that a number of Gallia's works have been saved. In the meantime that much-abused monument, the new Palais de Justice, promises to be able to accommodate the burned-out deputies, — doubtless in the huge Salle des Pas Perdus (which seems to be regarded by the German critics as more remarkable for size than for other merit). Such, at least, is frankly the opinion of

M. Verhaegen, who, in the current number of the *Revue Générale*, devotes a lengthy and interesting article to the subject of Poelaert's grandiose design. "Not national, not rational, and not beautiful," is the sum total of this latest critic on the general effect. "When I think," recently remarked a witty Belgian judge, who, like our own Lord Coleridge, had been inveighing against his new home, "that there are persons who call the Creator the great architect of the universe, I hardly think that the compliment can be said to be flattering."

From the banks of the Danube we shall soon, we suppose, have to listen to similar complaints against Herr Hansen's new Reichsrath gebäude or Houses of Parliament. For a long time past, in spite of the eminently pictorial effect of the long colonnades and the army of statues which have given the Franzens Ring so Classic an aspect, there have not been wanting critics to raise their voice against the new monument; but when such matters can expect to content every one, — particularly critics in matters architectural? — though it may be remarked that probably no city in the world more than Vienna can be said to have more generously endeavoured to satisfy the rivalries of all the schools, for in the mile or so of the Franzens Ring in which are gathered the chief modern buildings of "new Vienna" can be seen side by side specimens of the architectural styles of all the typical periods, commencing with Ferstel's exquisite Gothic "Votiv Kirche," — with Barry's Houses of Parliament admittedly the most satisfactory creation of modern Gothic; next to it, and also by Ferstel, let it be remarked, the new University, in pure Italian Renaissance; then the Gothic Rathaus, the Town-hall, by Schmidt, only opened a few weeks since; opposite, but not yet completed, the new Burg Theatre, a monumental Renaissance design by Semper and Hagenauer; a little further the Renaissance Courts of Justice, a line terminated by the new Houses of Parliament in the Greek style by Hansen, and, at no great distance down "The Ring," the new museums by Semper in Sansovinesque Renaissance, which, it may be remarked, decidedly carries the day in Germany and Austria. And yet in spite of all this lavish beauty, who that knows the lively Austrian capital can fail to have been struck by the sense of dusty vacuity which strikes the stranger's eye, everywhere in "New Vienna," outside the busy narrow quaint old city, crowded within its circumference of "The Ring."

It is no far cry from Vienna to Constantinople: only a few weeks since the Viennese were celebrating the two hundredth anniversary of their deliverance from a Turkish siege. A traveller and a brilliant author who, many years ago, while the memory of "Eöthen" was still fresh, gave the world a charming picture of the East, M. Edmond About, on the return from a recent visit to the shores of the Golden Horn, tells us that the condition of St. Sophia is positively heart-breaking. The tale he brings of the shameful manner in which the sacrarian sells to strangers the cubes of mosaic stripped or fallen from the walls, corresponds exactly with the experience of more than one English traveller, and shows how vast must be the destruction that is going on in the wonderful old building. Though the Mussulmans, it is true, have left standing the lines of columns borrowed, at least let us say, taken in every direction from the temples of Greece, of Asia, and of Egypt, the fanaticism of the Turkish conquerors and the fatal effects of neglect and time have worked sad havoc in the monument; the arcades and walls have had to be propped and shored up in the most primitive manner, iron and bronze clamps of the rudest nature being freely used. "The day is approaching," writes M. About, when St. Sophia can only be saved by a complete restoration. Can we expect the Turks to undertake such a task? Never." All who know the East are aware that restoration, even in its best form of conservation, is but little practised there; it should be remembered that what has been done in Egypt has been due only to the energy and constant supervision of English and French antiquaries. M. About looks forward to Russia as the only power which can carry out the work; but here, as he amusingly remarks, his archaeology becomes somewhat revolutionary; to demolish an empire to repair even the temple of Holy Wisdom, is, it will be admitted, rather stretching a point. M. About, while in Constantinople, visited, he tells us, the interesting museum which has been formed within a few years past

by Hamdy Bey, son of the present Minister of the Interior, and holding the appointment of director of the Imperial Museums. Small though the new collection is,—and we English, the Germans, and France, have, it will be admitted, rather successfully carried off within this century nearly everything of any value,—it yet contains much that is curious; terracottas, fragments, and other classic relics which the director hopes before long to further increase by the results of the excavations now being conducted by him in the Tomb of Antiochus, buried, it appears, in the snow, some 6,000 ft. above the sea-level. An enthusiastic antiquary, Hamdy Bey, if he can scarcely show such classic marvels as London, Berlin, or Paris, has succeeded in bringing together an interesting collection of smaller specimens of the Arabic and Turkish industrial arts, Mediaeval lamps from the mosques, furniture, arms, tissues, metalwork, and so forth, which, spite of deficient funds, constitutes a very promising commencement. The Germans have, it appears, contributed some casts from their wonderful excavations at Pergamos, and the Louvre has also presented a number of casts of their treasures, but England, so far as we are aware, has not in any way paid back its debt of gratitude to the country from which our museums have obtained such treasures. Surely some valuable exchanges might be made by our South Kensington or British Museum authorities. The school of design which M. About also visited appears to be in a satisfactory condition, some twenty young Turks busily studying, according, of course, to French methods. Is this, to borrow a Transatlanticism, as it should be, and is it not worthy of being compared with a recent and a very wise step taken by the Japanese Government in closing their new art schools when it was found that the students were merely preparing to become very tenth-rate artists of the decidedly French stamp?

With Constantinople and its relics of the Byzantium of the Lower Empire which has been, within a short time, so picturesquely brought before the London theatrical public at that old home of Charles Kean's spectacular triumphs, the Princes's Theatre, there is a bond of something more than mere historical interest in the series of excavations which are at the present moment being conducted in Rome. The visitor to the city of the Seven Hills, who devoutly drank of the fountain of Trevi a year back, will find great changes by the banks of the Tiber on his return this winter. Under the enthusiastic direction of Signor Bacelli, the Minister of Public Works, Rome promises to become even more than it so long has been, one huge museum of antiquities. We hear, in fact, of an intention to transform a great portion of the city into a second Pompeii, and the enterprise is no easy one, it will be admitted; millions of cubic yards of earth will have to be removed; new means of communication will have to be opened between the Trastevere side of the river and the city proper, while the expense will be no small matter. But the work has been well commenced. Happy visitors to Rome will find no longer, as they remember, the Farnese-gardens on the site of the Palace of the Cæsars; they have disappeared in conformity to the new Minister's plan of uniting in one huge group the whole mass of monuments which lie scattered round the valley of the Coliseum and the Forum. It is true the whole of this portion of the city has been already well explored, but only with a view to the discovery of any works of art which might have escaped from the destruction of wars and time; hence though such discoveries are scarcely looked for, much of antiquarian and classical interest may be expected to be brought to light. Rome, like the Troy of Dr. Schliemann, is composed of several cities built one above another, and the general excavation which will be necessary to carry out Sig. Bacelli's grand scheme cannot fail to unearth much of the utmost interest. But, as we have already remarked, discoveries of any great value can scarcely be expected. The Roman proverb has it, "The use of the classic ruins by the Popes and the Renaissance, Rome has in a new Looceons to set the discovery, though doubtless a discovery of the nature of the new Looceons, the patched creation of seventy-two fragments found scattered about

the walls of a vineyard demolished in the recent formation of the new neighbourhood of the Esquiline.

A correspondent has communicated the admirable series of regulations which, by a recent decision of the Paris municipal council, require the roof of each house to be provided with a practical pathway for the use of workmen and firemen, as also a serviceable fire-escape.* Though our Parisian neighbours are visited by fires far less frequently than ourselves, owing, doubtless, to the superior solidity of their stone-built houses, yet the municipality must be given no small credit for the attention paid yearly to this most important question. In addition to the architectural regulations above alluded to, and which are certainly worthy of consideration by our own Board of Works, it has been recently determined to build, on a sumptuous scale in the centre of Paris, a completely organised headquarters for the fire-brigade. The site chosen is under the very shadow of Notre Dame, and, in addition to sweeping away a number of old streets,—more familiar, perhaps, to the world through the pages of Eugene Sue than through actual acquaintance,—the erection of the new barracks will include the re-construction of the Morgue. Another corner of Old Paris will thus, before long, have been swept away, and, we suppose, according to some critics, the French capital rendered even more "plain" than it is by the destruction of a series of unhealthy rookeries and the addition to the public buildings of two completely organised institutions which we may well envy our neighbours.

THE WEST SIDE OF WESTMINSTER HALL.

On this subject an interesting and valuable paper was read by Mr. Somers Clarke at the meeting of the Society of Antiquaries on Thursday, the 13th instant. After some preliminary remarks, Mr. Clarke proceeded to name the sources of information on the subject. First stands vol. iii. of the collection of Sir C. Wren's drawings in the library at All Souls', Oxford. Every one knows, as a matter of course, that there are several drawings relating to St. Paul's Cathedral in that collection, but in addition to these are sundry others showing works, projected or carried out, at Hampton Court, Windsor Castle, St. James's and Kensington Palaces, the Houses of Lords and Commons, and elsewhere. The cataloguing is very imperfect, and the ascriptions are in some cases quite ridiculous.

The plan No. 10, vol. iii., is, however, rightly described as of "Old Record Room at Westminster."

Looking through the volume on Saturday week last, I lighted most unexpectedly on the drawings. In addition to these plans, numbered 10 and 11, there are several of lesser size, but hardly less in interest, which are numbered 17, 21, and 42, and have on them many notes and measurements. They are indeed not unlikely to be in part the originals from which Nos. 10 and 11 were drawn out. They show more completely the position of the windows, &c., in the west wall of the building attached to the west of the hall, and the foundations of which are revealed by the recent excavations.†

Another source of information is a plan drawn in pencil and contained in a large volume in our library. The volume is labelled "Westminster Houses of Parliament." The plan is in pencil, and on the back is written a reference to Mr. Capon's engraved plan, vol. v., "Vetusta Monumenta." It would appear that the plan in pencil is in some respects at least an original from which this valuable engraved plan is compiled. The engraved plan in "Vet. Mon." bears on its face a statement that it was measured and drawn between 1793 and 1823. There are also three or four pages of notes and remarks accompanying this plan.

A comparison of these plans at All Souls' and that in our library shows some variations of considerable interest. In the Grace collection at the British Museum, amongst plans, Portfolio XI., is a drawing of value, as it is dated, and bears the following,—"Apl. 2nd, 1795. Copy of Mr. Soane's plan, del'd to Mr. Harrison."

* See ante, p. 771.

† The date of these plans I take to be at the very end of the seventeenth century. I have not had the good fortune to meet with any others that go so far back.

at the Land Revenue Office, this day, by Thos. Chawin.

This plan is in many respects the same as the plan in pencil in our library; but being as it is, partly tinted and written to, it becomes a more valuable document.

There are other maps and plans which show the arrangement of the west side before the recently-demolished law-courts were built, and some of Soane's, published in the most handsome form, in Brayley & Britton's "Westminster" a book very well known.

There are many engravings extant which have been consulted, chiefly of the front of Westminster Hall, but I have not found any to throw much light on the part under consideration. It is clear that for a vast length of time this side has been more or less enclosed in a series of courts and back-yards,—indeed, I doubt not that it was so from the first. It would appear that we are going quite away from the original intention of the builder in throwing open the whole side of the Hall. Its very office as a hall, judging by the way in which we know these portions of a residence to have been used, would suggest that it was always more or less surrounded by buildings. A good plan, to a small scale, is shown in Smith's "Antiquities of Westminster," facing p. 125. It shows the general disposition of the adjacent buildings previously to the construction of the Law Courts recently removed.

From documentary evidence we must now pass to that afforded by the remains as they show themselves at the present moment. These remains as they stand are the more important from the fact that whilst teaming with evidence of many changes in the course of their existence, even the repairs necessary to maintain them in a state of reasonable stability must probably efface some pages of history. Any attempt at a restoration, in the ordinarily accepted sense of the word, must result in wholesale destruction and falsification. The remains consist of a vast wall, forming the western side of Westminster Hall, and certain huge buttresses with their abutments, which help to sustain the great roof. Traces of foundations between these abutments have recently been found, and the plans to which I have referred make it evident that a long range of buildings existed against the west side of the great hall. At the north end there are evidences of walls running westward, and these, doubtless, formed the substructure of important buildings. Mr. Micklethwait has already stated his views as to the setting out of William Rufus's great hall. The wall now laid bare is, by its masonry and material, marked of Early Norman date.

The Norman wall is built of wide-jointed masonry, and shows an intermixture of two sorts of stone. It would almost appear as though the builders had valued the effect so produced, making an imperfect chequer-work on their wall. A little above the original external ground-line, and some 5 ft. below the present surface, is a plain chamfered plinth, which returns round a series of slightly-projecting plaster-buttresses, which are set at an average distance apart of about 17 ft.

In his alteration of the hall, Richard II. did not make his great roof trusses quite so accord with this system of subdivision. He erected a vast flying buttress and massive abutment to resist the thrust of each alternate truss. Each division thus formed I have called a bay. The whole length of the hall as we now see it, is therefore,—beginning from the north,—divided into six bays.

To return to the Norman work and plaster-buttresses, it is to be noted that in the first bay one does not appear. There is no indication that it ever was there; the plinth, moreover, runs on as though the wall were intended to have an external face all along. On the other hand, the wall at the extreme north corner is clearly Norman, and returns westward. It looks on its south and only visible face like internal work. Following this wall along to the west we meet with a broad foundation, and once more a chamfered plinth appears on the north face. This plinth is 11 in. below that on the hall. The masonry does not seem to me to be altogether Norman. It may be Norman, repaired, or later work built in part with some Norman stones. South of the last described wall, and with the Norman plinth returning on it, lies a foundation of a parallel wall. We know, by old prints and plans, that a range of buildings stood along here. Hollar's view plates in Smith's "Westminster," &c., show

the appearance of the north front, a three-storied building with Tudor windows. It ended westward in an octagonal turret,—the parent of that now alas! gone. The plan in "Yestera's Monuments," vol. v., and that of 1795 in the Crace collection, bears the name of Court of Exchequer in this part. The court extended northward beyond the line of wall, and a row of pillars are shown as having the wall for their foundation. It is to the presence of a building against this first bay in Norman times that I attribute the absence of a pilaster buttress. In "Archæologia," vol. xxvii., Mr. Sidney Smith's longitudinal internal elevation of the Hall shows a round-headed doorway at the north-east end of the wall. He implies that there was a similar one opposite. The Palace undoubtedly lay chiefly to the east of the Hall, but, with screens covering the doors, as was usual, the kitchen would possibly lie to the west. These walls may mark the site of the kitchen.

In the remaining five external bays of the Hall there do not appear evidences of Norman foundations of buildings touching its walls. We must now examine the later work.

The letters patent of King Richard II., Jan. 21st, 1394, are extant, and direct John Godmerston to repair the Hall. The walls were to be heightened 2 ft. Directions are also given in connexion with the internal work and roof, but our present concern being with the exterior of the building, we are only interested with the roof so far as it became necessary to resist its thrust by the construction of flying buttresses and abutments. These fortifications of the fabric were not, however, considered sufficient, but, as the side elevation of the Hall shows, a curious system of arches, two stories in height, was set up, springing from the Norman pilaster buttresses, and forming a species of thickening over the whole lower face of the wall. The arches are in parts roughly bonded into the Norman wall face. They have in some cases sunk away, to a slight extent, from the Norman work; and where the lower range has been removed the evidence of their previous existence is almost effaced, saving by the springing-stones. They bear a hollow chamfer on the angle. It may be doubted whether this skeleton was ever of much value, but a species of engineering in stones, and often most wonderfully ingenious, was not unfrequently resorted to, to strengthen already existing work. The interior of the centre tower at Lichfield, below the spire, or the lantern tower of Lincoln Minster, are notable examples.

Whether the pilaster buttresses were originally carried upwards or whether they were raised by Richard II. is not now easy to tell. The modern recasings have obliterated this part of the history most effectually. We now find ourselves in front of the hall, with its walls 2 ft. higher than before, its new roof, windows, wall thickening, and great buttresses. This, however, was not all.

The abutments of the great buttresses were joined together by a continuous wall. As soon as the abutments were exposed by the recent demolition, it became clear by the marks on them that a leaden roof had extended back to the wall of the great hall. The returns of the parapet were clearly to be traced, especially on the most southern abutment. The greatest difficulty presenting itself is that the roof must have sloped a little towards the hall. It is not evident, therefore, how the rain-water was disposed of. Recent excavations have not, I understand, thrown any light on this matter.

Whether the line of building parallel with the hall was in one or two stories is not clearly to be traced. The lower part of the first abutment has some points not to be explained.

Sir C. Wren's plans show the west wall of the hall, as also the parallel wall to it, all coloured yellow. It would seem that the plans were prepared so that a scheme could be made out for joining some new work to the old, coloured yellow, the new being tinted in Indian ink. In this second bay from the north the line of west wall is broken, and a large room is shown with three mullioned windows. On Drawing No. 17, this is called the Chief Justice's room. Elsewhere it appears as Queen Elizabeth's bed-chamber. No access is shown to it. Bays 3 and 4 are, on Wren's plan, occupied by a long room. It is called the Treasury Record room. A large external staircase is shown, leading apparently from what was known as "The old fish-yard." A small stair leads from the hall. The way in which it is drawn makes it probable that this stair shows a rise from the hall

level. The Norman work is in bay 3 much cut about. In the fifth bay, a similar stair rises from the hall. A solid wall is shown in Wren's plan (the foundations remain) separating bays 4 and 5. The extreme south end of the attached building, Bay 6, is marked as Captain Turner's, and on Plan 16 is called warehouse over cellar. Indications on plan 17 also show distinctly that when it was made the building was in two stories. The large ogee-headed doorway in the third bay is not shown on Wren's plans.

In a plan by Thos. Lediard, stated thereon to have been surveyed in 1740, the doorway appears, and gives access to a large room breaking the general wall line. It is the only doorway shown in the side of the hall. In Fourdrinier's plan, dated 1761, this building is called the New Court.

In Mr. Soane's plan already referred to, dated 1795, this room is called "Court of Common Pleas," and a circular staircase appears right and left of the large doorway before mentioned. These staircases also appear on the pencil plan in our library; but are not upon Capon's plan in "Yest. Mon.," vol. v. The doorway is of a strange style. The section of the jambs and mouldings is a travesty of Classic work. In the apex of the ogee arch is a large Tudor rose; but, to use a favourite modern phrase, very freely treated. As in the abutment between the second and third, so in that between the fourth and fifth bays, a garderobe appears, and is evidently a part of the original construction. At the time the lately-demolished Law Courts were built the side of the hall was very roughly treated.

Not less than four large doorways were pierced through the massive wall. The ogee-headed doorway was filled in and masked by fresh-coloured stonework, and a doorway was also made at the extreme north end of the wall.

I would suggest the following as the result of my examination. That at the time the Hall was brought to its present form, not only were the flying buttresses and their great abutments built, but a wall rising as high as the eills of the great hall side-windows was also built at a distance of about 18 ft. from the great hall joining these abutments. This building was probably two stories high, i.e., a cellar or low story, and a more important one above. There is no evidence whatever to show what the wall was like. Sir Christopher Wren's plans, Nos. 17, 21, and 42, show imperfectly the position of sundry windows, but give no indication as to their antiquity. We must, however, fear that by laying bare what was never intended to have been completely thrown open a ghost has been raised which can, I believe, only be properly laid by following the advice of Sir Charles Barry, and completing his beautiful building as an enclosure to this mighty skeleton.

[At the same meeting, and previously to Mr. Clarke's paper, Mr. Edwin Freshfield exhibited and commented on rubbings of masons' marks on the west wall of the hall, which had been collected by Mr. Clarke; and Mr. Micklethwait read a short paper on the Hall in its Norman form, raising a question on the irregularities of spacing of the large windows, which led him to believe that the first design had been considerably altered not long after its completion.]

THE INSTITUTE OF PAINTERS IN OIL-COLOURS.

THE Galleries belonging to the Royal Institute of Painters in Water-Colours seem to be intended in winter to become the scene of an exhibition of cabinet pictures, or, at all events, mostly moderately-sized works in oil. We welcome this decision for a double reason; first, because we feel sure the rooms are too large to be filled twice a year with water-colours with any really satisfactory result; secondly, because we think that an exhibition of oil paintings on a smaller scale than the Academy, but larger than the Dudley Gallery afforded space for, is to be desired. Perhaps the new rooms in Piccadilly are rather too large, for certainly the standard which admits some of the works here cannot be called very exacting. Still, there is a good deal to be seen, and the rooms are very pleasant ones for spending an hour in fitting from picture to picture among the best works, and skipping the less attractive ones.

We can only briefly touch on some of the

salient points of the collection. There is a fine work by Mr. Alma Tadema, "Well-known Footsteps" (446), a Roman lady, very much in love, listening to the tread of a dignified-looking man, who comes up the outer steps facing the entry bearing a bouquet for her acceptance. Unfortunately, as in so many of the works of this splendidly-gifted painter, the figures do not much interest us from anything in their expression; in the management of the effect of the varied lights, reflected and transmitted (for a semi-transparent curtain forms an item in the properties), and the charming view of the long woodland vista beyond the entry, the picture is one of the finest the artist has painted. One of the most perfectly satisfactory works in the Gallery is an architectural picture, Mr. Fulleylove's "Antinous" (334), a scene at Versailles. Mr. Arthur Severn has made one of his brilliant attempts at the impossible in "Waves breaking by Moonlight" (7), very successful and very fine in some ways, and affording an interesting study of tone in light and shadow. What is the tone of the shadow in moonlight? What is it in this painting? It is difficult to say. In the painting the idea evidently has been that the bright but cold gleam of the moonlight on the waves imparts, by complement, a good deal of warmth to the shadows, even in such a scene; we believe this is correct, but only a careful observer of nature will discover it. Mr. P. R. Morris has made a brilliant and amusing study of "a blue girl" (101), of very tender years, whose helpless baby face and round eyes receive further comment from the comparison with the equally babyish face of a rabbit peeping out of its burrow close by. This might do as an illustration for Mr. Romanes, of the comparative brain power of babies and some of the lower animals. In "Promising Youngsters" (130) Mr. Tom Lloyd has given one of the most brilliant and real bits of light we remember to have seen in modern painting.

Mr. Van Haanen's fine "Study of a Head" (272) is a thing to be noted; likewise Mr. Linton's "Waiting" (304), one of his single figure studies, less expressive than some, though fine in colour, also Mr. Waterhouse's "Fishing" (316), carried on from the wall of a canal by a thin characteristic-looking damsel whose attitude, leaning back a little to keep her balance as she expects a bite, is admirably given. Mr. Seymour Lucas's "A Suspicious Guest at the Mermaid" (389): he really seems, to mean a "suspected" guest) is one of the best of his Jacobean scenes. One of the cleverest paintings in the room is by an American artist little known here, Mr. F. D. Millet, "The Window Seat" (508); it is a study nearly all in whites or pale-greys, of a girl, seated with her back to a long window, sewing; the face is beautifully drawn and painted, the effect of light and air through the window very well given; the work is unusual and original. Mr. Walter Langley's "In Memoriam," an aged invalid man reading some old letter which has dropped from his hands (701), is a really pathetic work, though not of the sort that tells in exhibitions.

Among landscapes, we welcome Mr. Wimperis as an oil-painter, in a fine work called a "Calm Day at the Land's End" (165); Mr. Mark Fisher's "A Sussex Pastoral" (184) shows in perfection his fine qualities of touch and minute colouring, also a certain want of outer air and daylight, which we are too often conscious of in his works; Mr. Koeley Halswelle sends a very fine upper Thames landscape, "Opening Day" (678), illustrating Shakespeare's noble sonnet,—

"Full many a glorious morning have I seen."

Among other works may be mentioned Mr. Otto Weber's "A Chat on the Road Home" (70), in which landscape and cart-horses and figures are equally commendable; M. Fantin's "Poppies" (12), and also his portrait of himself, in another room; Mr. Henry Stock's "The Aspiration of a Soul while Listening to Music" (78), a highly praiseworthy attempt at idealism, partially successful, certainly worth serious attention as a work with serious aim (too few of such at present); Bay W. C. Symonds's study of pitch cauldrons and pitch boilers,—"there is a substance known to many in our land by the name of pitch,"—and why should it not be painted? Mr. Symonds has made something of it. Mr. Knight's "Low Tide" (349) is good; Mr. Matthew Hale's "Gossip" (374) is quite out of the artist's usual line, and a not

unsuccessful attempt to play a little on Mr. Tadmara's fiddle,—not with the touch of the master-hand, of course. The catalogue is illustrated with a large number of exceptionally good sketches of the pictures.

TWO EXHIBITIONS OF RIVER PAINTING.

MESSES. GONFREL & Co. have had open for some days a very nice collection of oil studies (chiefly) of English, French, and Dutch river scenery, by Mr. F. Myers Bogges, who is one of the French-American artists who seem to be becoming almost a little school in themselves; American artists working in Paris and adopting French mode and feeling in painting. It is needless after this to add that the landscapes and buildings and water are painted in that broad and occasionally "smeary" style which has become a tradition of so much French landscape; but there is some fine free work among the paintings, or sketches rather; "The Canal, Dordrecht," and "The Old City Gate" of the same town, are very good specimens of "the picturesque," and "High-tide, Poppendrecht," is a really high tide, the painter has given the peculiar brimming look of the water on the top of a full flood.

Mr. Keeley Halswelle's collection of Thames studies at Messrs. Agnew's is a much higher type of work, and contains so much variety of tone, and effect, and subject, as to show that with an effort Mr. Halswelle could certainly break through his mannerism of one repeated set of tones, which has hitherto been the drawback in his larger exhibited landscapes. The studies represent some years' work in a houseboat on the Thames, about some of the most beautiful portions of the river. They are well worth going to see. A catalogue on a sumptuous scale gives numbers of poetical quotations "suitable for the occasion," as well as other matter in relation to the scenes painted. We observe that Mr. Halswelle, like Mr. Leslie in his book on the Thames, is eloquent on the joys of punting and its great superiority to rowing. Probably rowing men will reply that punting is a form of river locomotion that is very well—"for artists."

THE TERMINATIONS OF THE FAÇADE AT FLORENCE.

THE question as to which of the two schemes for finishing the façade of the Duomo should be preferred, in regard to which we printed a communication in our last, is, according to another correspondent, exciting almost as high party spirit as in the times of the Guelphs and Ghibellines. The question, put briefly, is whether the new front should be finished as a Gothic building, with high gables and pinnacle erections at the angles, or more as a basilica, with a low centre gable and horizontal cornice to the aisles.

Our opinion, after looking carefully at the illustrations of the two schemes, is, that if it be accepted that nothing more is ever to be done at any time to the Campanile (which, as we have more than once pointed out, is unfinished in reality), then the basilica termination is the best, as harmonising best with the outlines of both tower and dome as they at present stand. But in reality the west end of the Duomo is Gothic, not Renaissance; the tower is a Gothic tower, and the most complete scheme would be the finishing of the tower with the lantern and spirelet which it was meant to have, and the west end in Gothic form with high gables. The dome would be left to appear as what it really was, an addition when the spirit of Renaissance had begun to alter and modify architectural forms. The Gothic of Santa Maria is not very Gothic, it may be said, and the dome is not very Classic; but there is the distinction; and if west end and campanile were ever completed as one great whole, it is Gothic form they must take, leaving the dome out of the controversy.

Lincoln Cathedral.—In the recent gales, the whole of the open parapet on the west side of the central tower was blown down, and the remaining portions are left in an insecure condition. Fortunately, the stonework was blown inwards, and fell on the roof of the tower, or greater injury to the building might have ensued.

THE LONDON FEVER HOSPITAL.

THIS hospital has been carrying on its useful work now for upwards of eighty years. It has done excellent service in enabling the medical profession to study the various kinds of fevers, and has in this respect alone a most important claim upon the country. Until 1868 it was the only hospital for the reception and treatment of persons suffering from infectious fevers other than small-pox, and in its wards, where there have been sometimes as many as 3,600 patients in one year (1866), Murchison gained most of his experience of those diseases,—experience which he has since given to the world in the shape of a volume which may be regarded as the standard work on the subject.

The present building was erected from the designs of the late Charles Fowler in 1848, and was illustrated in the *Builder* of that year.* It is an imposing building, but in arrangement, as may be expected, is far from being up to the standard of hospital construction at the present day. Indeed, the progress that has been made in the knowledge of infectious fevers during the last twenty years has tended in no small degree to prove the unfitness of the hospital as originally designed for the separate treatment of the different kinds of fever now known, and the committee have from time to time had to make such alterations in the arrangement of the buildings as the limited funds at their command have permitted in order to afford the patients the best chances of recovery. The difficulties of successfully carrying on such a hospital will best be understood when it is remembered that patients have to be received into the hospital, whether suffering from typhus fever, scarlet fever, typhoid fever, diphtheria, or measles.

An effort is now being made by the committee to reconstruct the hospital upon improved principles, and so that the accommodation may be adapted in the best possible way to the requirements of the institution.

The first instalment of the reconstruction is a block of three isolation rooms, part of a large block to contain about a dozen such rooms, which has just been opened, and which we illustrate this week.

A noticeable feature in the exterior of the building is that it stands upon arches, partly above and partly below the level of the ground, so that there is a sort of open cloister beneath it, about 6 ft. high and 4 ft. below the ground, which is sloped down to the lower level. This space is intended to promote the circulation of air beneath and around the building in order that the ventilators at the floor-level of the wards may derive their supply of air further away from the ground surface than would otherwise be the case, and that the air so supplied may be less stagnant than if the ventilators in the walls were only a foot or so above the level of the ground outside. The cloister, too, will serve as a cool retreat for convalescents in hot weather.

Passing into the new wards, we find they are lined on all sides with glazed bricks of pleasing tints. All the external and internal angles, both vertical and horizontal, are rounded with purpose-made bricks, so as to afford no corners for the accumulation of dust and dirt. This, which has been recommended before by sanitary authorities, is the right method to employ; for there is absolutely nowhere that cannot be reached in the most effectual way by duster and broom, the floor and ceiling being rounded to the walls, and the corners of the rooms and the corners formed by the chimney-breasts being all carefully rounded in glazed bricks. In the same way the corners of the window-sashes and the panels of the door are smoothly rounded, and being without mouldings, afford no corners for the lodgment of dust. The window-sashes are each glazed with two thicknesses of glass, in order the more effectually to preserve a uniform temperature in the wards, and the lower sash in each window has an extra deep bottom rail in order that it may be raised so as to admit air at the meeting-bars without being open at the sill. One window in each room is fitted with casements, to give access to a broad balcony, where the patients, while still in bed, may enjoy the benefits of the outer air whenever the weather permits. This is an arrangement commonly adopted in all the best modern hospitals abroad, and is regarded as most beneficial to the patients.

The floors are of concrete, and iron joists,

finished in the wards with oak block flooring, and in the corridors with a silicated cement face.

The wards will be warmed by means of Boyd's powerful stoves, with hot-air chambers, and in addition to the windows, which have fanlights above the sashes, the wards will be ventilated by large openings at the floor level, one behind each bed, fitted with Ellison's "Radiator" ventilators.

Each ward opens directly into the external air, so that there will be no atmospheric communication from one room to another, and consequently patients suffering from different diseases may occupy the several rooms with reasonable safety. The rooms provide 2,000 cubic feet of air space to each patient, and will be furnished with simple but pleasing furniture, made specially for the purpose, and resembling that usually provided in the private bedrooms of a house. All the heavier articles of furniture will have large wheel-casters to facilitate their removal for cleaning purposes, and the wardrobes will have smooth tops within easy reach, so as to be readily dusted. In fact, every detail seems to have been studied most carefully. The building has been designed by Mr. Keith D. Young, of Southampton-street, Bloomsbury-square, the architect to the hospital, and carried out by Messrs. Hall, Beddall, & Co. We commend the spirit of the committee in desiring to make the hospital perfect in its arrangements, and to raise its character by constructing the new block in accordance with the most approved modern theories of hospital construction. The building, of which we give plans and sections, is not one that will attract the admiration of the youthful draughtsman of the day, who thinks architecture consists in making pretty pictures. But it is because this "pretty picture" theory of architecture is so over-emphasised at present, that we hear so many disagreeable things said about the practical shortcomings of architects (not all of them false). One gentleman was indignant with us the other day for declining to publish a view of a hospital without the plan. To do so would be to put the cart before the horse. The architect of the new Fever Wards has evidently given his mind to the practical side of the subject, and set a good example in so doing. We observe that the arrangements of the building have received the commendation also of our respected medical contemporary, the *Lancet*.

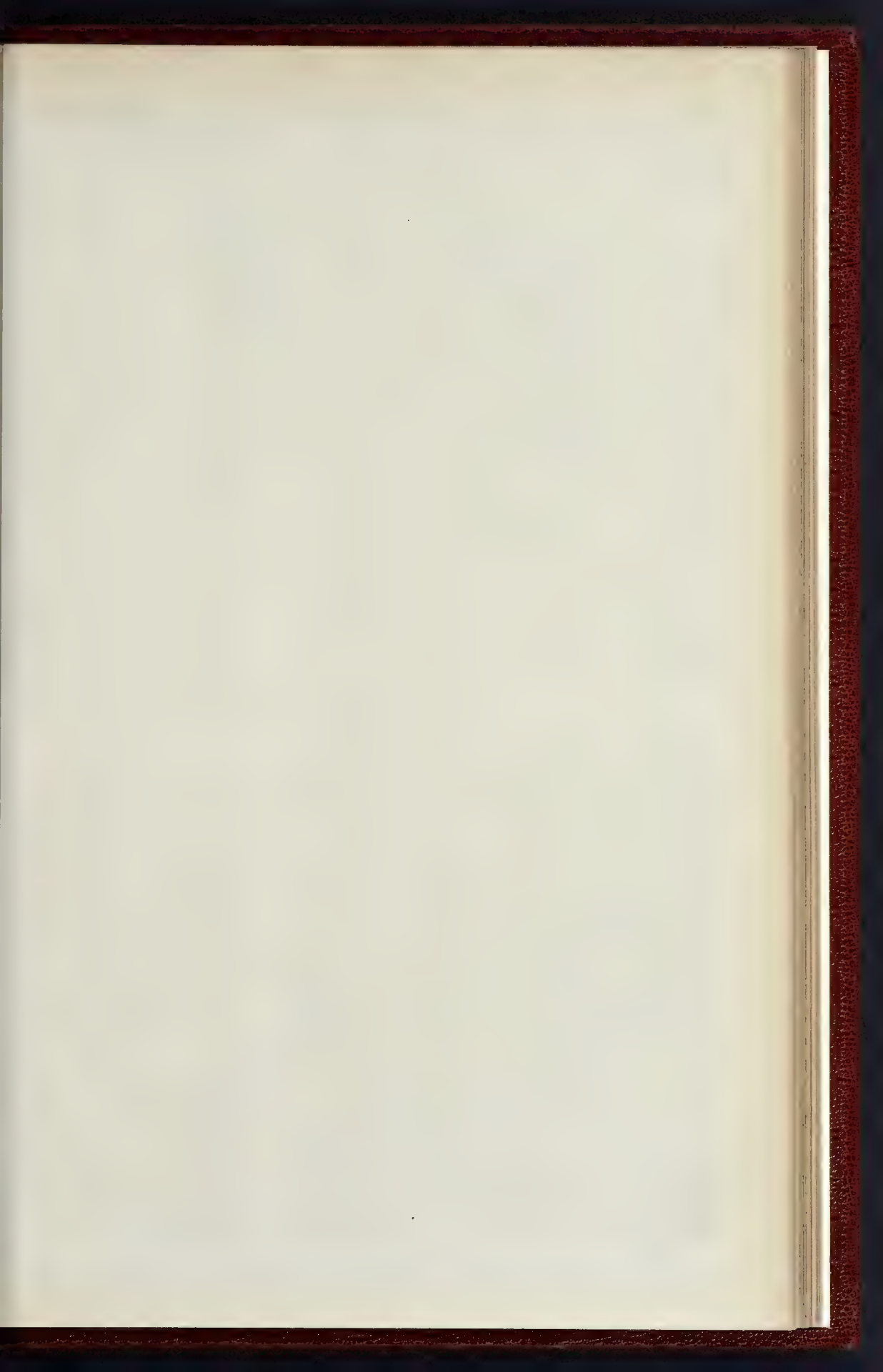
MODERN STREET ARCHITECTURE, BARCELONA.

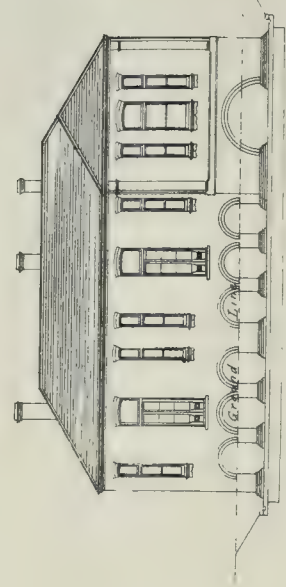
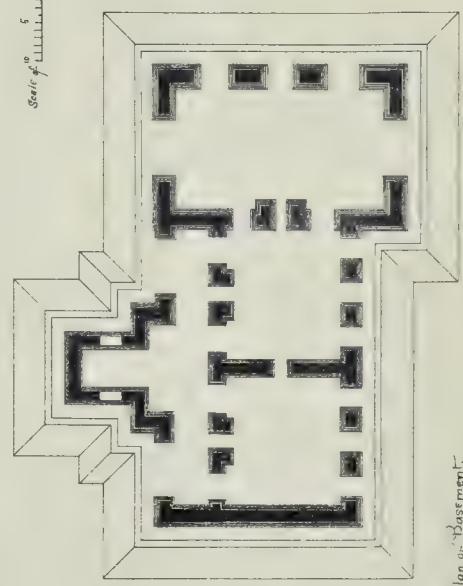
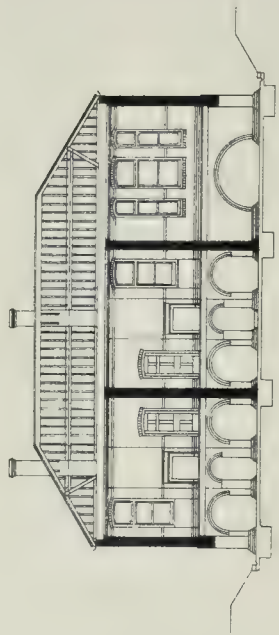
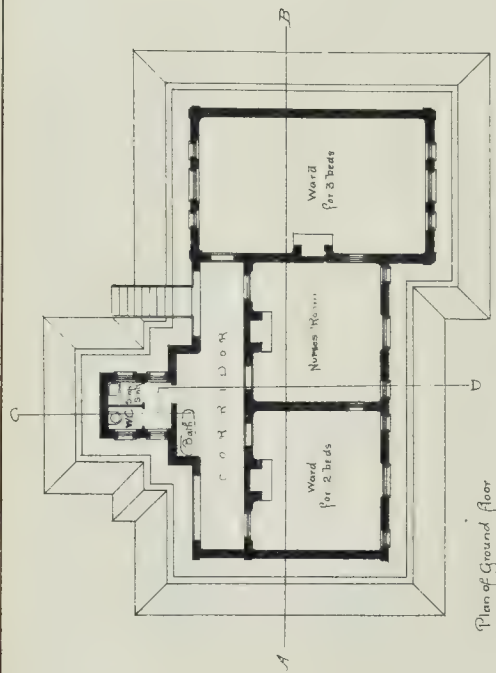
THE "CASINO MERCANTIL."

THE Casino Mercantil, or commercial club, of Barcelona (of which we give a perspective view), is situated at one of the most central points of the old city. It covers an area of 900 square metres, with a front of 11 metres in the Plaza de la Verónica, and one of 38 metres towards the Calle d' Arinyo. The style adopted is that of modern Renaissance. The material used for the façades is marble. The interior is most elegantly finished, and fitted up completely for the purposes of a commercial club and exchange combined. The architect of the building is Señor Don Tiberio Sabater. The statuary of the principal façade is the work of Señors Roig and Novas. The edifice was completed in the short space of nineteen months.

The Mersey Tunnel.—There now remain less than 200 yards of rock to be passed through between the two ends of the tunnel. The returns for the week ending Saturday, December 8, were as follow:—By Colonel Beammont's boring machine, on the Birkenhead side, 30 yards; by hand, on the Liverpool side, 7 yards. Spaces between the two tunnels at end of previous week, 232 yards. Operations are in constant progress day and night at eight faces of the rock: two at the extreme ends of the heading, two at the extreme landward ends of the tunnels under Lord-street, Liverpool, and Hamilton-street, Birkenhead; two at the river ends of the tunnels which are about to break through into the level heading in the central part of the river, and two faces which are being worked back from the central heading to meet the tunnels. By arrangement with the Corporations of Liverpool and Birkenhead, temporary ventilating shafts are being sunk in Lord-street, Liverpool, and Hamilton-street, Birkenhead, for the health and convenience of the workmen.

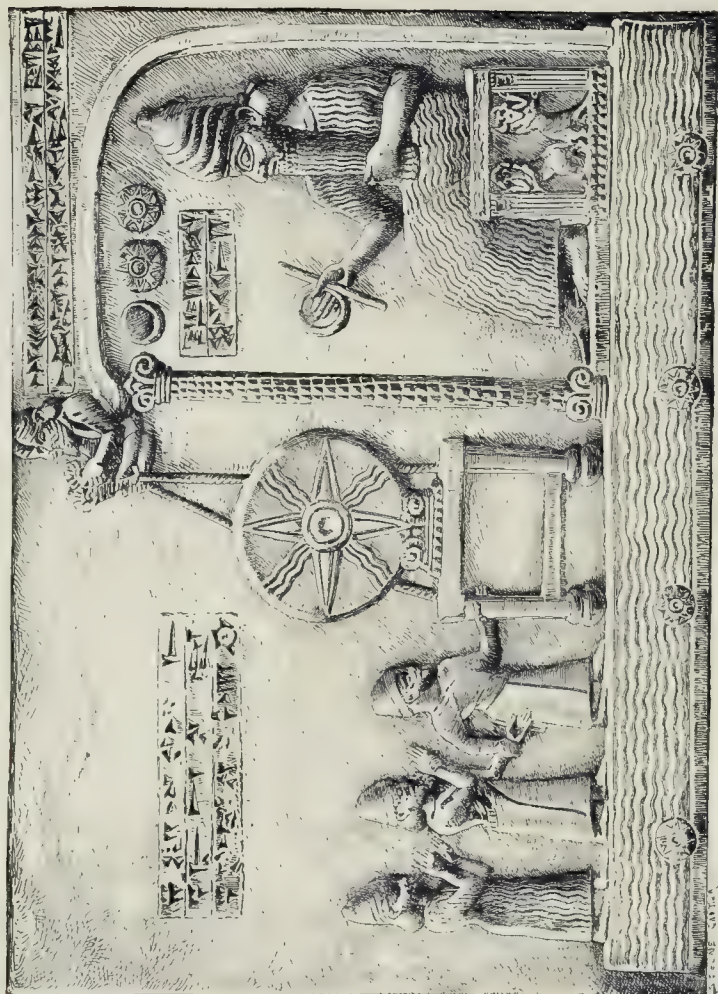
* See vol. vi., pp. 390, 391.



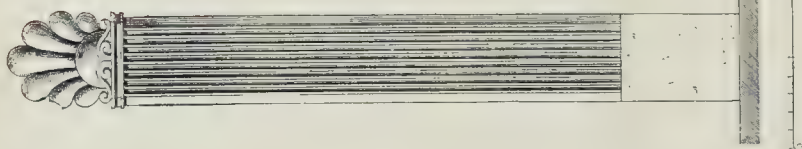


Plan of Basement

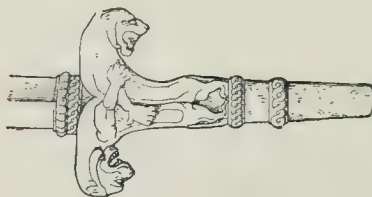




No. 1.—King doing Homage to Sun. Tablet from Abou-Abba; actual size. (Now in the British Museum). [See p. 811, *ante*.]



No. 2.—Stone found at Khorabad.



No. 3.—Termination of Street, Susa. (From a Bas-relief).



Gate-Top - French
seventeenth century



Gate-Top - Flemish
early eighteenth century

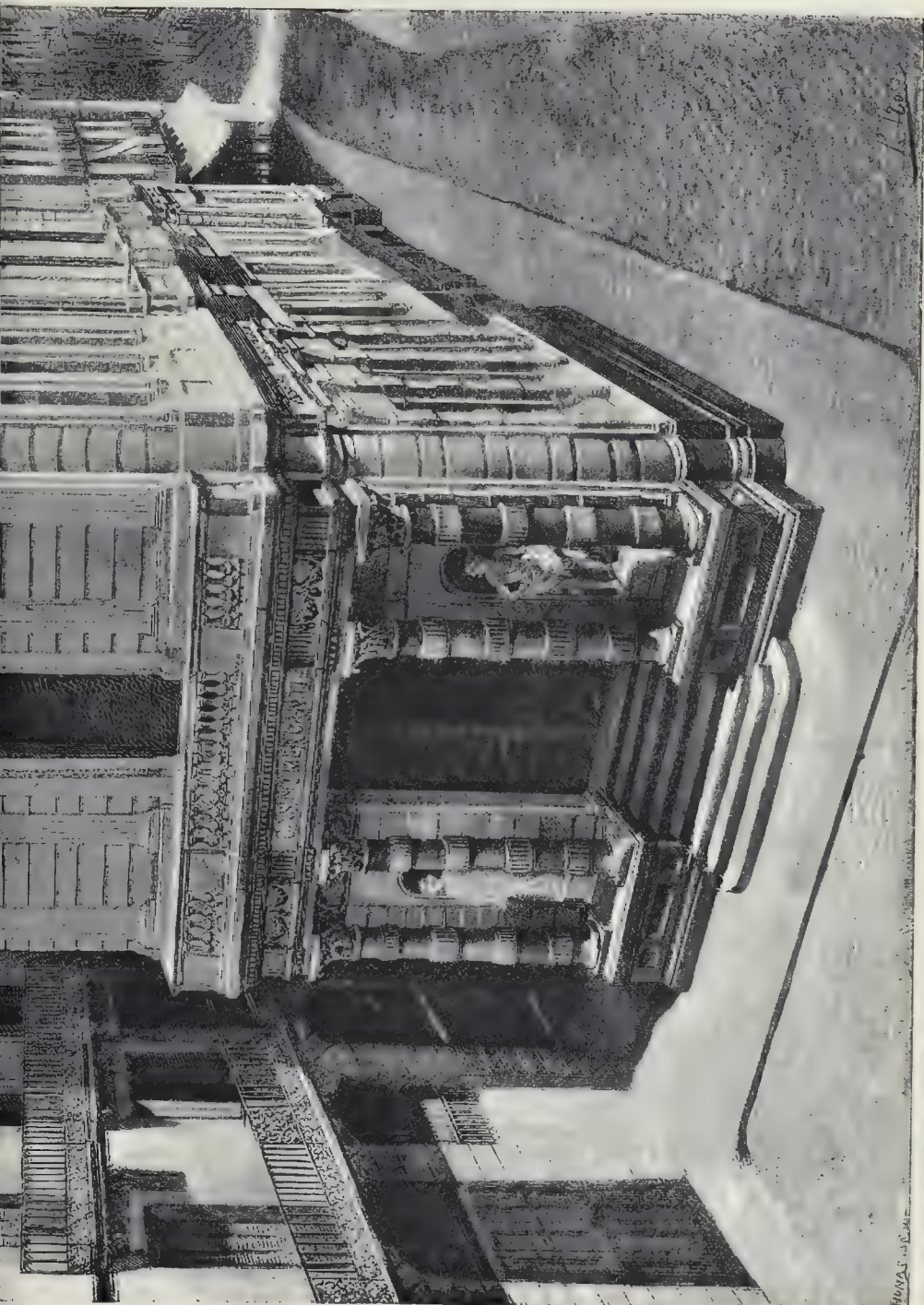


AN APPENDIX OF STREETS IN THE DISTRICT OF COLUMBIA



THE BUILDER, DECEMBER 22, 1883.

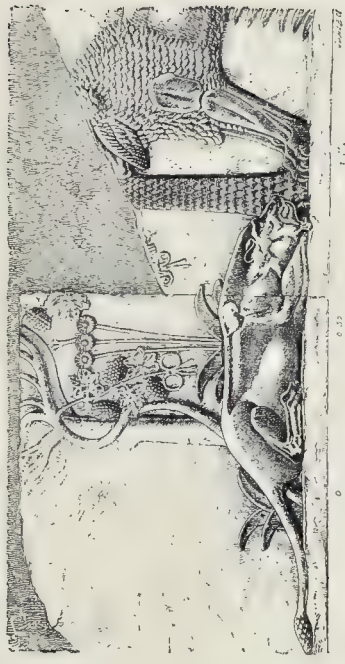




THE "CASINO MERCANTIL," BARCELONA.—SEÑOR DON TINERIO SABATER, ARCHITECT.

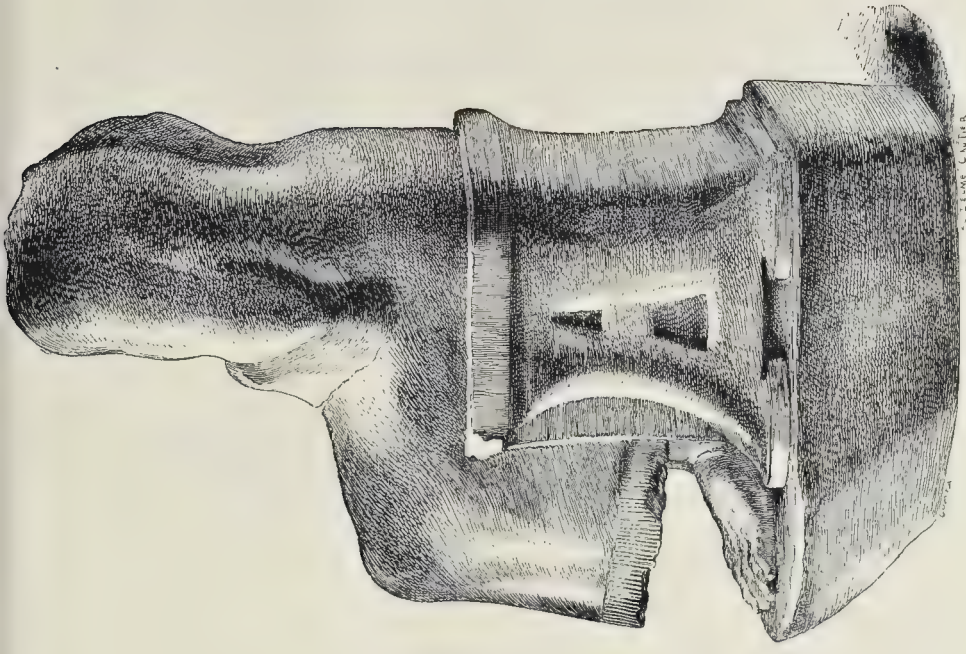


No. 4.—Rosette. (British Museum).

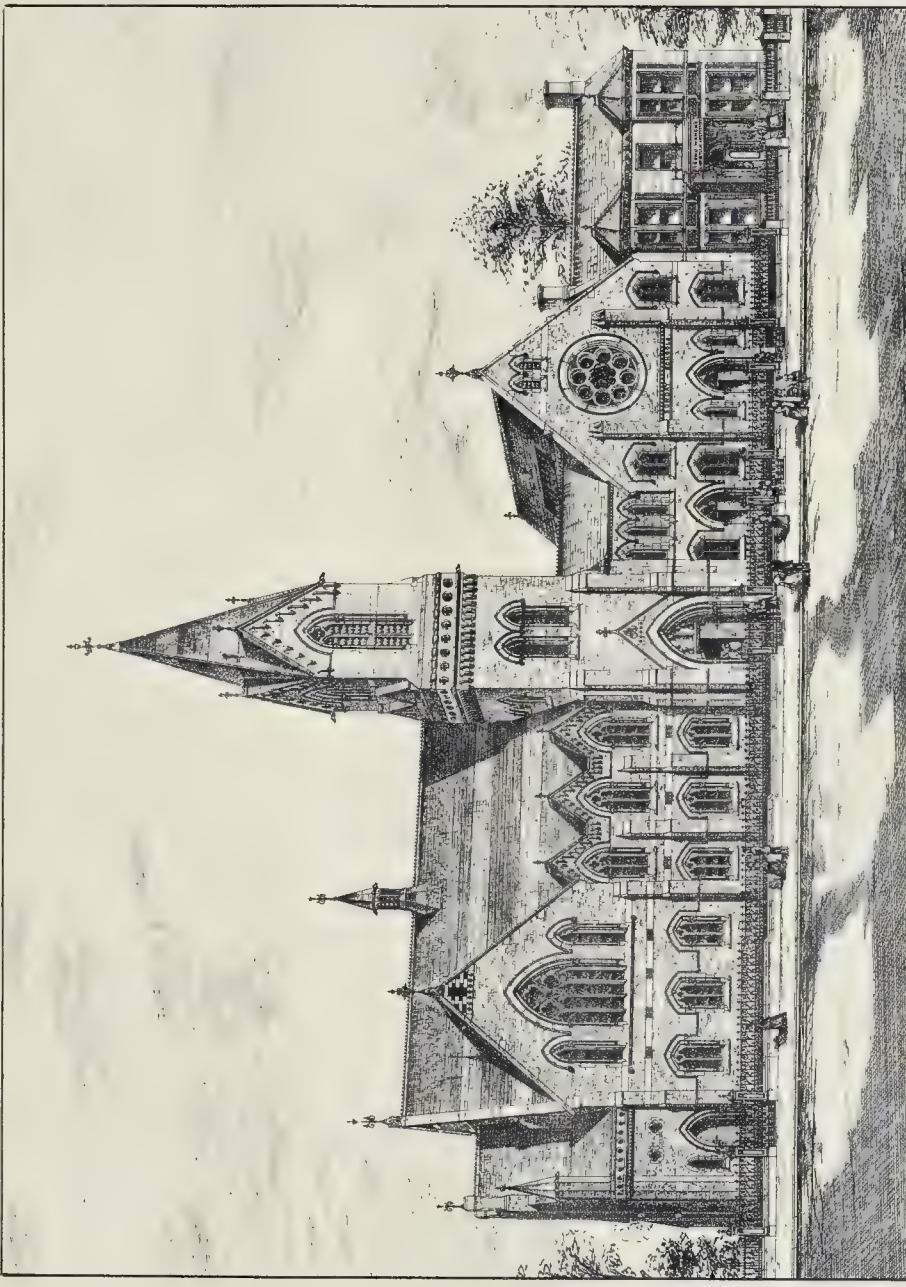


No. 6.—Lion and Lioness in a Park. (From a Bas-relief, British Museum).

CHALDEAN AND ASSYRIAN ART.



No. 5.—Statue from Tello (in the Louvre). [See p. 81, ante.]



BAPTIST CHAPEL, SUNDAY SCHOOLS, AND YOUNG WOMEN'S CHRISTIAN INSTITUTE, HOLLAND RD., WEST BRIGHTON.
JOHN WILKS, ARCHTCT., ESQ., 23, WHITEHALL ST., LONDON, E.C. 4.
Whitman & Co., Photo Litho 238, High Holborn.
DERRY, 1883.
Wm. and A. S. on the right of the page.

WROUGHT IRONWORK.

We alluded last week to the interesting collection of wrought ironwork which is at present to be seen at the Galleries at No. 175 New Bond-street, and which has been brought together and arranged by Mr. A. Newman, who is himself conducting an atelier for the execution of wrought ironwork in accordance with the true principles of this branch of art workmanship.

To speak first of the examples of old work; one of the finest specimens is a piece of work in the school of, if not by, Huntingdon Shaw; the property of Mr. l'Anson. Whether Shaw's work or not, it exhibits the qualities of bold modelling of conventional but freely flowing foliage, which characterise so remarkably the famous work at Hampton Court, part of which is now at South Kensington. Among the others of the larger specimens are two gate-tops, lent by Mr. Wyatt. One of these is a boldly-treated example of Louis XIV. period, in which there is a curious mixture of the bad taste in design characteristic of the period, combined with a thorough knowledge of the most effective way of treating iron in such details as artificial foliage. The other example referred to is a similar piece of work, Flemish, but rather in the spirit of Louis XVI. style, when a more naturalistic use of foliage was adopted. This greater naturalism is not, it must be admitted, a quality to be desired in iron-work, in which conventionalism seems more necessary, artistically, than in most materials; but the desire to achieve it has resulted in the execution of some exquisitely-finished workmanship, the difficulty and delicacy of which can hardly, perhaps, be rightly appreciated by any who are not practically conversant with working in iron. We give sketches of these two gate-tops (see illustration) giving an idea of their general character and style. In both one must regret the flagrant error in taste in making the ramifications of the ornament start from realistic boughs or branches modelled as if torn from the tree, a glaring mistake from an æsthetic point of view. But, in spite of this, the freedom and boldness of the curves, the light execution of the leaves (which only an inspection of the original can entirely convey), and the ability with which, in the one case, some of the characteristic forms of Louis Quatorze ornaments are modified and attenuated to suit them to the character of the material; and, in the other case, the peculiarly iron-work way in which the foliage design is held free in the centre of the space by the rings and loops of metal welded to the main bars, these qualities commend themselves as proofs that the workers of these pieces, however clogged by adherence to some bad artistic fashions of the day, had a great deal of the true feeling for wrought-iron style and execution.

In remarkable contrast to these are the simple and practical specimens of old English utensils of various kinds, of which a most interesting collection has been lent by Lady Dorothy Nevill. The interest of these is of quite a different kind from that of the Renaissance work just mentioned. There is in these no intention to be exceptionally artistic, ornamental, or striking; they are practical articles made with direct reference to their use; and yet how really artistic they are, simply because the material is used in the way best suited to gain the end required, in harmony with the qualities and capabilities of metal. We have seen few things lately more interesting and significant, in a way, than this portion of the collection; because in these there is really an art of the people,—a workman's art,—the pith of which consists in doing the work in the best way, and just putting so much of fancy and invention into it as, without in any way interfering with the practical usefulness of the article, may show to us that the workman really enjoyed and found interest in his work for its own sake, and not in a merely conventional or trade spirit. Among these articles, of which we give sketches, are two somewhat battered specimens of Old English "fire-dogs," one of them showing the basket for a spare lump of fuel at the top, its open work constituting about the only bit of real ornament in the two; but both are worked in a thoroughly honest and characteristic manner in every particular. The pair of tongs adjoining them is of a higher order, and is really a most artistic bit of design; as a small matter, notice how the workman has graduated his

little ornament of rings round the legs of the tongs, first four, then three, then two; and the distances between them graduated also. The rushlight-holder is an interesting relic of social history; it is simplicity itself in design, but it has great practical merit and no nonsense about it; the tripod is modelled so as to give a firm stand; the spikes on the projecting arm or blade, some of which have gone, seem to have been for sticking a spare light on till wanted; or possibly a candle was stuck here to be lighted as occasion required, when a more powerful light than the rushlight was required. The extinguisher, with its fancifully worked bracket, speaks for itself; and so does the "footman," or stand shown below it, and which is another example of tasteful effect got merely by employing the metal in the manner which its character, to a workman not fettered by mere precedent, would naturally suggest.

In strong contrast again to this type of work is the Renaissance work in what must be called "carved steel," of one example of which,—an Italian key,—a sketch is given. Some exquisitely fine work has been produced in this way, and Mr. Newman's own collection affords some exceptionally fine examples of it. In Renaissance work of this type the utilitarian spirit is quite secondary,—too secondary, perhaps, for even the most truly artistic conditions; the object is to produce a piece of fine modelling, independently of the suitability and convenience of the implement for its purpose. This, one may say, is art for the rich, who can afford to pay for elegant knick-knacks; the collection of old English implements just referred to is the art of the practical workman, and is, perhaps, the more true in spirit of the two. Still, we cannot refuse our admiration to some of this exquisitely-wrought chased metal work, of which some very minutely-finished specimens are to be seen. Among the other attractions of the collection are some very fine keys, one with a monogram most delicately wrought in open-work; another, the "Stuart" key, lent by Mr. Truett, which must have taken two years to make, and represents a delicacy of execution which is almost unique. There is a fine collection of iron jewelry lent by Dr. Braxton Hicks, old Berlin work; and Mr. Shoppee contributes some fine keys, a pendant from an old city church, designed by Wren. There are some exceptionally fine and interesting specimens of old locksmith's work, some of the best of which are Mr. Newman's property.

Mr. Newman is endeavouring to assist in the idea of forming a really versatile school of English smith's work, getting out of the line of mere fashion of reproducing this or that style of old work, and encouraging the development of individual taste on the part of his workmen. He has, he tells us, sought often among the practical hands working at bicycle-making or carriage body-work, for men able to use their materials and tools well, and has succeeded in making out of rude craftsmen some of his best workers in artistic design. Capital is necessarily sunk in this kind of effort, but it is hoped that the growing taste for wrought-iron work, fostered by travel and observation, will have an appreciable effect before long, and that architects and their clients will demand something of higher artistic class than we get out of the thick and bulky "pattern-books" of some great firms who think they can manufacture "art" in the shape of cast-iron ornament.

Few who could appreciate the work that is collected in the exhibition referred to would be content with the pattern-book afterwards; and all who are interested in artistic metal-work should go and see it, and especially men who are engaged in metal-work of this class. Mr. Newman would be very glad if any of the workmen of art-metal firms would organise a Saturday afternoon to visit the collection, when he would have great pleasure in pointing out and explaining some of the more remarkable and interesting examples of design and workmanship. We may add that some of the modern work from his own forges, which is also included in the exhibition, is of an admirable character.

Bequest to Preston.—Mr. Richard Newsham, J.P., of Preston, has bequeathed the whole of his pictures, porcelain, bronzes, and statuary to the Corporation of Preston, his native town. This collection of art-treasures was ten years ago valued at from 60,000l. to 70,000l., and since then has received some costly additions. Mr. Newsham died on Friday last.

BAPTIST CHAPEL AND SCHOOLS, WEST BRIGHTON.

The buildings occupy a site on the east side of Holland-road and have a total frontage of 155 ft., but the depth of the land is only about 75 ft., thus presenting, on account of its shape, very considerable difficulties, both as regards the plan arrangement and external treatment.

The chapel is 72 ft. 6 in. long by 44 ft. wide inside, and will seat about 800 adults, or a mixed congregation of 950 persons. The general building material is brick, but the front will be built with Purbeck rock faced stone, with Freestone for doorways, windows, and other dressed parts. The windows will all have mullions except those of the orchestra and the gable opposite, which will be circular, with transitional tracery. The pew fittings will be pitch pine, and the gallery front will be open with ornamental cast ironwork. The pulpit will be of elaborate design, and behind it will be placed the orchestra, with richly-panelled and cusped front.

The orchestra is separated from the chapel by a lofty moulded arch, which rests on polished marble columns, and these are supported by Bath stone corbels, carved with natural foliage.

The roof is partially open, the visible work being filled in with panels with trefoil heads. The principals are supported with carved stone corbels.

The tower is 110 ft. high, and the main entrance to the chapel is under it. This leads to a vestibule having doors leading to aisles, and stairs leading to galleries. There are entrances at the other end also leading to ground-floor and galleries, so that egress and ingress are well provided for. There are three vestries from 10 ft. to 24 ft. long, placed in the best positions in reference to baptisms.

The schools have been thoroughly considered in all their arrangements, and will accommodate 900 children. There is a central hall, 52 ft. 6 in. by 36 ft. 6 in., having a narrow gallery, and lighted from the ends and roof. There are also class-rooms for infants and senior scholars.

There will be a large kitchen under the infants' room with copper for teas, stores for china, and heating apparatus for warming the whole of the buildings by hot water and by one boiler.

Ventilation is considered and a provision made for fresh air, and extraction of foul air, in chapel, schools, and every class-room, and vestries.

The architect is Mr. John Wills, of Derby, and the cost of the works is estimated at 7,200l., which, added to the architect's fees and cost of land, brings the total to about 10,750l.

The building adjoining the schools is a "Young Women's Christian Institute." The front part consists of living and bed rooms for the curators, also a library, cloak-room, and three class-rooms. Behind these is placed the lecture-hall, 38 ft. by 25 ft. 6 in. inside, and 20 ft. high to ceiling.

Much attention has been bestowed on these buildings internally, with a view to their utility and attractiveness. They are also designed by Mr. Wills, but are treated in a different style from the chapel to avoid the appearance of uniformity, as this institute is an unsectarian enterprise. The cost will be 1,500l., and including land 2,500l.

The chief promoter of the combined scheme is Mr. Geo. Thos. Congreve, of Peckham, who has taken up his residence at Brighton.

The Church Missionary Society's Buildings in Salisbury-square.—The premises of this Society, on the west side of Salisbury-square, Fleet-street, are at present undergoing an enlargement by an additional frontage of 26 ft., the extension occupying the site of McEwen's Hotel. The ground-floor portion of the frontage is in Portland stone, with rusticated spandrels between the windows, the three upper stories being faced with white Suffolk brick, with stone dressings. When completed the premises will have a frontage of between 80 ft. and 90 ft., occupying the whole of the west side of the square, with the exception of the premises of the Farmer. The additions will provide a new board-room, together with numerous new offices. Mr. Bracebridge is the architect, and Mr. W. Bange, of Bow, the contractor.

ANGLO-SAXON ANTIQUITIES.

HAVING presented our readers with a *résumé* of the first three of the lectures delivered by Professor Hodgkin, in the Anglo-Saxon Room at the British Museum,* we subjoin a similar account of the three later lectures which completed the course.

The fourth lecture was on the subject of the "Brooch," of which three forms are preserved in the national collection. The most ancient, *preon*, or *spang*, to adopt old English nomenclature, appears to have been the complicated cruciform brooch, of which so many specimens are preserved in the national collection. This form, notwithstanding its cross-like shape, is Pagan and very ancient. We find it in Frankish graves of high antiquity on the Continent. The cross is of Pagan origin; for the Christians certainly did not invent it. They did not crucify the Saviour, nor could they have originated the various cruciform ornaments found all over Europe, and evidently of a pre-Christian origin.

The word "brooch" is French, and not at all comfortably at home in England, yet sometimes we see it written "broach," and sometimes "brooch," but as it is a foreign word still we never feel sure which is right. If we used the word *spang*, or *gospang*, we should feel that it was English at least; for we have the verb "to span," the span of an arch, both from the verb *spannan* or *gospannan*, to clasp, to join. The word "buckle" is still more objectionable, coming from the Latin *bucca*, a cheek, in allusion to the cheek-like roundness of the raised portion of a connecting-brooch. In French ringlets are called by the same name as buckles, the word *boucle* meaning a buckle, an ear-ring, or a ringlet,—the first from its resemblance to the form of the cheek, and the other two from their proximity to it.

The large brooch or *gospang* was used by both sexes as a fastening for the mantle, just on the breast and off the shoulder. It may be called the king's *gospang*, for its size, beauty, and resemblance on the MSS. to the form seen on royal mantles; but one very similar is described by the late Mr. Thomas Wright, the antiquary, as having been found on the breast of a lady in a grave on Kingeston Down. He also notices the circumstance that this brooch was worn by men and women. These ornaments are richly worked. They are well supplied with garnets and other stones, in a peculiar and rather fanciful setting. The filigree-work, in concentric circles, is peculiar.

The smaller brooch or *preon* is less known to the world at large, and a good opening might be found for a London jeweller who would make some brooches in this fashion, and so offer an old friend in a new dress. The coronated portion, which would naturally be taken for the head, was really the base of the ornament and worn downwards, so that the whole had somewhat the appearance of an anchor. This form of brooch is found all through Kent. The cup, or, rather, saucer-like brooch, is a well-known Anglo-Saxon form. At the bottom there is generally a human face very badly executed, for the study of any portion of the figure seems to have been greatly neglected by the early English. Every thing they drew seemed to resolve itself into the scroll; the foliage of trees, the limbs of animals, and even of men and women: all partook of the scroll feature, and this tendency served them in good stead in their delineation of flowing mantles. Among the Angles proper the circular form of brooch was used for the mantle.

The long mantle was worn on state occasions at Ting and *Witena gemót*, and the shorter garment in hunting and in war. The short cloak was always fastened on the right shoulder; the longer mantle was sometimes clasped at the throat. Mantles were frequently very richly ornamented with gold lace, or gilt leather bordering. Bishops, and even inferior ecclesiastics, are represented with ornamented mantles, and among the Angles proper with the circular form of brooch. The mantle was used by the Anglo-Saxons as a distinctive mark of rank, the white cloak being used by the novice soldier, while blue and red were worn as emblems of nobility and of military rank.

Among the articles mentioned in the syllabus in the same category as the brooch are many which pertained more directly to ladies' dress, and this gave occasion for a brief notice of the female costume of the Anglo-Saxon times,

and to notice the high tone of morality prevalent among the Teutons, including the Scandinavians and ourselves, and the conduct of the Goths gave occasion to some interesting quotations from Tacitus, Strabo, and from a priest of the fifth century named Salvian, who calls on the Romans to blush at the contrast between their manners and those of the Goths. This high tone of morality was owing to the influence of women among the Northern nations, and the high respect paid to her as priestess, wife, and mother, which made the early Scandinavian such "a thorough gentleman." He revered woman, and listened to her advice and prophetic sayings. Whether he was right or wrong the result has shown. Rome, who held woman as a thrall or plaything, was humbled to the dust; we took her proud possession on this island, and now a lady wears the crown.

Referring to Strabo's remark that the Cimbric were always attended by their wives, even in their most distant expeditions, the structure of the lower part of the Viking ship was shown to have been fitted up with accommodation for the wives of the heroes, who, by the Viking code, were not suffered to sleep below, and thus the circumstance was accounted for that the warlike but moral Scandinavians held no intercourse with the wretched Britons, whom Rome had conquered, but could never civilise. Comparison was made between the statements of Tacitus, Strabo, and Salvian, regarding the Gothic nations and those made by Caesar respecting the disgusting mode of life of the Britons.

The buckle was shown to have existed from a very early period, and to have been made in iron and bronze. Connected with the buckle came the consideration of the amount of leather work done in the island. A curious list of articles made by the shoemaker was given, showing him to have manufactured ankle-leathers, shoes, leather hose, bottles, bridled-thongs, trappings, flasks, boiling-vessels, leather neck-pieces, halters, wallets, pouches. The leathern thongs with which the lower extremities were adorned were proved to have been used to fix and support the linen covering in which the lower limbs were encased. As they crossed each other, they formed the check pattern now preserved in the stockings of the Highlanders who were indebted to the Saxons for their sword shield, glengary cap, and for this curious ornamental stocking. This mode of keeping a linen bandage in its place round the leg is now in use in Russia. Where the leathern thongs crossed each other in the case of an important leader, the point of intersection was always marked by a metal boss or button, either gold, bronze gilt, or brass.

In the fifth lecture, the subject immediately under notice was the ring, which was shown to have been an object of great importance to the whole world in almost every relation in life during at least 1,500 years. Chain-armour was brought from the cradle of our race, India, at the time when the tide of population began to surge westwards, and the Aryans to people the north-west of Europe. They brought with them, what they could not very conveniently have left behind, their language and their dress. The oldest records in India refer to chain-armour, and we find such chain-armour in India at the present day as was worn more than 3,000 years ago. In "Beowulf" armour is called the "war-net," "the net woven by the smith, hard hand-locked," i.e. riveted. The various patterns in armour called ring-armour, the armour of rings set edgewise, banded mail, chain mail, and mascelled armour are nothing else but the different patterns of chain-mail; and this was strikingly evident on referring to a set of specimens of chain-armour which, by the kindness of Mr. Franks, were furnished for the purpose of comparison. The same appearance was seen in a fragment of ancient mail of the twelfth century that is represented in the Bayeux tapestry, and called by Meyrick "armour of rings sewn contiguously on cloth or elk-skin." The patterns called by him "armour of rings set edgewise," and "mascelled" armour were seen to be the result of different styles of weaving the rings together into a net.

So entirely were the Scandinavian-English identified with their rings that they enter into their very name in a compound word formed on the principle of Gár-Dane or Spear-Dane already noticed in the lecture on the spear, and occurring in "Beowulf" as Ring-Dene. It seems that this armour was seldom interred with his

nearest male relative or friend. This was done by Beowulf, who left his byrnie to his Thane Wiglaf, "because he had no son to leave it to." All through this poem the evidence that the byrnie is made of linked rings looked together like chain is most complete. So in the sagas and legends handed down in the North, we have evidence all round that the armour of the Scandinavians was the same as that worn in India, allowing for certain differences in the pattern of setting the rings and in their size.

Great stress is laid upon the frequent gift of rings by the rich chiefs who engaged retainers in their service by allowing them free quarters, board, plenty of mead to drink, and rings. This curious custom has never been fully investigated, and when all the evidence yielded by the Early English (or Anglo-Saxon) and Scandinavian documents, referring to this custom of giving rings has been carefully gone through, we come to the conviction that rings were current as money from a very early age indeed. Mr. Hodgkin is the first to draw attention to this circumstance, and he suggests that the Britons who obtained copper money from the Gauls got their ring money from the Scandinavians, who came to the island for certain metals which they had not in their home in the North. Arm-rings are generally called "*bedh*," from the verb "*bagan*," to bend, whence our bough of a tree and the verb "to bow." That all the rings spoken of as awarded by chiefs to their retainers were of solid gold is improbable; it is far more likely that they were of bronze or of bronze gilt, either of which would be magnified into arm-bands of gold. This expression, however, is less common than "arm-rings" or "*bedh*," alone, so that there is every reason to suppose either that the sagas magnified the bronze into gold, or when not of gold purposely left them merely as rings without any specification of the metal. Some of the rings in the collection seem too large and clumsy for finger ornaments and too small for bracelets; these were in all probability money. The Anglo-Saxons never used money until they came to this island, but their name for a treasury was the "hring-board," or hoard of rings. There is no mention of money all through "Beowulf." Among the Scandinavians, Germans, and English, large dealings were transacted by exchanging land, or whatever was to be sold, for cattle originally called *feoh* (German *vieh*, pronounced "fee"), whence our name for the honorarium paid to professional men at the present day. In Latin, *pecunia* is also derived from *pecus*, cattle. Smaller matters of business and personal services were constantly rewarded by the gift of rings, certainly not arm-rings, but more like those in the collection.

Civil oaths were sworn on the ring as military vows were made on the sword, and it would appear that a civil oath on a sword was not binding any more than a military oath on a ring. On occasion of the great law meeting, when three districts sent each a judge attended by his twelve doomsmen to the court, so that there were three judges and thirty-six jurymen, an imposing ceremony was performed. A priest in white robes would issue from the *tempel-hús* near the doom stein, and holding up a large silver ring in his hand would present it to each doomsman sitting on a huge stone on the ting-stead (as on Salisbury Plain) and cause him to swear to judge rightly.

The judges, witnesses, plaintiff, and defendant were all sworn alike on the ring, and when the entrails of the victim were examined, the same wicd priest held up the same solemn ring in one hand while the other performed the rites of the augury. The Danes were made to swear on their rings not to vex this land for a certain time in consideration of receiving Dane-geld. But, as it was an oath military, sworn on a civil emblem, they had no hesitation in breaking it. So they took the money, broke their promise, and laughed at the stupid English, whose conversion to Christianity had caused them to forget the niceties of Scandinavian law.

The finger-ring seems a later invention than the arm-ring. Mention is made of it in the coronation of the queen of the second Ethelred, a ring being put on her finger, "and then she was crowned." It would appear from this that the act of placing the ring was a special honour allied to coronation, and that the English custom of placing a ring on the finger of the bride is simply an admission of her to the dignity of queen of the household; and indeed her position was something like it when we take into con-

* See p. 748, *ante*.

sideration how many privileges she enjoyed. In older times there used to be a grand interchange of presents, from the wife's family to the husband as a *miit-gift* or dowry, and from the husband to the wife as a *morgen-gift* or morning gift, presented on the morning after the wedding. This interchange of presents is preserved in Germany and Scandinavia, where the parties exchange rings.

The helmet was a leathern cap strengthened by a ring at the base, and surmounted by two half-rings crossing each other at right angles where the spike of the modern German helmet is fixed. The sword was ornamented with rings, and the stem of the war-ship was adorned with rings passed over the portion to which the figure-head was subsequently fixed. That these enormous rings were of gold seems incredible, but that they were of bronze is very probable on account of the resistance of that metal to the action of the water which corrodes iron. That the poet should call them gold rings is in keeping with the strain of these skalds, who certainly did not understate the wealth of the heroes whose praises they sang.

The mystic value of the ring is seen in the great living ring, or Midgard's serpent, that holds the world in its place by keeping his tail in his mouth with all due firmness. In the centre of a circular disc is the mountain of Valhalla; round this as a circle lies the Midgard, or Middingard. Then comes Ocean, in whose streams lies the monster Jormungand or great sea-serpent, the conserving power of the cosmos, a living ring. Beyond Ocean is the ring of frost mountains, where the giants dwell.

To place things in a circle is to "ring" them. To produce a clear metallic sound that vibrates all round is to ring; so when the great stones are set up for judgment, punishment, and debate the doom-ring is raised, and round the stones a cord is drawn, to make the ring complete. To cut this cord is to profane the ring. The whole setting has been in vain, and the preliminary rites must all be gone through over again. In the absence of the ring-stones hazel-twigs were set up in a circle (as we read in Egli's "Saga"), and the cord is drawn round them to make the ring complete. From the circumstance of the stem of their ships being strengthened with rings they were called ring-stems; the warriors were called ring-Danes, from their armour; the prince was the "distributor of rings," *quasi* paymaster; his treasury, "the ring-road"; his sword, the "ring-mel"; his crown, the "cying-helm"; and the distinctive mark on the arm of a Viking was the bronze or golden ring, just as at the present day the respective ranks in the Navy are marked by rings of gold lace on the arm.

The thane and jarl were distinguished by a gold band worn round the helmet, the prototype of the coronet of our House of Lords, which is only a hoop of gold set round with precious stones and subsequent devices. The cying-helm was such a ring of gold, surmounted by two other half-hoops crossing each other at the top of the head, also of gold, not of bronze or iron, as those of the ordinary helmet were; and between these half-hoops on the lower circlet were either small triangular pieces of metal or *feurs-de-lis* of gold, while the circlet of the noble was plain. This account of distinctions in rank led to some archaeological research into the different degrees of nobility existing in Scandinavia and England, and the origin of the titles connected with them.

The sixth lecture was devoted to the consideration of the various articles usually found in Anglo-Saxon tumuli. Necklaces of beads were first noticed, and shown to have been worn by men, although more emphatically articles of female adornment. The constant occurrence of amber is due to a Pagan belief that this fossil gum was a talisman against the dark elves in the Pagan times, who were only translated into fiends by the advent of Christianity, and were kept at bay by the amber, in the same manner as before the Christian period. The coloured clay beads in the British Museum are almost identical with some found on Kingston Down, in the middle of the last century, and described by Thomas Wright, the antiquary. The powers possessed by beads as amulets against the evil enemies of our souls lived on after the introduction of Christianity, and the beads of monks and nuns were supposed to be endowed with supernatural might. Even at the present day beads of extraordinary virtue are sold at a certain holy shrine in Russia.

Besides these beads there are several other interesting articles for the toilette, some of which point to a refinement and cleanliness, not generally claimed for our forefathers. Combs are found everywhere, in the graves both of men and women, and such articles as ear-picks, tooth-picks, tweezers, and the like abound, proving that there was great attention paid to minor acts of cleanliness. The hair-pins of the ladies here preserved are similar to those in use in the north of Germany; the ear-rings are still met with in Sweden and Norway, and the foreign gold coins worn as ear-rings remind us of the modern custom prevalent throughout Europe.

The drinking-horn and vat (*fat*) found in Anglo-Saxon graves are purely Scandinavian. There is a German horn well imitated in glass, and many remains of English stoups, or vats, for drinking, carefully preserved in this collection, and the lecturer called attention to the absurd reproach made against the Goths of drinking wine out of the skulls of their enemies. The passage from which this custom has been deduced means the horn of the Orochs and not the human skull, and to this kind of drinking-vessels our forefathers were attached, because they could not be set down while any liquor remained without spilling the whole. This idea was carried out in the glass "tumblers" of the later Saxon time which would not stand. Subsequently two gold feet attached to a ring were added to the horn, which, with the sharp end resting on the board, formed a tripod which could stand. The stoup was used for ale, and also for a kind of *olla-podrida*, which our forefathers greatly affected. The solid pieces of meat were taken from the stoup with a perforated spoon, which allowed the liquid to drain through, leaving the solid portions dry. The soup proper was drunk in the heroic style by setting the stoup to the lips and exhausting the contents.

The horn in mythology was next considered, and Thor's drinking adventure in Jotunheim explained at considerable length, and shown to indicate the descent of divinity to aid man and rescue him from the evil principles represented by the jotuns or eaters (giants), and from the danger of being overwhelmed by the flood of mere external knowledge preventing his appreciation of spiritual or heavenly truth.

The custom of draining the horn to friends, to heroes both living and dead, and to the gods survived the introduction of Christianity; for we learn that shortly after its reception by our ancestors, they were in the habit of drinking healths to the Saviour, the apostles, and to saints, so that there was actually no change in the custom itself, but only in the name of those in whose honour it was observed.

Notwithstanding all this, the Pagan English had no Bacchus, no Bacchante, no Silenus, no orgies, no saturnalia. Odin drank wine, because it is the most wise and solemn of food; flesh he took none; and although the drinking of mead was practised to excess, there were no disgusting rites connected with it. There was, however, a god of Purity, who would hardly find a representative in Olympus. It was strongly urged that our own mythology was more fitting for our consideration and for our peculiar genius than that of Greece and Rome, and that it certainly contained none of the objectionable ideas suggested to youth by the mythologies of Greece and Rome.

The various kinds of burial were then dwelt upon. Cremation and interment seem to have been coeval practices. Ship burial was also minutely entered into. But our limits will not permit of further report, especially as we understand that the lectures are to be repeated as such, and also that, in compliance with a very widely-expressed wish, Mr. Hodgetts is about to issue them in the form of a book.

Sir James Alexander occupied the chair at all but the closing lecture (when he was prevented from being present), and spoke in high terms of the interest and value of the information given in them.

Drainage of Kilburn.—With reference to a paragraph (p. 786, *ante*) reporting the result of "Metropolitan Board of Works v. The Willesden Local Board," we have received letters and a copy of Baron Pollock's judgment, showing that the report which reached us was inaccurate, and that judgment in the Kilburn case was for the defendants.

THE METROPOLITAN BOARD OF WORKS AND LONDON THEATRES.

In March last the Lord Chamberlain forwarded to the Metropolitan Board of Works a letter he had received from Mr. Gustave Bernheim, of Rheims, an eminent maker of fire-extinguishing apparatus, and the patentee of several methods for rendering buildings, &c., incombustible, relative to a new invention for rendering the scenery, decorations, and wood-work of theatres proof against the action of fire.

The matter was considered by the Board of sufficient importance to be referred to a committee, by whom all questions relating to theatres and music-halls are dealt with, and the Chemical Assistant to the Board (Mr. Dibdin) was directed to obtain from Mr. Bernheim samples of materials treated with his fire-resisting composition, and to report to the committee.

The chief merits claimed by Mr. Bernheim for his invention are:—

1. That the protection afforded by the process is of a permanent character.
2. That the cost of the application is relatively inconsiderable; and
3. That the process does not injure the flexibility or colouring of the most delicate fabrics.

He further states that he attains the object he has in view in the following manner, viz.:—

(a.) By the use of chemical salts, which, although of themselves capable of resisting fire, give off, when heated to a given point, certain gases which choke the fire and keep the material to which the salts are applied slightly damp.

(b.) By the use of salts which, on the application of heat, form an incrustation around the protected material which is impervious to the action of flame, and prevents the contact of the oxygen of the atmosphere with the heated surface.

(c.) By the use of neutral products for the purpose of combining the various salts used for protecting materials and, at the same time, allowing each salt to act without injuriously affecting the colour and flexibility of the material protected.

It appears from the report of the Chemical Assistant to the Board, which was presented to the Board on the 19th of October last, that the action of Mr. Bernheim's process is two-fold, and that the material to which it is subjected is covered by an incombustible coating which effectually prevents the access of the oxygen of the atmosphere, by which means rapid destruction is arrested. It is, of course, impossible to prevent the ultimate destruction of the material, but instead of burning it undergoes what Mr. Dibdin describes as destructive distillation, and this process only lasts so long as it is exposed to external heat. So soon as the extraneous heat is removed the fire goes out, and it is therefore almost impossible for fire to be communicated from one portion of a material to another which is protected in the manner proposed by the inventor.

Scenery and dresses can be protected more readily than heavier materials on account of the larger quantity of the solution they are capable of absorbing, and the relatively smaller quantity of inflammable gases given off by their combustion.

The practical effect of the invention would be that in the event of a gas-jet coming in contact with any portion of scenery or other materials proposed by Mr. Bernheim's process no further damage would be occasioned beyond the destruction or disfigurement of the part immediately in contact with the flame.

It appears that the cost of rendering the Grand Theatre, at Rheims, fire-resisting so far as regards the scenery, decorations and wood-work, was about 840l. Mr. Bernheim states that the cost of applying his invention to the whole of the combustible parts of a theatre ranges from 400l. to 3,000l., according to the size of the building, and offers to make a trial of his invention in London on an extensive scale in order to test its applicability.

The Metropolitan Board of Works forwarded a copy of their officer's report on Mr. Bernheim's process to the Lord Chamberlain, and informed his lordship at the same time that as the Board's powers, with regard to theatres, are limited to the remedying of structural defects they have no power to enforce the use of any process for rendering any portion of a theatre incombustible.

A NEW BUILDING IN EDINBURGH.

AFTER describing the plans for a proposed new mission-hall, to be erected at the foot of the High-street, in the proximity of the house which was occupied by the Scottish Reformer, John Knox, we expressed an opinion that the proposed building was designed in a style wholly unsuited to the site, the buildings upon which bear the characteristics of the national style strongly impressed upon them. The building in question is now approaching completion, and has elicited, in the local press, an unusual amount of hostile criticism, and those concerned with it are taken to task for their want of discernment and good taste. Not only is this so, but, as is frequently the case in such circumstances, the whole architectural profession are stigmatised as perpetrators of similar enormities, and the words of Victor Hugo are quoted in confirmation of the bad taste of the profession. The gifted Frenchman remarks:—"To the operations of ages and of revolutions, which, at all events, devastate with impartiality and grandeur, have been added those of the cloud of school-trained architects, licensed, privileged, and patented, degrading with all the discernment and selection of bad taste."

Apart altogether from the position it occupies, the building is of itself a miserable production, exhibiting in a feeble-forcible manner the most commonplace details of the style of Palladio. There is a central arched doorway with moulded architrave, which is flanked by shops of considerable breadth, spanned by lintels supported only at each end. The superstructure consists of two stories divided into five bays by massive attached and unfuted Corinthian columns, two of which stand in the centre of the voids left for the shop-fronts. Between these columns appear the windows; those on the first-floor are arched and moulded in a similar manner to the doorway. The upper windows have pediments which are crushed up close under a heavy architrave, and they are further adorned by attached balusters above the sills. There is, of course, the usual dentilled cornice. It is maintained,—and justly, we think,—that the money spent upon this uninteresting and inappropriate elevation would have been amply sufficient for an ornate and picturesque façade in the national style, such as those which have been erected in Jeffrey-street, Cockburn-street, &c. There is much need of some controlling power to supervise the designs of buildings prior to their erection. The Dean of Guild Court does indeed do so, but its power only extends to matters of construction, sanitary appliances, &c.; as it is, the deed is done beyond recall, and subsequent remonstrance is useless, except as a check upon future operations.

THE DISPOSAL OF SEWAGE.

We regard with no little interest the attempt now being made at Barking to precipitate and disinfect the sewage of London. The fallacy which has led to the failure of so many schemes of this nature has been the attribution of too high a chemical value to the constituents of sewage. This was taken by the Select Committee on Sewage as high as 2d. per ton for ordinary town sewage; whereas the highest value at which we can arrive, allowing a dilution of 100 to 1, is little more than half that figure, or 1-3d. per ton of 220 gallons. This is equal to 22l. 14s. 6d. per million gallons, and the Sewage Purification Association propose to add to this chemicals to the value of 9l. The labour is estimated at 5l. for the same quantity. The dried residue, of which 9 tons are said to be produced out of a million gallons of sewage, is valued at 2l. 10s. per ton, or 22l. 10s. for the whole quantity. In round numbers this is equivalent to the extraction of the whole chemical value of the sewage at a cost of 14l. per million gallons, which we are not at all prepared to pronounce impracticable. The question of market, of course, is a matter not so easy to dispose of by anticipation. Still, as on the figures that we have given there is a margin of 9l., or a possible chemical value of 31l. 14s. 6d. against a selling price of 22l. 10s., we are not precluded from the hope that it may be worth the while of the agriculturist to make use of the manure.

At all events, it is matter for congratulation to see any evidence on the part of the Metropolitan Board of Works of a desire really to grapple with the most difficult part of the great

problem, to solve which they were called into existence. Of all anomalies, not even to say of all legislative scandals, none can be greater than the exemption of the greatest city in the kingdom, seated on her most important waterway, from those rules of health and of decency which the State is endeavouring to enforce on all other towns and rivers. The exemption (if it really exist, as to which we have before shown that there is room for grave doubt) of the Metropolitan Board of Works from the ordinary responsibility of other corporations or individuals in this matter, is due to misapprehension. When the Act on which they rely for immunity was being passed, arrangements were in progress for the purification of the sewage by an independent association, that expected to make much money out of the article. This fell through, no doubt from the over-estimate above referred to of the value of the product; and thus London was caught in a trap. That in some way or other the pollution of the Thames by enormous streams of crude sewage must be put a stop to is a part of the very A B C of sanitary science.

If the market should not be found, or, indeed, in any event, we should be glad to hear what has been the further experience of our correspondent, Mr. E. C. Trapp, who in March last (see vol. xlv., p. 296) wrote, in reference to an article in our columns of the 17th February, that he was about to carry out some works for a small local board district, with a view to the profitable utilisation of sewage. Our own remarks had included a chemical analysis of the elements of this refuse, with reference to a German plan for distilling the same into gas. The great value of such a satisfactory solution of one of the most perplexed problems of modern civilisation (if possible) invests any practical experience that may be obtained with unusual value. We shall be very glad to hear whether Mr. Trapp has continued to obtain from this source "a brilliant light, equal or superior to gas light from coal."

LONDON AND THE SESSION OF 1884.

SIGNS are already manifest of some of the more important changes in London and in municipal control, due to existing public enterprise, which Parliament will be moved to ratify in the ensuing session. Taking, firstly, the Metropolitan Board of Works, we find that body will apply for powers to fix on a remodelled basis the contributions by insurance companies insuring from fire property in the metropolis; and for emancipation from an existing Act which prevents them from estimating, as required for the general purposes of the fire-brigade, any higher sum than would be produced by a rate of one half-penny in the pound. A notable conflict of the past summer will probably be adjusted by the Board's Bill for the compulsory closing of certain of the shafts which the Metropolitan District Railway Company opened under their Act of 1881. These are six in number: four in the gardens of the Victoria Embankment between Whitehall-place and the Temple Gardens; the fifth in the Embankment roadway opposite Montague House; and the sixth in Victoria-street near the company's station. The Government stipulate there shall be no "ventilator or air-hole of any kind" in the tunnels,—mainly under Crown lands,—of the projected underground line from Paddington to Westminster. The new contemplated thoroughfares consist of one from Kentish Town-road (a continuation of Clarence-road) westwards to the junction of King's-road with Great College-street, in St. Pancras parish; one from Cotton-street to Preston's-road, in All Saints', Poplar; and in the Liberty of the Clink, St. Saviour's, for the extension northwards of Great Guildford-street to Bankside, at White Hind-alley. Minor projects embrace the acquisition of property in Elm-street, Fleur-de-Lys-court, and Mount Pleasant, for purposes of the Gray's-Inn-road improvements. As regards their Commons Acts, they purpose to bring the Firs, a highly picturesque group of trees at North End, Hampstead Heath,* and Sol's Hole, Plumstead, respectively, within their present schemes for the preservation of those localities. The site for the river subway is definitely chosen. Two tunnels, for vehicular and foot traffic, are to be made by Hermitage Wharf, Wapping, from a point lying between St. Katharine's and London Docks. Two main

approaches to the subway, north and south respectively, will start from Upper East Smithfield, at the London Docks gateway (absorbing in part Nightingale-lane), and from the intersection of Abbey-street (formerly Neckinger-road) with Dockhead (formerly Parker's-row). Other subsidiary roads are planned in the vicinity of the principal thoroughfares on either side of the water. Lastly, the Board seek authority to establish and maintain ferries across the Thames, two lines for which are already chosen: between North Woolwich Railway Station and Nile-street, Woolwich; and between Ferry-street, Isle of Dogs, and the Horseferry-road, Greenwich.

The School Board for London schedule eighty-two sites to be obtained by them, whereon to erect public elementary schools, in the several board divisions of Lambeth (say twenty-three schools); Marylebone (nine); Greenwich, Hackney, and Chelsea (eight apiece); Finsbury and Tower Hamlets (seven apiece); and Southwark (two). These comprise the enlargement of one or two existing premises, and seven alternative schemes. R reckoning with the Board's own separate items, it would appear that 509 inhabited houses are condemned by them to demolition. The aggregate area to be appropriated, including gardens, nursery-grounds, stable-yards, and the like, together with a small extent of vacant land, amounts to nearly 40 acres.* By the very nature of the case not only are the districts concerned thickly populated, but to provide increased school accommodation presupposes that the evicted inhabitants will abide in the neighbourhood in each instance. Viewed, therefore, by the light of the now agitation on the question of overcrowding, one cannot fail to see that the Board's action in carrying out the requirements of the Education Acts does not diminish the evils that oppress the London poor.

THE BELT LIBEL CASE.

JUDGMENT was given on Saturday last in the Queen's Bench Division on the application for a new trial of this protracted case. The application was argued at great length at the last sittings of the Court, and had stood over for some time to enable the judges to consider their decision. It will be remembered that the trial resulted in a verdict for the plaintiff, with 5,000l. damages. A new trial was applied for on various grounds, the chief of which were alleged misdirection of the jury by the judge who tried the case (Mr. Baron Huddleston), and an excessive award of damages by the jury. The judges before whom the application was argued were Lord Justice Coleridge, Mr. Justice Denman, and Mr. Justice Manisty. The Lord Chief Justice and Mr. Justice Denman concurred in thinking there ought to be a new trial, though they were not exactly agreed as to the grounds, nor as to the extent, to which the new trial should be granted; and, under these circumstances, the Lord Chief Justice intimated that at the time of the hearing, in order "that the parties might, if possible, approach each other." This was understood to suggest that they should agree together to reduce the damages in order to avoid a new trial, but they could not "approach each other," and had come to no agreement when the Summer Assizes arrived; and afterwards the Vacation and the Autumn Assizes separated the Judges, and the other business of the sittings had prevented them coming together until now to deliver their judgments. Those judgments, now delivered, were to the effect already stated, Lord Coleridge and Mr. Justice Denman concurring in thinking that the verdict could not stand, the former thinking it altogether wrong, the latter thinking it wrong as to the two important points of the two competitions, and the damages excessive and exaggerated in amount,—Mr. Justice Manisty alone thinking it right, but, to avoid a new trial, concurring in a reduction of the damages to 500l. as proposed by Mr. Justice Denman.

The case was ordered to stand over until Friday, the 21st inst., to see whether the plaintiff will consent to the reduction of the damages to 500l.; if not, there will be a new trial.

[It was stated in Thursday's evening papers that Mr. Belt has decided to accept the suggested compromise.]

* About a square quarter-mile, or rather more than seven times the space of Lincoln's-Inn Fields, measuring its extreme limits.

* See *Builder*, vol. xlv., p. 625.

THE INSTITUTION OF CIVIL ENGINEERS.

THE Annual General Meeting of Corporate Members was held on Tuesday evening, the 18th of December, Mr. Brunles, F.R.S.E., President, in the chair, to receive a report from the outgoing Council on the state and condition of the Institution, and on the principal matters that had engaged their attention during the now expiring year.

It was stated in the report that, owing to the policy pursued by successive Councils, the Institution had become one of the most successful and prosperous of scientific societies,—not only financially, but also in respect of the amount of professional knowledge diffused by its publications. The Constitution was now sufficiently broad to include as corporate members all persons who had acquired eminence in the profession, or who, by their training and experience, were entitled to be considered civil engineers, whatever branch of engineering they might follow.

After the reading of the report the president presented the Telford medals, the Telford and Manby premiums and the Miller prizes for 1883, and the Howard quinquennial prize for 1882 to the several recipients. The following gentlemen were then duly elected to serve on the Council for the ensuing year:—President, Sir J. W. Bazalgette, C.B.; vice-presidents, Sir Frederick Bramwell, F.R.S., Mr. E. Woods, Mr. G. B. Bruce, and Sir John Coode; other members of the Council, Mr. B. Baker, Mr. J. W. Barry, Mr. G. Berkley, Sir Henry Bessemer, F.R.S., Mr. E. A. Cowper, Sir J. N. Douglass, Mr. C. D. Fox, Mr. A. Giles, M.P., Mr. H. H. Mayler, Mr. W. Pole, F.R.S., Mr. W. H. Preece, F.R.S., Sir Robert Rawlinson, C.B., Sir E. J. Reed, K.C.B., M.P., Sir W. Thomson, F.R.S., and Sir Joseph Whitworth, bart, F.R.S.

THE DEVELOPMENT OF RAILWAY AND TRAMWAY COMMUNICATION IN IRELAND.

IN the course of a paper read recently at the Institution of Civil Engineers of Ireland, on the above subject, by Mr. H. T. Crook, it was stated that in consequence of the legislation of last session, by which the Treasury is empowered to guarantee, under certain circumstances, dividend to the extent of 2 per cent. on the capital of Light Railway and Tramway Companies, a great impetus has been given to the promotion of schemes for the further development of such communication in Ireland. Mr. Crook further observed that "there is still a point in the gauge question which so far appears to have been generally overlooked, and that is that a railway with the ordinary type of rail, and a tramway with the usual grooved rail, even when nominally of the same gauge, are not actually so, and the vehicles adapted for running on the one would not travel properly on the other. This point arose in the construction of the Glasgow Corporation tramways, which by the Act of Parliament were to be constructed for the transit of ordinary railway rolling stock. In consequence, the Glasgow tramways have been constructed to a gauge of 4 ft. 7½ in., instead of 4 ft. 8½ in., so that the railway wagons run upon their flanges in the groove of the tram-rail. If the speeds sanctioned by the Act are attained on tramways, the rolling stock and road will have to be pretty much of the ordinary railway type; and where tramways are constructed partly in private lands and partly on public roads and streets, a special form of rail will be required to carry the track across places where the ordinary railway rail would not be admissible.

It is to be hoped that some very stringent regulations will be made for lines laid mostly along the public roads. Paving is almost entirely out of the question because of its great cost. But tram-rails of the usual type cannot be laid on unpaved roadways without destroying the roads for all ordinary traffic. It is impossible to maintain a macadamised road level in the rigid rails; and, moreover, when the rails are laid at one side of the road, they entirely destroy its drainage. In cases where the road is of sufficient width, it would be best to have rails of the railway type laid upon a slightly-raised bench like a footwalk, with a curb laid at the side in the ordinary manner, the curb being laid at such a distance from the nearest rail of the tramway as will give full clearance between

vehicles on the tramway and those on the road. Where the roads are not wide enough to permit of a double line of ordinary traffic as well as the tramway, it will be necessary to widen the road by the purchase of land. By giving up a portion of the roadway entirely to the tramway, the ordinary traffic of the road will be more safely conducted."

This may be admitted, but how is the ordinary traffic in that case to cross from one side of the road to the other, which one may suppose to be a tolerably frequent necessity?

THE CLOCK AND BELLS AT THE NEW LAW COURTS.

THE clock and bells in the great tower of the Royal Courts of Justice were formally started at mid-day on Tuesday last, the 18th inst.,—a day which happened to be the second anniversary of the death of the architect of the Courts, Mr. Street, R.A. It was expected that Mr. Arthur Edmund Street and Mr. A. W. Blomfield (who have charge of the completion of the buildings) would have been present, but they were both unavoidably absent, and the clock was started by Mr. Gandy, surveyor. The operation merely consisted in severing a cord which held the pendulum to one side.

The clock, with the bells, dials, &c., were manufactured by Messrs. Gillett & Co., of Croydon, who have been engaged on the work almost since the beginning of the year. The frame of the clock is of solid cast iron, and measures 8 ft. long by 3 ft. 6 in. deep, and is placed perfectly true both at the top and bottom. All the wheels of the clock are of solid gun-metal, turned, cut, and polished by machinery; and some idea of the powerful nature of such a clock may be gained when it is stated that the larger wheels measure 24 in. in diameter. All the pinions are cut out of solid steel. The escapement is that which is technically called the "double three-legged gravity," and the pendulum is a compensated one, made of zinc and iron tubes, which prevents the clock from being affected by changes in the weather. The "bob" weighs 3 cwt. The pendulum beats two seconds of time at each swing, and is some 15 ft. long altogether. A notable feature of this clock is the introduction of Messrs. Gillett & Co.'s patent "Remontoire Train," which may be briefly described as a contrivance for causing the outside hands which overlook the street to jump simultaneously at every thirtieth second, remaining stationary in the meantime. This contrivance was first applied by the firm to the Manchester Town-hall clock, erected by them some four years ago. The new dials, which measure 6 ft. 6 in. in diameter, are purposely divided into half-minutes all the way round, in order to give effect to this "Remontoire" arrangement. The dials themselves are cast all in one piece. The two dials are secured to each other inside the drum by strong iron tie-rods. The clock is fitted with the firm's improved maintaining power and winding gear, the former to keep the clock going during the operation of winding, whilst the latter is a device for enabling the hands to be turned either way without doing any injury whatever to the machinery. The weights which act as the motive power are composed of sixty-three cast-iron "shifters," each weighing 56 lb., these giving a total of 1 ton 11½ cwt. altogether. There is attached to the clock a self-acting gas apparatus, by means of which the gas is turned up and down by the clock, without requiring a man to go up to do this. It is so arranged also that all the seasons of the year are taken into account. The clock is guaranteed by the makers to keep within one second per week.

The bells, which give out the St. Mary of Cambridge chimes, are hung in the belfry a few feet above the clock. They are of the following dimensions and notes:—

No. 1	Note B	Weight	Tn. Cwt. Qr. Lb.
" 2	" A	"	0 12 0 14
" 3	" G	"	0 15 3 4
" 4	" D	"	1 1 1 0
" 5	" C	"	2 7 2 0
Hour Bell	" C	"	3 8 0 0
Total weight 8 4 2 18			

The framing which carries them is of massive oak timber. The hammerhead which strikes the hour on the large bell weighs in itself 180 lb.

As heard in Fleet-street, Bell-yard, and the vicinity, the tone of the bells (especially the quarters) appears to be satisfactory.

NEW BUILDINGS IN FETTER LANE.

TWO prominent blocks of buildings in Fetter-lane, Rolls-buildings, and Bream's-buildings, which have for some months past been in course of erection, are now externally completed. The new Birkbeck Institute, which has two lofty and commanding frontages to Rolls-buildings and Bream's-buildings respectively, has been raised to its full altitude. It is 80 ft. in height, the Bream's-buildings frontage having a massive stone cornice 4 ft. in height. The building is divided into two portions, the main half being that facing Bream's-buildings. The first floor of this portion will contain the reading-room, magazine-room, lending library, and coffee-room; whilst on the second and third floors are the class-rooms. That portion of the structure facing Rolls-buildings has continuous three-light mullion windows in Portland stone, on each story, and massive entrances at the east and west sides, upwards of 16 ft. in height to the apex of an ornamental surmounting arch, resting on carved cantilevers. In this part of the building will be a spacious lecture-room, 66 ft. by 50 ft., with circular galleries, and capable of seating 1,200 persons.

Immediately adjoining the Institute is Messrs. Burt's new printing establishment, which has just been completed. It has three prominent frontages, to Rolls-buildings, Fetter-lane, and Bream's-buildings respectively, each nearly 120 ft. in length, the structure covering a ground area of more than a quarter of an acre. The building is upwards of 70 ft. in height, and contains five floors, each floor containing ranges of recessed Gothic windows. The building has cost 10,000l.

The elevations of both the Birkbeck Institute and Messrs. Burt's premises are in red brick, with stone dressings. Messrs. Fowler & Hill are the architects of the Institute, and Mr. Nightingale, of the Albert Embankment Works, Lambeth, is the contractor for both buildings.

NEW BUILDINGS ON AND NEAR THE VICTORIA EMBANKMENT.

THE frontage of that portion of the Thames Embankment extending westward from the offices of the London School Board to Norfolk-street is at present undergoing important improvements by the erection of several extensive and costly buildings. When the whole of the buildings now in course of construction, and others shortly to be commenced, are finished, they will have a continuous frontage to the Embankment of upwards of 300 ft. in length, together with return frontages to the streets leading from this part of the Embankment to the Strand.

To the west of the intended enlargement of the School Board buildings, to which it is proposed to give an additional frontage of about 40 ft. towards the Embankment, at a cost of 53,000l., a new block of buildings, intended for offices and residential chambers, is now actively in progress. These buildings, which have a frontage to the Embankment of about 60 ft. in length, are Gothic in character, faced with red brick, and with Portland stone windows and dressings. Mr. H. C. Boyes, of Bow-churchyard, is the architect, and Mr. George Green is the contractor.

Immediately to the rear of these buildings, on the north side, with their principal frontage to Arundel-street, a similar block of offices and residential chambers is likewise in course of erection, for the Law Land Company, their general architectural features resembling those just referred to. Mr. Dunn, of John-street, Pall-mall, is the architect, and Mr. Chappell is the contractor.

To the north of the last-named premises, and immediately adjoining them, is the Temple Hotel, a prominent Gothic structure on the east side of Arundel-street, which has just been completed, and is intended to be opened for business at the commencement of the new year. It is faced with red brick, stone dressings being freely introduced. The approach to the hotel is by a flight of steps leading into a vestibule. Mr. Dunn is also the architect of this building, and Mr. Patrick is the contractor.

On the opposite or west side of Arundel-street, with its main frontage to the Embankment, the new Arundel Hotel is in course of construction: a large building in the Tudor style of architecture, and faced with red brick and Portland stone. Mr. Dunn is also the architect

of this hotel, and Mr. Morter, of Stratford, is the contractor. The estimated cost of this building is upwards of 25,000l.

To the west of this hotel, and extending along the Embankment to Norfolk-street, the Law Land Company, who have purchased the existing old buildings, are about to erect offices and residential chambers.

BUILDING PATENT RECORD.*

APPLICATION FOR LETTERS PATENT.

5,734. H. H. Lake, London. Door-handles. (Com. by C. E. Lacey, Calais.) Dec. 13, 1883.

NOTICE TO PROCEED

has been given by the following applicant on the date named:—

Dec. 11, 1883.

5,333. W. P. Kelly, Mount Brandon. Apparatus for retaining and releasing window-blind cords, &c. Nov. 12, 1883.

ABRIDGMENTS OF SPECIFICATIONS,

Published during the week ending December 15, 1883.

1,599. A. F. Andressen, London. Smoko-preventing and fuel-saving grates and stoves. March 29, 1883. Price 6d.

The draught is so arranged that it strikes the fire on the front and top, whereby this part of the fire is kept briskly burning, and the unsummed black coal is below.

2,029. C. E. Davis, Bath-locking or keying together bricks employed for building purposes. April 21, 1883. Price 2d.

Holes or passages are made through the bricks, in which are placed plugs, and each of these enters the passages in two adjacent bricks and locks them together. (Pro. Pro.)

2,078. D. S. Keith, Toronto, Canada. Water-closets and valve-apparatus applicable thereto. April 24, 1883. Price 6d.

The basins have the usual plunger chamber, and the cistern has a ball-valve which can close the discharge opening therefrom. A tilting disc-valve, the stem of which is acted on by a pusher, governs the entrance of the water into the basin.

2,079. H. H. Lake, London. Apparatus for disinfecting or deodorizing water-closets, sewers, &c. (Com. by C. F. Pike, Philadelphia, and G. F. Collings, New Jersey, U.S.A.) April 24, 1883. Price 6d.

The inlet of the place to be disinfected is closed, and all the air expelled therefrom when fumes or gases that are suitable are introduced, and the vent is closed.

2,199. T. Smith, Sunbury. Materials for making cements, capable also of being used for other purposes. May 1, 1883. Price 4d.

A mixture is made of the scrapings of macadamised roads, well-washed chalk, and coke, and these materials when well ground together are placed in melted sulphur and well stirred. Sand may be used instead of the scrapings of roads. The material can be used for cements, &c., for building, and paving for tiles, for lining tanks, cisterns, &c., for castings, and for joining articles together. When a small quantity of bitumen or pitch is added, it can be used for jointing pipes, and for covering electric wires, &c. Any colour can be added, but when a light colour is required the coke is omitted, and the material can be made any light shade that may be required.

IRON AND CONCRETE.

SIR,—My letter to you last week [p. 804] on this subject was written somewhat hurriedly, and it is evident from your editorial note that I did not sufficiently explain myself when I said,—“The combination of two such different materials in one member must result in the entire uselessness of one or the other.” I trust, therefore, that I may be permitted to show that my statement will bear criticism, and will, I think, prove to be correct.

In the same paragraph I said that concrete was practically incapable of tension. The consideration of the materials of which it is made almost proves this statement; but in order to be perfectly clear, we will assume that the particular piece of concrete under examination, say, a beam a foot square, and 10 ft. between the bearings, is composed of an aggregate of broken granite and Portland cement. If the concrete is properly made, no two pieces of the aggregate will touch, but there will be a thin layer of cement round each of the larger, the interstices being filled up with smaller aggregate, each piece surrounded by the thin layer of cement in similar manner.

I believe some experiments have been made as to the defective power of a rod of Portland

cement, but I have not the particulars before me. The rod was, I think, 12 in. long and $\frac{1}{4}$ in. square, and the amount of deflection which was possible without fracture was something considerably less than 0.1 in.—sufficient to prove that for practical purposes cement is incapable of deflection or tension. With respect to the aggregate, it is hardly necessary to produce experiments to prove that the pieces of broken granite are incapable of tension; and as far as the adhesion of the cement to the aggregate is concerned, it is clear that the least relaxation of that adhesion means fracture to a greater or lesser degree.

Concrete is, therefore, composed of materials which are of themselves incapable of tension, and the concrete must, therefore, be, and is, of the same inflexible nature. What, then, would be the result of producing deflection in the concrete beam, and how would the introduction of iron rods placed longitudinally, as suggested by your correspondents, in the lower half, increase its strength or give it that power of tension so much desired? I am afraid it must be considered that a concrete beam, like a stone one, is practically rigid, and that as soon as deflection commences, so does fracture; in the case of stone, it being one piece, the decided fracture would probably be quicker and more sudden than with concrete, for the concrete being composed of irregular pieces and consequently broken jointed, it would be possible for the adhesion between the aggregate stratum to commence in a very minute and almost unappreciable form, but still fracture would have commenced, and the end could not be far off. Now suppose an iron rod inserted longitudinally 3 in. from the bottom of the beam. The beam being rigid the rod would be perfectly at rest, and not till the beam was deflected would the rod do any work, but by then fracture would have commenced in the concrete beam, and hence all the work, plus the weight of the concrete, would be thrown upon the rod; therefore, the rod to be of any use must be strong enough to do the work which it is intended the concrete beam should do, plus the weight of the concrete, in which case it is evident the concrete is not required. This, of course, is assuming that the ends of the rod are fixed; if they are not, I do not see how any appreciable strain could come on it at all, for, as cement has no power (or, at all events, but little) of adhesion to metal, the rod would run loose in the concrete.

I believe that concrete has a great future before it as a building material to be used in a similar manner, and treated in the same way, as stone or brick; it is to all intents and purposes, when properly made, the best substitute for stone known, and unlike most imitations, is not only cheaper, but in the great number of instances better than the material of which it takes the place. It is capable of any amount of ornamental or architectural treatment, and, unlike terra-cotta, is true to form and design. It may be made in districts where building stone or good bricks are not to be procured, and as it utilises as aggregate many waste products it can always be produced at a moderate cost.

Although some architects have used concrete very largely, there is no doubt that as a general rule it is not regarded in a favourable light: the reasons are that, firstly, it has only lately been introduced in a form suitable to the requisites of the day; and, secondly, failure in a new material means ruin, and of course there have been many failures of concrete, and it naturally makes architects timid of using a material, of the permanency of which there is any doubt; but if those failures are examined it will be found that invariably they have resulted from the inexperience of those engaged in the work, leading to the use of improper aggregate or bad cement, or from the non-observance of some of those numerous points which it is necessary to pay attention to in order that good concrete may be produced, a knowledge of which is only to be obtained by experience. My apology, therefore, for addressing you at this length is that, when I see that the use of concrete may possibly result in a failure, through what to my mind seems a misconceived opinion of its properties and capabilities, I think it incumbent upon me to hint at a few of the difficulties attending its manufacture and use.

HENRY FAIR.

* * * Another important letter on this subject we are obliged to defer till next week.

“PARTY WALLS.”

SIR,—In the *Builder* of the 1st December [p. 715] Professor Kerris reported to have said, in reference to party walls, that, by the law laid down in the Building Act,—“The building owner on one side of the wall *dared not touch a brick on his own side of the wall without giving his neighbour three months' notice*,” &c.

This statement surely requires some modification.

As a general rule it applies when a wall has to be raised and the adjoining owners' half has to be built upon, or is interfered with in any way.

But cases sometimes occur where the building owner's half of the wall is of sufficient thickness to build upon, so that he need not interfere with the adjoining owner at all.

There are, also, cases where the *whole* of a party wall belongs to the owner who intends to raise the same.

An owner can also cut into a party wall on his own side without giving notice.

PHILIP B. LEE.

“QUANTITIES.”

SIR,—I am of opinion that if “A Provincial Architect” [see *Builder*, p. 804, ante] gives proper attention to the drawings and specification, he will have no time to take off quantities, but will hand that work over to a properly-qualified surveyor whose constant experience will enable him to do it in a much better way.

Is it not possible,—nay, probable,—that a surveyor feels that his interests are the same as the architect's, and while endeavouring to see that the builder is not injured by work omitted, is equally anxious that the client should not pay for more than he gets?

My experience shows that quantity surveyors are very accurate, and that their quantities are rarely excessive, while on the other hand I have known many instances of low tenders obtained from the architect's own quantities, with very unfortunate results to all concerned.

A.R.I.B.A.

ELM BLOCK FLOORS.

SIR,—The interpretation of your correspondent “P” [p. 774] is correct. For deal blocks I have always used $\frac{1}{2}$ -in. stuff, but elm, if thinner than $\frac{3}{4}$ in., would be likely to turn up, especially with the slightest moisture beneath. Elm bedded in moist earth is said to last longer than oak, but not if it be subject to being sometimes wet and sometimes dry.

WILLIAM WHITE, F.S.A.

CIRCULARS.

SIR,—I read with much interest the article on “Circulars” in your last issue [p. 778], because I had a very intimate bearing on a work the Leeds and Yorkshire Architectural Society have had in hand for some time. We found it to be a common subject of complaint amongst professional men that the amount of printed matter continually brought before them is so great that they have no means for preserving it or for classifying it so as to be available for reference when required. As a consequence the bulk of it is consigned to the waste-paper basket, and so ceases to be of benefit either to the issuer or the recipient. Most of the material thus destroyed is of value to the architects to whom it is sent, and is thrown to one side unwillingly, but as a mere necessity.

It is equally certain that the present method of scattering circulars, &c., wholesale amongst the architects of the country does not produce so much result as its cost might do were there better means for making the outlay tell in the direction intended.

In their own interests, as much as in those of the persons who issue trade catalogues, the Leeds and Yorkshire Architectural Society are getting together a library of these, with the intention of making them available for ready reference by their members or by the public generally. All the circulars, trade catalogues, &c., which are deposited with them are classified, and an index published, which is placed in the hands of every member of the Society. This being in a concise form is naturally kept on every member's desk, and will show at a glance where the information required may be found, and will make every catalogue sent as useful to its issuers as it is possible for it to be.

At the rooms of the Society an attendant is always in charge, during office hours, whose duty it is to answer all inquiries, supply any information, and lend out to members any catalogues of which duplicates have been deposited.

A small charge is made, sufficient to cover the necessary expenses of classification, and of annually publishing a classified index, but leaving no margin,

* Compiled by Hart & Co., Patent Agents, 136, Fleet-street.

as the idea is not to make a profit, but to make the immense amount of published matter sent out by tradesmen more useful, both to themselves and the architects for whom it is intended. Our Society is sanguine as to the result being one of value alike to both senders and recipients, and one that the mass of information being gathered together is more commonly recognised.

J. WREGHITT CONNOR.

Sir,—In the matter of circulars, treated in the article in your last number [p. 778], you do not appear to have mentioned one point which might with advantage be considered.

Every one must have noticed the extreme diversity in size and form which current circulars assume, apparently with the design to draw attention by these very peculiarities. These variations may be also convenient, but if one point were attended to it would often prevent the papers being destroyed or misplaced. I allude to the facility for making up into convenient packages.

To commence, one may take a leaf of the *Builder*, which is nearly foolscap size; many advertisements are worth keeping, and I think most of them folded up in four, that is, about 9 in. by 3½ in. Many circulars are also easily to be folded to nearly this size, smaller rather than larger, and if all persons issuing circulars paid attention to this point, it would be greatly to the advantage of themselves as well as a convenience to such recipients as do not scrow them up at once.

Even the most strict attention to this point allows some considerable choice in size,—9 in. by 6½ in., 9 in. by 10½ in., 9 in. by 13½ in., and any multiple of these sizes, besides others with slight variation.

Perhaps the most awkward size is one which is prevented from doubling up by reason of sewing, &c., though nearly the proper size; for instance, thirty or forty pages, 9 in. by 6½ in., stiffly secured along one of the short ends.

If you can insert this note in your journal, it may do some good. W.

THE HOUSING OF THE WINDSOR POOR.

Sir,—Just a month ago to-day, the Mayor of Windsor visited with me and with my curate, in the course of a now memorable tour of observation of some of the least habitable houses of the poor in this parish, a shoemaker and his wife, who lived at 8, Garden-court, Bier-lane, Windsor. The place was a desolation of dilapidation and dirt. There was about it neither "sweetness nor light." The lady of the house, indeed, herself described her abode, with much frankness and force, as being "as black as old Harry." This their home, situated 50 yards from Thames-street-hill, right under the castle walls, had never been renovated, whitewashed, cleaned, repaired, or touched in any way whatever, during the whole of their tenancy of four-and-twenty years. Here, on Saturday, the 8th day of December instant, the woman died; and up to Monday, the 17th instant, at mid-day,—in all, nine days,—the body of this poor old soul was lying. Garden-court, condemned without any reservation whatever, by the Sanitary Commissioner of the *Builder* as long ago as March, 1871, is from 20 yards to 40 yards long by about 20 yards wide. Here for years, ruined reputations and ruined houses have gone together. Here have long been established the head-quarters of "the social evil" in Windsor. It is close and cramped, and contains in all some twenty-five houses. The water-service is limited to a single pump. There is not a drop of water in the houses, and the other sanitary appointments are on a like lavish and liberal scale. In another court close by there are about a dozen houses, with no closets. This outrage on health and morals was published to the world by the *Builder* thirteen years ago. Between these twelve families there is only a service of two privies. Whilst the degradation and demoralisation of our poor is thus being accomplished in this portion of the Royal Borough, the sanitary officers make it plain that they make no complaints.

Notwithstanding that it has been sought to discredit me in one direction and disparage me in another, the curate of the rectory edified me, when I first called attention in a sermon preached last month at Holy Trinity Parish Church here, are beginning to give way all round. Whilst the town is being soothed by the readiness of the official assurance that there is really nothing to do, a great deal, nevertheless,—of course, quite on the quiet, easy, late amongst some of the landlords,—is being done. Ricketty tenements are becoming whitewashed in all directions, "whited sepulchres," before the touch of the Surveyor; begrimed with the dirt of years, under cover of abuse of me they are being renovated, restored, washed down, propped up, and plastered. But better, perhaps, than all else, I have reason to hope and to believe that the member for the borough, Mr. Richardson-Gardner, may himself come to the rescue, and undertake, at any rate, the reconstruction, and, indeed, the regeneration, of many of the now deplorable homes of the poor in this part of Windsor.

In March, 1871, just after an alarming outbreak here of small-pox, the Sanitary Commissioner of the

Builder came to report upon the condition of the dwellings of the poor in the Bier-lane district of this town. His report is published in the *Builder* of the 25th of March of that year. From a structural, as well as from a sanitary, point of view, the houses throughout the district, comprising Bier-lane, Garden-court, Red Lion-row, and Collins-buildings, are all alike condemned. That condemnation was pronounced in the interests of health, morals, and civilisation, by competent authority, nearly thirteen years ago. They remain, with all their accumulation of dilapidation and dirt, with all that was then full of danger and of wrong about them, now aggravated gratuitously by continuous and contemptuous neglect, as well as by the wear and tear of time. The Chancellor of the Exchequer said the other day that there were already remedies sufficient to meet and cope with all the appalling evils in connexion with the housing of the poor, and that where they were not applied it was because of the incompetency of the local authorities. When all other centres of population are everywhere moving, why should the Royal Borough stand any longer aside outside the pale of civilisation, watching the pall of the Corporation as it visits the public-houses? In a word, sir, why should Windsor wait?

I shall never go back from the line on which I have entered until the "Authority" is either confounded or converted, and the landlords are reached; until old things have passed away and all things shall have become new; until the dwellings of our poor in Windsor be transformed, with howsoever bad grace, into human homes.

ARTHUR ROBINS, M.A.
Rector of Holy Trinity, Windsor.
Chaplain to the Queen and the Prince of Wales.
Holy Trinity Rectory, Windsor,
Dec. 18th, 1883.

LIGHT CASES.

LYOYD J. GATTI.

This was an injunction obtained *ex parte* on the 18th of December, 1882, in Mr. Justice Chitty's Court, by Mr. Lloyd, Dental surgeon, of 437, Strand, against Messrs. A. S. Gatti, and their builders, Messrs. Laughead & Way, to restrain them from wrongfully erecting a scaffolding and tarpaulin 26 ft. high, from the ground-floor level on the north side of plaintiff's house, and thereby darkening the light to his windows, and to restrain them from continuing the use of such scaffold and tarpauling, and to prevent the defendants carrying out their new works so as to darken the light to plaintiff's windows.

Subsequent to this *ex parte* injunction being obtained, plaintiff gave notice of motion to make the injunction perpetual, and afterwards gave notice of motion to commit the defendants to prison for contempt of court for alleged breach of the injunction.

The tarpauling was removed by defendants within two days after its erection, and defendants' architect, contending that he was only building to his old height, proceeded with the works, and completed defendants' building.

The case was transferred to the Queen's Bench Division, and the cause and motions were tried together, before Baron Pollock, on December 5th and 6th inst. Mr. Bingham, Q.C., and Mr. Boom, instructed by Messrs. Carr & Co., appeared for plaintiff, and Mr. Murphy, Q.C., Mr. T. Northmore Lawrence and Mr. Richard Nevill, instructed by Messrs. Pools, Hughes, & Co., for the defendants.

In the course of the Chancery proceedings various affidavits were filed by Mr. Lloyd and his manager, and also from Mr. Sams, his architect, and others; and on the part of the defendants pleas and affidavits were filed and sworn by Mr. Spencer Chadwick, defendant's surveyor, Mr. W. S. Cross, architect, and Mr. Robert Walker, architect and District Surveyor, denying that there was any permanent injury, or that the buildings had been increased in height, or in nearness to the plaintiff's premises.

At the conclusion of the case Mr. Baron Pollock gave judgment to the effect that the tarpaulin was not a permanent structure; that a solicitor's letter to the defendant would have had practically the same force as an injunction, the very object of which institution was to prevent a person "going to law on Tuesday for what was done on Monday." Verdict for the defendants, with costs.

Royal Caledonian Asylum of London.

At a monthly Court of Directors, Mr. James Lawrie, in the chair, held on Saturday, the 1st inst., on the motion of Mr. Robert Hepburn, seconded by Mr. J. Chisholm Gooden, it was unanimously resolved that the thanks of the directors be given to Mr. Alexander Peebles, F.R.I.B.A., the honorary architect to the Institution, for his services as such. "And as a token of their esteem for him, and as evidence of their appreciation of the work done by him, that a Life Governorship of the value of one hundred guineas be conferred upon him." This resolution has since been very suitably engrossed upon vellum, and presented to Mr. Peebles.

CHURCH-BUILDING NEWS.

Maidstone.—A new reredos has been recently added to St. John's Church, Maidstone, from the design of Mr. R. Wheeler, of Tunbridge Wells. The whole of the upper part is constructed in alabaster. The portion over the altar has a quatrefoil panel in the centre, in which is carved the Agnus Dei; the side panels contain figures of angels, and the intermediate panels have carvings of corn and grape. The remaining bays of the apse have alabaster panels filled in with marble diapers in various colours. The sanctuary has been newly laid with an encaustic tile pavement, and the chancel further enriched by seven handsome brass lamps. The works in connexion with the reredos have been successfully carried out by Messrs. T. Earp & Co., of Lambeth.

Ipswich.—The Church of St. Mary-le-Elms, Ipswich, has been enlarged by the addition of a chancel and organ-chamber and by lengthening the north aisle, the accommodation having been increased by more than 100 sittings. The west gallery has also been removed, opening up the tower arch with good effect. The chancel has an oak roof of single hammer-beam construction, the space between the principals being divided into panels by moulded ribs, above the battlemented collar beams, and in the spandrels of the moulded ribs of the principals is open tracery work. The ends of the hammer-beams are finished with carved angels with outspread wings, each figure bearing a different device. The cornice is enriched with angels and paterae, and the lower portion is pierced with tracery. The choir fronts and clergy desks, in oak, are elaborately wrought and carved. The floor is of Italian mosaic. On either side of the altar are sedilia and credence-table, and a new altarpiece is to be added from a design by the architect. A chancel arch in stone, with moulded jambs and arch richly carved on both sides with emblems of the Passion, Death, and Ascension of our Lord, divides the chancel from the nave. The outside walling is faced with cracked flintwork with stone dressings. The style is Perpendicular. The whole of the work, including the carvings and other details has been carried out from the designs and under the superintendence of Mr. E. F. Bishopp, architect, Ipswich. Mr. George Kenney, of Ipswich, was the general contractor. The cost has been borne by the Vicar, the Rev. L. D. Kenyon Stow. The church was re-opened on the 13th inst.

Derrington.—This church (near Pontefract) has been successfully lighted by Messrs. Jones & Willis, of Birmingham and London. In the nave and choir are handsome polished brass lamps in *repoussé* work, fitted with the patent "Hesperus" burners. In addition, there is a pair of five-light wrought-iron candle standards. These are unpainted, but oil-blackened by a special process of the makers, and picked out in gold. The whole of the fittings were designed by Mr. A. W. Blomfield, M.A., architect.

Weston-super-Mare.—Emmanuel Church, Weston-super-Mare, was re-opened on Tuesday last, after repairs and re-decoration. A memorial window has been inserted in the north side to the memory of the late Mr. E. U. Corbett Bond, by his widow, whilst the five windows on the south side have been filled with cathedral tinted glass, the gift of the vicar and churchwardens. The whole of this work has been carried out by Messrs. Bell & Son, College-green, Bristol. The general cleansing and decoration were entrusted to Mr. Theophilus Palmer; and the lighting and heating (hot-water apparatus) to Mr. Felix Thomas, and the whole of the work has been done under the direction of Mr. Chambers, architect. The stencilling of the walls and roof, and the display of texts over the principal archway and around the sides of the chancel, impart an agreeable warmth of colour to the interior. Over the east window is the text, "Now is Christ risen from the dead," and on each side is displayed the Decalogue. The reredos has been raised in the centre. The total cost of the works has been about 300l.

Penrhinwceiber.—On the 18th inst. the Right Rev. the Lord Bishop of Llandaff opened the new Church of St. Winefred, at Penrhinwceiber, South Wales. The new church, which has been erected in a commanding position, is in the Gothic style, built of native stone, the outside dressings being of Ombesley stone, whilst the

inside dressings are of Bath stone. The roof over chancel and nave is of the hammer-beam type, and constructed of pitch-pine left in its natural state, planed over, but neither stained nor varnished. The trusses dividing the nave from the chancel are more ornate than the others. The portion of the roof over the sacristy is semicircular, with nicely moulded ribs divided into panels. The aisle is laid with tiles, whilst the remaining portion of the church floor is composed of wooden blocks. The church has been substantially built from designs by Mr. Thomas Nicholson, diocesan architect of Hereford, by Mr. W. Cullis, builder, of the same city. The direction of the work was entrusted by Mr. Cullis to Mr. William Makin, of Manchester. Mr. Cullis is now effecting extensive alterations at St. Margaret's, Mountain Ash.

Miscellaneous.

Tenement Hospitals.—Under the above heading, Mr. Vacher, medical officer of health for Birkenhead, recently read a paper at Manchester, and having regard to the fact that it is of the utmost importance that persons occupying a somewhat superior social position should be attracted to hospitals for infectious diseases, some such plan of hospital construction as he advocates is certainly becoming more and more necessary. Persons in houses of business, and whose wares are particularly liable to spread infection, cannot often be induced to enter general wards; mothers in a good position of life will not part with their children, but will readily pay for a separate room where reasonable privacy can be combined with the advantages of isolation and treatment is hospital; and these persons, whom it is often essential to isolate in the interests of public health, could never be removed under the compulsory clause of the Public Health Act. All this is fully recognised by Mr. Vacher, and the principle he advocates deserves every attention. But as regards some of the details of his scheme, which he frankly admits may need revision, we think that the plan put forward is by no means the one best calculated to secure the end he has in view. He would arrange his tenements for hospital purposes much on the plan of an ordinary house; four, either for patients or nurses, on each floor of each block; and he would, under ordinary circumstances, make his block five stories high, with ten separate double-roomed tenements to each staircase. Now such a plan we think both unwise and wasteful. If a single case of one infectious disease were admitted into one of the tenements, no other disease could properly be admitted into that block, and since solitary attacks of certain fevers do occur, the remaining tenements in the same block could not be used, especially in a building where it is intended not so much to treat patients as to isolate them.—*Leicester.*

Christmas Cheer at Exeter.—Mr. Harry Hems, of Exeter, is known pretty well all over the country as an ecclesiastical carver and sculptor, but he is not so well known as the founder of a Christmas feast for old people in poor circumstances in the "ever faithful" city. This is the seventeenth year of Mr. Hems's hospitable entertainment, and we learn that he has invited between sixty and seventy aged guests, all of them broken-down tradesmen. On this occasion, the Boar's Head carol will be sung by some of the Cathedral choir. The guests are to assemble at one o'clock, and are to be regaled with boar's head, baron of beef, and other substantial viands, and (to quote from the quaintly-worded card of invitation).—

"After ye Feast, and even until ye toll of Curfew, there will be provided for their further temporal comfort and solace, Glee, Storie, and Carrole, and all that appertaineth to ye Countre Dance, together with much sweet Musick upon ye Harpsicorde, ye Fiddle, and Divers Curious Instruments."

Our readers will join with us in wishing Mr. Hems and his guests a happy time of it. We note that Mr. Hems has recently been elected a member of the Town Council.

New Winchester House, Broad-street.—Messrs. Archibald Smith & Stevens have accepted the contract for the erection of two hydraulic-balance passenger-lifts, on Stevens & Major's principle, at this building (Mr. J. Pilkington, architect). These lifts, we are told, will be among the tallest in London.

Dwellings of the Poor in Wandsworth. At the last meeting of the Wandsworth District Board of Works, Mr. Meaden presiding, the Board proceeded to consider reports made by the Medical Officer of Health and the Surveyor for Wandsworth, under the provisions of the Artisans and Labourers' Dwellings Act, relative to the condition of certain houses in Waterside and Field's-alley. The reports (according to the *Clapham Observer*) revealed gross neglect of means to comfort, cleanliness, and sanitary arrangements generally. Mr. Howick said the houses in Waterside were, so to speak, nobody's property. No rents were paid, no rates or taxes, and some of the occupiers were receiving parochial relief. If by a remote chance a tenant left a house, he sold his key, perhaps for a sovereign. It would be a great blessing to the poor creatures themselves if the whole lot of houses could be swept away. The owner of the south side of Field's-alley said he wished to get rid of his tenants, and convert his houses into a shed or a stable. At present they were a dead loss to him. He did not get a quarter of his rent. One tenant owed him ten months. The Chairman said if he wanted to make such an arrangement as he had suggested, he must first turn the people out. The owner said he was anxious to make arrangements first, for he was afraid to leave all the houses empty. They would be "gutted." The ranges would be taken away, the flooring ripped up, and the windows broken. One owner concerned was stated to be waiting for a proposed railway to cut through his dilapidated property. Orders were made for the houses to be put in a state of repair without delay.

"Wide" Tendering for Engineering Works.—The lists of tenders for building works which we publish from week to week often exhibit a great diversity of calculation, the highest tender frequently being double that of the lowest and accepted tender. But it is not often that the amount of the lowest tender is only one-third that of the highest one, as is seen in the following list of tenders published in the *Engineer* for the 14th inst. viz.:

List of tenders for two double twin screw boats for the Wallasey Local Board. Messrs. Flannery & Fawcett, Liverpool, engineers:—	
	Iron. Steel.
Edwards & Simes	£28,000 .. £37,000
Earle's Shipbuilding Company	17,500 .. 18,000
N. & H. Morton	16,239 .. 16,721
McIntyre & Co.	16,000 .. 16,500
James Jack & Co.	16,000 .. 16,200
Simons & Co.	15,500 .. 15,995
Dunsmuir & Jackson	15,351 .. 15,510
J. Watkins	14,970 .. 15,300
Stevens & Co.	14,977 .. 14,977
Barrow Shipbuilding Company	14,000 .. 14,000
Seath & Co.	12,900 .. 13,200
Wm. Allsup & Co. (accepted)	12,450 .. 12,850
Abercorn Shipbuilding Company	12,300 .. 12,900
Edward Finch & Co.	12,751 .. 12,530
Toward & Co. 12,500
Engineer's estimate	212,500.

Builders are thus not the only people whose tenders sometimes exhibit a wide divergence. It is also matter of some significance to note that while in the foregoing list the majority of the firms tendering ask from 2000. to 1,0000. more for steel than for iron, one firm puts the same figure to each material, while another asks less for steel than for iron.

International Health Exhibition, London, 1884.—The executive council of this exhibition is now meeting regularly, twice a week, at the Society of Arts House, by permission of the Council of the Society. A large general committee is also in course of formation. From among the members of the general committee, the following sub-committees have been appointed:—1. The Dwelling; 2. Workshop and factory sanitation; 3. Food—raw materials; 4. Food and cookery; 5. Heat; 6. School and education; 7. Ambulance; 8. India; 9. Colonial. Persons wishing to exhibit in any of the classes should apply to the Secretary, Mr. E. Cunliffe-Owen, at the offices of the exhibition, South Kensington.

The Art-Union of London.—We have received the forty-seventh annual report of the Council, with list of members. The report, with the names of prize-holders, appeared in our last volume (p. 581), in our account of the annual meeting. We may remind our readers that the subject of the current year's plate is "The Tailor's, June 20, 1792." The plate has been engraved by Mr. C. W. Sharpe, from the original painting by Mr. Alfred Elmore, R.A. Every subscriber of a guinea will be entitled to an impression of this plate, as well as to a chance in the annual distribution.

Fine Art Exhibition, Newcastle-upon-Tyne.—We understand that this exhibition, which is to be opened in January next, under the auspices and management of the Bewick Club (as recently mentioned by us), is meeting with the encouragement that it deserves. Already many well-known artists have promised to send works from their easels, and important examples of Mrs. Butler's, P. A. Morris's, W. B. Scott's, W. D. McKay's, B. W. Leader's, Robt. Herdman's, Alex. Fraser's, and Aumonier's works, are likely to delight the eyes of the Novocastrians. The secretary is Mr. Dickinson, Bewick Club, Newcastle-upon-Tyne. We also learn that a popular Art-Union in connexion with the exhibition has been sanctioned by the Board of Trade.

Westminster Abbey Organ.—This celebrated instrument, which many have doubtless observed to have been missing during the past year from its old site on the screen, is now being replaced in the Abbey, after complete reconstruction and enlargement at the hands of Messrs. Hill & Son. Mr. J. L. Pearson, R.A., the architect to the Chapter, has designed two fine cases for the organ, but as the capital body have now only very scanty funds at their disposal, they are unable to have these carried out. It is to be hoped, therefore, that the public may come forward and help the Chapter to invest their reconstructed organ with an appearance that is better than a mere skeleton of woodwork and pipes.

The International Forestry Exhibition. At a meeting of the Committee of the International Forestry Exhibition last week, it was reported that his Royal Highness Prince Christian, Sir Joseph Hooker, K.C.S.I., director of the Royal Gardens, Kew; and Sir Alexander Grant, Principal of the University of Edinburgh, were among the latest additions to the list of patrons of the exhibition. The committee, it is stated, are inclined to ask for permission to hold the exhibition on the grounds of Donaldson's Hospital, and it is understood that several of the governors are in favour of acceding to the request, though one or two object. The site is one which in many respects is an admirable one, and is probably the best that could be chosen.

Destruction of a Church by Fire.—On Wednesday evening the Roman Catholic Church in Dornier-place, Leamington, was entirely destroyed by fire. About five o'clock flames were discovered in the organ-loft, where it is stated that men had been tuning the organ; and by half-past six only the bare walls of the spacious nave and chancel remained. The tower and the adjoining presbytery have been saved. The dome of the apse was embellished with costly paintings, and the ornamentation of the high altar was very elaborate. All this has been destroyed. The building, without the tower, cost over 8,000l. in 1869, and large sums have since been expended upon it.

A New Asylum in the West.—It will be seen by reference to p. 845, that the tenders for the erection of the new Pauper and Lunatic Asylum at Heavitree, near Exeter, have been sent in. Twenty-four tenders were submitted, ranging from 75,735l. (the highest) to 55,000l. (the lowest). The tender of Mr. H. Phillips, of Exeter (amounting to 56,200l.) has been accepted. Views, plans, sections, and a description of the building (of which Mr. R. Stark Wilkinson is the architect), appeared in the number of the *Builder* for September 16 last year.

Cardiff Exchange.—The tenders for the Exchange Buildings, at Mount Stuart-square, Cardiff, for which excavations have already commenced, were received by the directors of the above company on Tuesday last, and a contract was made with Mr. Clerke Burton, of Cardiff, builder, to carry out the works within eighteen months from the beginning of the New Year. The architects are Messrs. James, Seward, & Thomas, Cardiff.

Pluckley.—A window of three lights has just been erected in the Parish Church of Pluckley, Kent, to the memory of James Bacon, late steward of the estate of Sir Edward Cholmeley Dering, Bart. The work was entrusted to Messrs. Mayer & Co., of Munich, who have selected as their subjects the Talents, the Good Samaritan, and Finding of the Lost Sheep.

Obituary.—We regret to record the death of Mrs. Griffith, the wife of Mr. W. Pettit Griffith, F.S.A., architect, which took place on the 14th inst.

Safeguards against Accidents with Electric Lighting Apparatus.—There have been several well-authenticated instances of death by the shocks of certain dynamo-electric currents, and in order to guard against such occurrences when electric lighting becomes more general, the Board of Trade have fixed the upper limit of electro-motive force at 500 volts. It is believed that above this value the current becomes fatal. There is no doubt, however, that the fatality of an electric shock depends on other factors than its potential. A recent paper by Mr. W. Lant Carpenter, read before the Physical Society, showed from experiment that the resistance of the body varies very considerably with the state of the skin or outer epidermis. If it is dry, the resistance amounts to thousands of ohms; if the skin has been soaked in salt and water for twenty minutes it will fall to perhaps as many hundred ohms. It follows that a person might touch the poles of a powerful dynamo when his hands are dry and get no shock, whereas if his hands were in a state of perspiration or moistened by working in solutions of sulphate of zinc or sulphuric acid, he might get a very disagreeable or even serious shock. Electric light engineers will do well to bear this fact in mind. Another matter is that the discontinuity of the current has an important bearing on its fatality. Thus the Gramme and similar machines have produced no fatal cases of shock, whereas the Brush machines, in which there are fewer coils, and a more discontinuous current, have been the cause of several deaths in this country and abroad.—*Engineering.*

Redecoration of the Theatre Royal, Edinburgh.—The interior of this theatre has just been redecorated. In the scheme of colour adopted, what the decorators had in view was to secure a light and cool effect. A notable feature in the design is the ceiling, which has been elaborately treated. Divided into eight gilded compartments, there is shown in the centre of each a medallion, with Cupid playing a musical instrument, while the surroundings are thrown into relief to imitate raised plaster work. In the cove below are eight arches, which form a framework for the portraits of eminent composers and authors, Shakespeare's occupying the place of honour over the proscenium. The front of the gallery and upper circle have been done in a delicate shade of yellow, while the open work of the front of the dress circle has been picked out in gold. The plastered down the sides of the stage boxes are done in gilt, with a blue running ornament in relief. The decorative work was designed and executed by Messrs. Dobie & Son, George-street; while the architectural work was entrusted to Messrs. Craston & Elliot.

The First Avenue Hotel.—A portion of this building, recently described in our columns, was dried by Messrs. Dreyfus & Co., with "Ligoy's Patent System."

TENDERS.

For the erection of a pauper lunatic asylum for 306 patients at Havre, near Exeter, including pumping and other machinery, for the Town Council. Mr. R. Stark Wilkinson, architect, 14, Fumival's Inn, London. Quantities by Mr. F. B. Smith, 6, Great College-street, Westminster, S.W.

J. R. Gibbard, Exeter	£76,735 0 0
Obank & Sons, Ltd.	67,840 0 0
Walters & Son, Bristol	68,250 0 0
Vanstone & Mumford, Torquay	66,182 0 0
Horsman & Co., Wolverhampton	66,000 0 0
Patman & Fotheringham, London	84,540 0 0
Stephens & Bastow, Bristol	64,000 0 0
H. G. Pollard, Taunton	63,700 0 0
S. Bevan, Plymouth	63,000 0 0
E. Bealey, Bradford	63,500 0 0
J. H. Foden, Ashburton	63,320 0 0
Perry & Co., London	61,975 0 0
Bull, Sons, & Co., Southampton	61,435 0 0
J. Hawkins, Devon	60,985 0 0
Laphorne & Goad, Plymouth	60,960 0 0
Scadding & Son, Exeter	59,678 0 0
H. J. Rossiter, Bristol	59,228 0 0
Honell & Son, Bristol	59,000 0 0
J. H. Saunders, Southampton	58,485 0 0
R. Reilly, Brixton	58,000 0 0
F. & D. Dicks, Rugby	57,498 0 0
Pethick Bros., Plymouth	57,414 0 0
H. Phillips, Exeter (accepted)	56,290 0 0
J. Marshall, Plymouth	55,000 0 0

[Architect's estimate, £26,355.]

For building three houses in Durham-road, Sunderland, for Mr. T. J. Howarth. Messrs. J. & T. Tillman, architects, 5, Bridge-street, Sunderland.

J. Thompson & Sons	£1,932 0 0
R. Hudson, jun.	1,920 0 0
G. H. Hudson	1,820 0 0
G. Seimons	1,800 0 0
T. P. Staftos	1,558 0 0
J. Huntley	1,498 0 0

For various works at Holy Trinity Church, Woolwich. Mr. H. H. Church, architect, William-street, Woolwich:—

Farmer & Bradley	£1,100 0 0
North of England School Furnishing Company	780 0 0
Ilamston & Co.	737 0 0
Kirk & Randall	675 0 0
Midland Joinery Company	565 0 0
Repairs and Alterations.	
Kirk & Randall	2,565 0 0
Combs	424 0 0
Johnson	395 0 0
Fenn & Sons	383 0 0
General Iron Foundry Company	477 10 0

Accepted for alterations and additions to College Chapel, Marlborough. Mr. Bodley (Messrs. Bodley & Garner) architect:—

Stephens & Bastow, Bristol	£10,188 3 11
----------------------------	--------------

For additions to St. Mary's R.C. Church, and for the erection of a lodge and convent, Ryde, Isle of Wight, for the Rev. Canon Cahill. Mr. Joseph Stanislaus Hanson, architect, 27, Alfred-place West, South Kensington:—

W. Newman (accepted)	£1,800 0 0
----------------------	------------

For erecting warehouse, Cow Cross-street, Farringdon road:—

Anley	£1,019 0 0
James	1,144 0 0
Shurmer	972 0 0
Thomerson	814 0 0

For additions to Board Schools, Woodford. Messrs. Hooper & Lewis, architects:—

Robson	£1,175 0 0
Fritchard	1,134 0 0
Sarjeant	1,115 0 0
Osborne	1,111 0 0
Bangs	1,090 0 0
Ratnager	1,065 0 0
Morley	1,054 0 0
Shurmer	1,046 0 0
Egan	1,030 0 0
Knight	1,016 0 0
Hoskins	993 0 0
Reed	983 0 0
Wells	970 0 0
Good	883 0 0

For alterations and additions to premises in Orendon-street, Haymarket, for the Civil Service Co-operative Society. Mr. Thomas Verity, architect:—

Wm. Webster	£10,981 0 0
Simpson & Son	9,173 0 0
Asby Bros.	8,711 0 0
Wm. Shurmer	8,676 0 0
Kirk & Randall	8,428 0 0
Wm. Brass	8,122 0 0

For the erection of drying shed for Messrs. Oastler, Palmer, & Co. Messrs. G. Elkington & Son, architects:—

J. & J. Greenwood	1,135 0 0
Wells	1,133 0 0
Tarrant & Son (accepted)	1,085 0 0

For the erection of three dwelling-houses at Newington, near St. Lawrence, Thanet, for Mr. W. Spain. Mr. E. L. Elgar, architect:—

H. Miller	£260 0 0
H. Bowman	480 10 0
W. Macdonald	480 0 0
Newby Bros.	463 0 0
J. Newby (accepted)	463 0 0

For the erection of a school for the School Board for London, in Surrey-lane (Lambeth Division), for 1,600 children. Mr. E. R. Robson, architect:—

W. Bangs	£16,279 0 0
W. Oldrey	16,000 0 0
W. Shephard	15,988 0 0
W. Shurmer	15,984 0 0
Atherton & Latta	15,789 0 0
Kirk & Randall	15,760 0 0
F. Higgs	15,720 0 0
J. D. Henson	15,533 0 0
W. Downs	15,501 0 0
Lathley Bros.	15,465 0 0
Holloway Bros.	15,323 0 0
J. Smith & Sons	15,266 0 0
Stimpson & Co.	15,100 0 0
S. J. Jerrard	14,899 0 0
B. E. Nightingale	14,831 0 0
H. Hart	14,910 0 0
J. T. Chappell	14,870 0 0
C. Cox	14,828 0 0
Wall Bros.	14,778 0 0
Patman & Fotheringham	14,753 0 0
W. Brass	14,704 0 0
C. Wall, Lot's-road, Chelsea	14,630 0 0

* Recommended by Works Committee for acceptance.

For the erection of a school for 1,200 children, in Napier-street, Hoxton (Hackney Division), for the School Board for London. Mr. E. R. Robson, architect:—

Steel Bros.	£13,403 15 0
W. Larter & Son	12,539 0 0
J. H. Tarrant & Son	12,570 0 0
W. Goodman	12,530 0 0
W. T. Niblett	12,450 0 0
Lathley Bros.	12,446 0 0
J. Wall Bros.	12,360 0 0
G. S. Fritchard	12,350 0 0
W. Bangs & Co.	12,331 0 0
J. Grover	12,178 0 0
M. Gentry	12,158 0 0
B. E. Nightingale	12,127 0 0
S. J. Jerrard	12,100 0 0
J. S. Sargeant	12,078 0 0
J. Smith & Sons	12,069 0 0
W. Shurmer	11,988 0 0
H. Hart	11,985 0 0
Patman & Fotheringham	11,981 0 0
W. Brass	11,911 0 0
Atherton & Latta	11,900 0 0
C. Wall	11,859 0 0
Kirk & Randall	11,857 0 0
Perry & Co.	11,780 0 0
C. Cox, Ash-grove, Hackney	11,476 0 0

* Recommended for acceptance.

For the erection of a school to provide accommodation for 1,200 children, in Scawfell-street (Hackney Division), for the School Board for London. Mr. E. R. Robson, architect:—

Steel Bros.	£13,113 10 0
W. Larter & Son	12,174 0 0
J. H. Tarrant & Son	12,035 0 0
G. S. Fritchard	11,968 0 0
W. T. Niblett	11,990 0 0
W. Bangs & Co.	11,839 0 0
W. Goodman	11,835 0 0
F. Higgs	11,820 0 0
H. Hart	11,800 0 0
M. Gentry	11,825 0 0
J. F. Sargeant	11,813 0 0
B. E. Nightingale	11,791 0 0
Stimpson & Co.	11,789 0 0
F. & F. J. Wood	11,767 0 0
S. J. Jerrard	11,693 0 0
Patman & Fotheringham	11,647 0 0
Atherton & Latta	11,630 0 0
W. Brass	11,590 0 0
W. Shurmer	11,565 0 0
Jas. Smith & Son	11,553 0 0
C. Wall	11,550 0 0
Kirk & Randall	11,577 0 0
Perry & Co.	11,328 0 0
C. Cox, Ash-grove, Hackney	11,077 0 0

* Recommended for acceptance.

For the erection of a school to provide accommodation for 800 children, in Pocock-street, Friar-street (Southwark Division), for the School Board for London. Mr. E. R. Robson, architect:—

J. Goodman	£11,935 0 0
J. H. Tarrant & Son	11,903 0 0
Holloway Bros.	11,850 0 0
W. T. Niblett	11,869 0 0
J. Grover	11,643 0 0
W. Downs	11,517 0 0
W. Bangs & Co.	11,501 0 0
W. Shurmer	11,494 0 0
G. S. Fritchard	11,433 0 0
B. E. Nightingale	11,373 0 0
W. F. Croaker	11,345 0 0
Lathley Bros.	11,341 0 0
F. Higgs	11,325 0 0
J. Mansland	11,301 0 0
W. Shephard	11,292 0 0
Atherton & Latta	11,255 0 0
Hy. Hart	11,233 0 0
Patman & Fotheringham	11,203 0 0
W. Brass	11,199 0 0
J. T. Chappell	11,140 0 0
C. Wall	11,059 0 0
S. J. Jerrard	11,040 0 0
Kirk & Randall	10,980 0 0
Wall Bros.	10,974 0 0
J. Smith & Sons	10,919 0 0
W. Oldrey	10,900 0 0
Stimpson & Co.	10,880 0 0
J. F. Sargeant, Tudor-road, Hackney	10,760 0 0

* Recommended for acceptance.

For the enlargement of the school in Glengall-road, Cubitt Town (Tower Hamlets Division), by 75 places, for the School Board for London. Mr. E. R. Robson, architect:—

Lathley Bros.	£9,483 0 0
F. & F. J. Wood	8,470 0 0
Patman & Fotheringham	8,430 0 0
C. Wall	8,332 0 0
S. J. Jerrard	8,310 0 0
W. Bangs & Co.	8,246 0 0
Wall Bros.	8,245 0 0
Atherton & Latta	8,150 0 0
C. Cox	8,099 0 0
J. Smith & Sons	8,621 0 0
Perry & Co., Tredegar Works, Bow	8,598 0 0

* Recommended for acceptance.

For the erection of a school to provide accommodation for 600 children on the "Slade" site, Plumstead Common, School (Greenwich Division), for the School Board for London. Mr. E. R. Robson, architect:—

W. Bangs & Co.	£28,108 0 0
Patman & Fotheringham	8,944 0 0
Holloway Bros.	8,860 0 0
Lathley Bros.	7,975 0 0
Atherton & Latta	7,982 0 0
J. Grover	7,960 0 0
C. Wall	7,855 0 0
S. J. Jerrard	7,781 0 0
J. H. Tarrant & Son	7,778 0 0
Stimpson & Co.	7,760 0 0
F. Higgs	7,590 0 0
J. Smith & Sons	7,577 0 0
W. Tongue	7,558 0 0
Perry & Co.	7,553 0 0
F. Johnson	7,436 0 0
Kirk & Randall	7,220 0 0
Loneragan Bros., Herbert-road, Plumstead	6,923 0 0

* Recommended for acceptance.

For the erection of a school to provide accommodation for 1,200 children in Single-street, Bow (Tower Hamlets Division), for the School Board for London. Mr. E. R. Robson, architect:—

M. Gentry	£14,355 0 0
Patman & Fotheringham	14,100 0 0
Kirk & Randall	14,060 0 0
F. & F. J. Wood	13,721 0 0
Perry & Co.	13,856 0 0
Wall Bros.	13,769 0 0
W. Bangs & Co.	13,759 0 0
B. E. Nightingale	13,721 0 0
Stimpson & Co.	13,708 0 0
C. Cox	13,700 0 0
C. Wall	13,675 0 0
Lathley Bros.	13,665 0 0
J. Smith & Sons	13,698 0 0
W. Shurmer	13,590 0 0
S. J. Jerrard	13,440 0 0
Atherton & Latta	13,300 0 0
J. H. Tarrant & Sons (withdrawn)	12,650 0 0
F. Higgs (withdrawn)	12,425 0 0

For erecting three houses at Walthamstow, for Mr. T. T. Millington. Mr. D. Haylock, architect:—

Knight	£1,640 0 0
Baker	1,300 0 0
Shurmer	1,268 0 0

For the enlargement of the Suffolk Convalescent Home at Felixstowe. Mr. E. F. Blashopp, architect, Ipswich:—
 A. Cox £2,340 0 0
 J. Pells & Sons 3,330 0 0
 R. Girdling 3,032 0 0
 R. S. Smith 2,849 0 0
 H. Everett & Son 2,849 0 0
 H. Saunders & Sons 2,824 0 0
 C. A. Wyatt 2,748 10 0
 A. Brown 2,743 0 0
 T. Ward, Felixstowe (accepted) 2,745 0 0

For the erection of new exchange, and part of the offices in connection therewith, in Mount Stuart-square, Cardiff, for the Cardiff Exchange and Office Company, Limited, Messrs. James, Seward, & Thomas, architects, Cardiff. Quantities supplied:—

Contract No. 1.	
Jones Bros.	£29,000 0 0
Shepton 27,225 0 0	
Purnell & Fry 26,645 0 0	
D. J. Davies 26,600 0 0	
F. S. Lock 26,633 0 0	
Armistead & Hodgson, Leeds 26,500 0 0	
C. Burton (accepted) 26,978 0 0	
D. Davies 25,553 0 0	
*All the others of Cardiff.	

For workshop at Colchester Union. Mr. Walter Scargill, architect, Colchester. No quantities:—

Amrose £17 11 8	
Wiles 181 18 0	
Rice 181 16 0	
Sansom 191 10 0	
Start 181 10 0	
Farren 169 0 0	
Lee 165 0 0	
Makier 165 0 0	
Oldridge 147 0 0	
Gladwell 145 0 0	
Pitt 144 19 0	
Garwood (accepted) 144 17 0	

For the erection of a warehouse and offices, Addle Hill for Mr. A. Stedall. Mr. George Edwards, architect, 68, Brompton-road. Quantities supplied by Mr. H. Lovegrove, 26, Budge-row:—

Brass £6,293 0 0	
Good 5,250 0 0	
Martin, Wells & Co. 5,869 0 0	
Chapple 5,886 0 0	
Stimpson & Co. 5,880 0 0	
Lawrence 5,860 0 0	
Scharien & Williams 5,992 0 0	
Higgs & Hill 5,680 0 0	
Conger 5,690 0 0	
Nightingale 5,650 0 0	
Green 5,419 0 0	
Reading (accepted) 5,249 0 0	

For alterations and additions to London and South-Western Bank, Balham Branch. Mr. Charles Bell, architect. Quantities by Mr. H. Lovegrove:—

Johnson £1,920 0 0	
Adamson 1,875 0 0	
Hobbs 1,739 0 0	
Knoch 1,670 0 0	
Traves 1,625 0 0	
Todd 1,593 0 0	
Board 1,560 0 0	
Smith & Son 1,507 0 0	
Scott (error in cast) 1,335 0 0	

For erection of new stabling, &c., for thirty-three horses, at Stockwell-road, Britton, for the London Southern Tramways Company. Mr. Chas. Jones, architect, 151, Ebury-street:—

Evan £210 5 0	
Jackson & Todd 761 0 0	
Coulhard 745 0 0	
Allard 732 8 6	
Holliday & Greenwood 688 13 9	

For alterations and additions at Allerton House, North Chess, for Mr. Charles F. C. Mr. Charles Jones, architect, 161, Ebury-street:—
 Powell, Worcester Park (accepted) £231 0 0
 [No competition.]

For the erection of a house in Mount Park-road, Ealing. Mr. Robert Willey, architect, 86, Ludgate Hill:—

Jones & Sons, Ealing £1,375 0 0	
Penny & Durrell, Ealing 1,220 0 0	
Ricketts, Kilburn 1,220 0 0	
Bailey, Ealing 1,193 0 0	
Nye, Ealing 1,149 0 0	
Waters, Ealing 1,026 0 0	

For additional story and alterations to felt hat works, Hyde, for Messrs. S. Warham & Co. Mr. J. Hunt, architect, 4, Warren-street, Stockport:—
 T. Wharham, Hyde £1,147 13 8
 R. Fairbrother, Hyde 990 0 0
 Statham & Sons, Pendleton 963 0 0
 E. Simpson, Hyde 850 0 0
 S. Robinson, Hyde 812 0 0
 A. Haughton, Godley (accepted) 800 0 0

For two additional rooms to house at Heath-road, Leighton Buzzard, for Miss Grace. Mr. F. Gatto, architect, Leighton Buzzard:—

J. & F. Adams £38 15 0	
H. Edwards 83 0 0	
G. Garside 80 0 0	
Cook & Sons 78 10 0	
A. Miles 75 7 6	
S. Holdstock 75 6 6	
T. P. Webb 75 0 0	

SPECIAL NOTICE.—Correspondents are desired to send full lists of persons tendering, with the amount of each tender. In future, no single name will be given without the amount of the tender, and not then unless we have the assurance of the sender that there was no competition.

To Contributors and Correspondents.

All LETTERS and COMMUNICATIONS referring to LITERARY and ARTISTIC MATTERS must be addressed—

"To the Editor of THE BUILDER,
 46, Catherine-street,
 Covent Garden, W.C.,"

And not to any individual by name.

J. B. (next week).—J. H. B. (next week).—M. E. H.—N. and N.—A. D. (Publicist) shall be glad to hear from you. J. B. N.—D. B. & Co. (shall have consideration).—H. B. & S. (next week).—H. G. Correspondents should address the Editor, and not the Publisher except in cases of business.

All statements of facts, lists of tenders, &c. must be accompanied by the name and address of the sender, not necessarily for publication. We are compelled to decline pointing out books and giving addresses.

Note.—The responsibility of signed articles, and papers read at public meetings, rests, of course, with the authors.

NOTICE TO ADVERTISERS.

Persons advertising in the Builder may have REPLIES ADDRESSED TO THE OFFICE, 46, Catherine-street, Covent-garden, W.C., FREE OF CHARGE. Letters will be forwarded if addressed envelopes are sent, together with sufficient stamps to cover the postage.

CHARGES FOR ADVERTISEMENTS.

SITUATIONS VACANT, PARTNERSHIPS, APPRENTICESHIPS, TRADE, AND GENERAL ADVERTISEMENTS.
 Six lines (about fifty words) or under £s. 6d.
 Each additional line (about ten words) £s. 6d.
 Terms for Series of Trade Advertisements, also for Special Advertisements on front page. Competitions. Contracts. Sales by Auction, &c. may be obtained on application to the Publisher.

SITUATIONS WANTED.
 FOUR Lines (about THIRTY words) or under £s. 6d.
 Each additional line (about ten words) £s. 6d.
 PREPAYMENT IS ABSOLUTELY NECESSARY.
 *Stamps must not be sent, but all small sums should be remitted by Cash in Registered Letters, by Money Order, payable at the Post-office, Covent-garden, W.C. to DOUGLAS FOURDRINIER, Publisher.

Advertisements for the current week's issue must reach the Office before THREE o'clock p.m. on THURSDAY. The Publisher cannot be responsible for DRAWINGS, TESTIMONIALS, &c. left at the Office in reply to Advertisements, and strongly recommends that of the latter COPIES ONLY should be sent.

TERMS OF SUBSCRIPTION.

"THE BUILDER" is supplied direct from the Office to residents in any part of the United Kingdom at the rate of 7s. per annum. PREPAID. Remittances payable to DOUGLAS FOURDRINIER, Publisher, 46, Catherine-street, W.C.

Best Bath Stones.
 WESTWOOD GROUND,
 Box Ground, Combe Down,
 Corsham Down,
 And Farleigh Down.
 RANDALL, SAUNDERS, & CO., Limited,
 Corsham, Wilts. [ADVT.]

SUMMER-DRIED
 Corsham Down Stone
 For Winter Use.
 PICTOR & SONS, BOX, WILTS. [ADVT.]

Doubling Freestone and Ham Hill Stone of best quality, in blocks, or prepared ready for fixing. An inspection of the Doubling Quarries is respectfully solicited; and Architects and others are CAUTIONED against inferior stone. Prices, delivered to any part of the United Kingdom, given on application to CHARLES TRASK, Norton-sub-Hamdon, Ilminster, Somerset.—Agent, Mr. E. WILLIAMS, 73, Charlotte-street, Portland-place, W. [ADVT.]

Doubling Freestone, Of best quality, supplied from their own Quarries and Kilns by SPARKS & HARRIS, Stoke, Ilminster. Agent, Mr. H. MITCHELL, 6, Augustus-road, Hamersmith, London, W. [ADVT.]

BLUE LIAS LIME (Ground or Lump).

Asphalte.
 Seyssel, Patent Metallic Lava, and White Asphaltes.
 M. STODART & CO.
 Office:
 No. 90, Cannon-street, E.C. [ADVT.]

Asphalte.—The Seyssel and Metallic Lava Asphalte Company (Mr. H. Glenn), Office, 88, Poultry, E.C.—The best and cheapest materials for damp courses, railway arches, warehouse floors, flat roofs, stables, cow-sheds and milk-rooms, granaries, tan-rooms, and terraces. [ADVT.]

Immense quantities of
 DRY WAINSCOT,
 DRY MAHOGANY,
 DRY WALNUT,
 in all thicknesses.
 B. J. HUDSON & SONS,
 Whitfield-st., W., and Great Peter-st., S.W. [ADVT.]

Notice of Partnership.—Mr. W. H. BARBER, Surveyor, of No. 12, Buckingham-street, Adelphi, W.C., having taken into Partnership his son, Mr. W. W. BARBER and Mr. A. BOXALL, begs to announce that on and after the 1st of January, 1884, his practice will be carried on by the firm under the name of BARBER, BOXALL, & BARBER.

J. L. BACON & CO.,
 MANUFACTURERS OF IMPROVED
 STEAM AND HOT-WATER
 APPARATUS,
 FOR WARMING AND VENTILATING
 Private Houses, Churches, Schools, Hospitals,
 Manufactories, Greenhouses, &c.
 OFFICES AND SHOW-ROOMS:—
 No. 34, UPPER GLOUCESTER PLACE,
 DORSET SQUARE, LONDON, N.W.
 And at DUBLIN, BELFAST, GLASGOW, and
 NEWCASTLE.
 Illustrated Pamphlet on "Heating" post free.

CHAPPUIS' PATENTS FOR REFLECTING LIGHT.

DAYLIGHT REFLECTORS OF EVERY DESCRIPTION, ALSO ARTIFICIAL LIGHT REFLECTORS.

WHY BURN GAS?—CHAPPUIS' REFLECTORS DIFFUSE DAYLIGHT.—They are exclusively adopted by and fitted at Buckingham Palace, all H.M. Government Offices, Houses of Parliament, H.M. First Commissioner of Works, the Metropolitan Board of Works, the British Museum, South Kensington Museum, Royal Institution, Guildhall Museum, on board H.M. Ships, also Railway Companies' Offices, Hospitals, Institutions, Banks, Insurance Offices, Manufactories, Private Houses and generally from Noblemen's Mansions to Artisans' Work-shops. 30,000 in use in London alone. Patronised by leading Architects, Engineers, Contractors, &c., &c.

N.B.—For Prospectuses and Diagrams, address Stamped Envelope to

P. E. CHAPPUIS, Patentee and Manufacturer, 69, FLEET-STREET, LONDON.

NOTICE.—The POLYGONAL REFLECTOR (Latest Patent) FOR ARTISTIC and PICTURE GALLERIES.

Its construction allows of the angle of light being readily altered so as to reflect in any desirable direction.

The Builder.

Vol. XLV. No. 2134.

SATURDAY, DECEMBER 23, 1922.

ILLUSTRATIONS.

Shop and Cottage, Sutton Coldfield, Warwickshire.—Mr. T. W. Cutler, F.R.I.B.A., Architect	859
New Mission Chapel, St. Faith's, Stoke Newington.—Mr. J. M. Brooks, Architect	860
New Buildings, Brick-court, Temple (Double-page Photo-Lithograph).—Mr. J. Piers St. Aubyn, F.R.I.B.A., Architect	862
Grafton Hall, Cheshire (Double-page Photo-Lithograph).—As restored by Mr. John Birch, Architect	864, 865
New Church, Dovercourt.—Mr. J. E. K. Cutts, Architect	869
Elevation and Plans of the Nelson Club, Warwick.—Mr. F. H. Moore, Architect	871

CONTENTS.

The Metropolitan Board of Works and the Gas Companies.....	817	New Buildings, Middle Temple	856	International Health Exhibition	878
The Architecture of English Fiddlers.....	818	A Working Men's Club	856	Obituary	878
Impressionism in Sculpture.....	849	Lower Dovercourt Church.....	873	The Hospitals Association.....	878
Notes as to the New London New Railway Bridges.....	850	The Work of Art Students	873	Architectural Services	878
Continental Notes	851	The Facade of Thetford Cathedral.....	873	Building Patent Record.....	878
Chimney Construction: Civil and Mechanical Engineers' Society	852	The Dwellings of the London Poor	873	The "and" and "Ye"	878
Some Art Notes in the Music Plinth.....	854	The Destruction of the Port in London	874	Elm Black Floors	879
Institution of Civil Engineers: Annual Meeting and Annual Report	854	Projected Public Works: Railways, Rivers, Docks, Harbours, and Town Improvements	874	Ze "Party Walls"	879
Edinburgh	855	Crestal Palace Engineering School	875	Light Cases: Russell v. Watts	879
St. Mary's Church, Paddington	855	Refuge at the Institute of Architects	875	Case under the Employers' Liability Act: Hill v. Scott	879
Shop and Cottage, Sutton Coldfield, Warwickshire	856	The Constructional Value of Iron and Concrete in Combination	876	Practical News	879
Mission Hall, St. Faith's, Stoke Newington	856	Architects' Assistants	876	Stained Glass	880
Grafton Hall, Cheshire	856	Hull General Infirmary	877	Vaporium.....	880
		The New Borough Asylum for Hull	877	The Uses of the Money Counters	880
				Maschinen	880

The Metropolitan Board of Works and the Gas Companies.

THE considerations which, on the 3rd ultimo (*ante*, p. 580), we laid before our readers as to the proposed amalgamation of the Gas Light and Coke and the South Metropolitan Gas Companies, appear to have had full weight with the advisers of the Metropolitan Board of Works.

The *Times*, indeed, appears to assume that it is rather with an eye to the future extension of its own powers than for any other reason that this body has now come forward to do its best to prevent the amalgamation. Into that question, thorny as it is, we do not propose to enter, though we may be allowed to say that there is no vice in the management of public business of which the *Builder* has been a more consistent opponent than that of deciding important questions on a side issue. To the expedient of dealing with architectural or engineering questions on political lines, for instance, the greater part of the confusion now existing in much of our legislation is attributable. But we must confess that we see no very evident signs of this sideways action in the observations made by the Metropolitan Board of Works on the scheme of amalgamation. The protection of the South Metropolitan district from the imposition of charges higher than those now imposed on it, to which we referred as essential, has been put in the front of the case raised by the Metropolitan Board. That Acts of Parliament are not to be overridden by Orders in Council is another point made by the Board, as to which the argument is so strong that we have not felt it necessary to bring it forward. We cannot conceive that such an order would be sanctioned that should limit or reduce public rights existing under statutory provisions; nor do we suppose that the order would hold good if it is thus infringed on the law. At the same time, it is perhaps well that no mistake should be possible under this head; and that in carrying out any change agreed on by the companies for their mutual advantage, the rights of the consumers should be clearly maintained, and their position shown to be rather improved than deteriorated.

If, however, this safeguard be duly maintained, it is not easy to see that any very great economical advantage is to be derived from the

amalgamation. The river Thames forms a practical boundary of gas and water districts, the effect of which must be to make any fusion of a north and south district partake more of the nature of a federation than of unification. At the present time the cost of producing a given quantity of gas is nearly 20 per cent. higher in the Gas Light and Coke Company's district than it is in the South Metropolitan district. The figures in 1882 were:—For coals and working expenses (less residuals), per 1,000 cubic feet of gas sold, 21.95d. in the former, and 18.37d. in the latter. This difference mainly arises in the cost of coal and the returns from residuals. As for working expenses alone, the prices come out at 14.70d. and 14.78d. per 1,000, or substantially at the same amount. On the other hand, it may be noted that the cost of management (which is included in the above 14d.) is nearly 1d. per thousand more for the smaller than for the larger company. This is neither unnatural nor objectionable. At the same time, it may be taken to show that the margin for saving by uniting the managements is small, as the total cost, not only of the directors and auditors (which might be reduced), but also of collectors, of salaries, and of general charges, only amounts to 1.05d. per 1,000 cubic feet for the Gas Light and Coke Company, and to 1.45d. per 1,000 for the South Metropolitan Company.

There may, of course, be other elements of advantage in consolidation, of which the directors of the respective companies are probably the persons best able to form an opinion. The usual gain to be derived from absence of competition can hardly come in here; or, if it do, it must, we apprehend, be at the cost of the consumer. We can only deal with positive cost. That is, as we have said, considerably less south than it is north of the river. And not only is this so as to coals and working expenses, but interest on capital, in spite of the much larger extent of the district served by the Gas Light and Coke Company, follows the same rule. The net profit per cent. on stock and share capital raised, which in the Gas Light and Coke Company is 10.04 per cent., rises in the case of the South Metropolitan Company to 12.05 per cent. The total dividends on stock and share capital raised are 10.28 and 11.08 per cent. respectively. One important item of comparison is omitted in the annual returns of the gas companies; nor do we find it supplied either in Mr. Field's "Analysis of the Metropolitan and Suburban Gas Companies' Accounts," or in Mr. Firth's "Municipal London." We refer to the area served by each company. In the case of the water companies we know both the area included in Parliamentary powers and the capital, and we can thus calculate the respective cost of the several services for interest on capital or in any other way that may be desired. In the case of the gas companies this demarcation of area is yet

a desideratum, and we can regard only the cost of capital, without being able to see how it has been laid out, as regards area. The total raised capital of the Gas Light and Coke Company is 9,656,147l. (for 1882); that of the South Metropolitan is 2,092,221l. The only means that we have of estimating how far this capital outlay is proportioned to the actual services rendered by the respective companies is by taking the account of the number of tons of coal carbonised by each. These were, 1,305,216 tons for the Gas Light and Coke Company, and 418,722 tons for the South Metropolitan Company, in 1882. If we compare the above figures we find that the capital of the former company has been laid out at the rate of 7.4l. for every ton of coal carbonised in the year, and that of the latter at the rate of 5l. for every ton; the southern company thus having made a more economical outlay of capital by 40 per cent., nearly, as regards work done on a given outlay. When this remark is added to those before made as to the comparative cost of coals and working expenses, it will be seen why the South Metropolitan stock should be the more valuable of the two. We may also understand that several reasons may exist for the swallowing up of the smaller company by the larger. But taking, as we have done, exact figures, it becomes difficult to see how this absorption should profit the shareholders of the purchasing company, except at the cost of the consumers. And if that be really contemplated, South London will owe a considerable debt of gratitude to the Metropolitan Board of Works for thus coming forward to take the bull by the horns.

That the South Metropolitan Gas Company "presents, and has presented for many years, an excellent standard of comparison, and a stimulus to beneficial rivalry as regards other companies," as stated by the Metropolitan Board of Works, is an outcome of the figures that we have above given. The Board also take the same view as that for which we have given chapter and verse as to the doubts to be entertained of the margin existing for reduction of cost of management. If the proposal for which the sanction of an Order in Council is sought, is intended to have the effect of raising the standard or initial price for the South Metropolitan district by 3d. per 1,000 cubic feet, as understood by the Board of Works, we conclude that such a proposal would, of itself, be enough to wreck the scheme. "Of course," as we wrote on the 3rd of November, "the amalgamation can make (or, at all events, should be allowed to make) no difference in this respect." Both companies, as it is, are under the provision of the sliding scale, which has added 1.79d. per 1,000 cubic feet of gas sold to the dividend of the Gas Light and Coke Company, and 2.36d. per 1,000 to that of the South Metropolitan Company. There is thus no feeling of need or pinch of poverty in the matter; and if the

companies see that their own interests promise to be materially advanced by the amalgamation, it will be for them to show that those of their customers are as fully protected.

It may be asked what is the lowest cost at which we may look forward to the production of gas for metropolitan use. In the first instance, in the attempt to reply to this question, we have looked through the analysed expenditure of the existing companies, and taken the lowest price for each item. We must admit that this plan is liable to the objection that some slight differences in management, or in the mode of keeping accounts, may throw an expense that is returned under one head by one company into another column in the accounts of another. With that reserve we give the following figures. The lowest price for coals (or, rather, the highest returns for residual products, leaving the lowest net cost for coal) is in the South Metropolitan Gas Company, and is as low as 3.59d. per 1,000 cubic feet. The least manufacturing charges are those of the Commercial Gas Company of 8.51d. per 1,000. The lowest cost of distribution is 1.70d. per 1,000 in the South Metropolitan district. Taking for the remaining items of rent and taxes, management, Parliamentary and law charges, bad debts, public officers and testing officers, depreciation of works on leasehold, and other charges, the lowest figures in each case, we have 3.05d. for the lot, making a total of 10.85d. per 1,000 cubic feet of gas sold. The lowest gross profit earned is by the London Company, being 11.64d. per 1,000 cubic feet, which, as the standard dividend is 9.83 per cent., we will call 11.86 for a 10 per cent. dividend. The net cost thus arrived at, allowing 10 per cent. dividend, is 23.71d. per 1,000 cubic feet of gas sold; and, making allowances for cross entries, as before said, the division of 10 per cent. to the shareholders seems to be incompatible with a price to the consumer of less than 2s. 6d. per 1,000 cubic feet. With regard to the proportionate outlay of capital, which, in the Gas Light and Coke Company we found to be 7.4l., and in the South Metropolitan 5l. per ton of coal used in the gross, in the London it is 53l. for every ton annually carbonised, and over the average of the four urban companies it is 65l. per ton. If we add a proportionate allowance for the excess of the average capital over that of the London Company above taken, it gives a cost of 32.68d. per 1,000 cubic feet, or a little more than 2½d. per 1,000 above the half-crown before roughly arrived at. This is less than 2d. per 1,000 below the lowest price obtained for gas rental, which is 34.2d. by the South Metropolitan Company. Thus, again, we come to the remark that the actual performance of this company approaches very nearly to what we may regard as the best result likely to be practically attainable in London.

There has, indeed, been the suggestion made, that the production of gas should be conducted at the bottom of a coal mine or mines, and that the gas in its purified state should be sent through a duct or tube extending from the coal districts to London. We are not aware how far the eminent man to whom the idea owes its origin has brought it to the test of figures. The inquiry is worth a little attention.

More than two million tons of coal are now annually carbonised by the four great London gas companies. The volume of gas produced is something over twenty-one milliards (or thousands of millions) of cubic feet. If we divide this formidable total by the number of seconds in a year, the quotient gives a flow of 666 cubic feet per second through the whole time. The question of the velocity with which the gas should be driven through the duct, of the frictional resistance offered by from 150 to 300 miles of pipe (according to the coal field selected for production, and of the forcing arrangements by which this resistance is to be overcome, are points as to which it is premature now to enter into detail. At the velocity of 1 ft. per second the area of cross-section of the tube would be 666 ft., or thirty per cent. over the size of an ordinary railway tunnel. This area would, of course, be diminished in proportion to the excess of speed in the current over 1 ft. per second; while the frictional resistance, on the contrary, will increase with the square of the velocity, which, in this case, will be inversely as the size of the duct. When we come to think of the cost of land, works, and machinery for a connexion of this kind, we think it will be long before the screw collier finds its occupation gone.

It will be on all accounts to be regretted if any misunderstanding should be allowed to exist as to the amalgamation proposed. If it be calculated, on sure data, to effect an economy in the price of London gas, it is only necessary for the promoters to show, first, that such is the case, and secondly, how the consumer is to partake of the advantage, in order to receive warm support. If neither of these things can be shown, and if there be any ground for the suspicion that by watering the stock of the more costly company by an absorption of that of the more economical concern a benefit is to be ensured to the gas proprietors, accompanied by any infringement of the exceptionally good position of the South Metropolitan consumers, it is only necessary to bring this into clear daylight to insure the rejection of the measure. Doubt there ought to be none; for if ever a case has to be decided on its unmistakable merits, such a case is now before the public.

THE ARCHITECTURE OF ENGLISH FICTION.

"As we read in those delightful volumes the England of our ancestors is revived. Out of the fictitious book I get the expression of the life of the time, and the fiction carries a greater amount of truth in solution than the volume which purports to be all true."—THACKERAY.

As the English drama attained at a bound the highest conceivable pitch of perfection, so it was with the English novel,—a fact which has often been noted, but which never ceases to astonish us with every fresh recognition of its force and meaning. All other arts have been slow and gradual in their ripening. The crowning excellence of Greek sculpture was the result of centuries of effort. The progress of the sister art of painting was tardy and tentative. In architecture, the course of its development from the Early Doric, which was doubtless the elaboration of an Egyptian model, to the later refinements of the Ionic or the graceful exuberance of the Corinthian style, the space covers the rise and fall of dynasties and empires. With us the long series of years which elapsed between the imported art of our Norman neighbours and the full development of the purely native Decorated and Perpendicular styles, embrace nearly the whole of our national history. We count the steps by decades, and the pace is so slow as to be almost imperceptible. But the first work of pure fiction still remains amongst the highest achievements of the literary artist, and no one expects to see the Elizabethan drama approached in its essential features, to say nothing of its ever being surpassed by the ages to come.

It is a little unfortunate, perhaps, that the time which marks the rise of the novelist's art was, so far as architecture is concerned, a time of artistic dearth. The indigenous styles had died out, and the alien manner which succeeded them was practised, not as a free and living art, but as a mere branch of reconde learning. In this character it imposed upon the boldest minds, and its canons, ill understood, had an awful and mysterious power. Ordinary men had no personal views or opinions on the subject of the art, or at least none that they dared express and abide by, and had only one, if any, ambition concerning it, viz., to ascertain what the *contemporari* held, and receive their *dieu* implicitly. We nowhere see the sway of this influence more strongly exercised than in the case of the daring and original mind of De Foe. Although his fame hangs mainly upon one work which is more a school-boy's book than anything else, he was the most voluminous author in his time. And not only so, but he was one of the most original thinkers and the most fearless advocates of what he thought whom England has ever produced. His activity was unfortunately for us limited too narrowly to petty political squabbles and intrigues. But the ingenuity and labour of modern admirers of this writer have succeeded in rescuing from oblivion many of the almost countless works which, under one pseudonym or another, flowed for half a century in never-failing copiousness from his pen. In the majority of these there is no reference to architecture to be found. His mind was exercised in far other directions. But in the tour through Great Britain which he published as written "by a gentleman" in 1723-8, we get not only a multitude of interesting facts and acute observations on the England of the time; but numerous glimpses of architectural works, many of them now no more. And it is curious to see the attitude which the writer assumes, as

he is variously confronted with the ancient art which he really admires, as a man of his ardent imagination must necessarily do, and the modern manner which had everywhere displaced the ancient, and the merits of which he accepts on the assurance of those whom he conceives to be much better judges than himself. In some instances he is under obvious restraint in presence of the Mediæval remains. He passes Durham Cathedral and Castle, and with a shrug of the shoulders. At Ely, he limits his speculations to the question how much longer the cathedral can escape complete ruin, and how it happens that destruction has not overtaken it before. As he turns away without a word of praise for that marvellous triumph of the genius of Alan of Walsingham, you might think him insensible to the charm of the fabric, were it not that the beauty of King's College Chapel at Cambridge excites his warmest admiration. He is often betrayed into expressions of genuine appreciation of the old residences of the Elizabethan nobility, but invariably makes a concession to the prevailing opinions by qualifying his admiration with some such phrase as "though in the ancient taste," reminding one of Thackeray's sea-captain, who loved his wife as well as when he first married her, "although she had borne him fourteen children." He sets down the tower of St. Michael's, Cornhill, built in 1723, as "one of the finest Gothic pieces in London," and has these judicious remarks upon the characteristics of Gothic and Italian architecture: "The latter is not really heavy, he says, but only so in comparison with the extravagant airiness and lightness of the other. In Gothic, the designer is bound by no rules of proportion, but what his own fancy suggests. In Classic art the height of every arch 'hath a fixed proportion,' the doors, windows, and ornaments the same. The intercolumniations and their entablatures are all confined to certain admeasurements. But who, he triumphantly asks, 'ever found that exactness observed in any Gothic structure?' Nevertheless, he does, when giving way to his unlearned instincts, dilate upon the charms of Gothic structures, and in the presence of the portentous works which were then rising on the country estates of the great ones of his day, invariably slides off, after giving a few dimensions of the principal front and a reference to their "fluted pillars, triangular pediments, and other beautiful decorations," into a description of the noble vistas and the artificial lakes which appear to have been one of the chief concerns of their owners. Speaking of Burleigh House, "Burleigh House by Stamford Town," he has this curious passage:—"The grandfather of the present earl had a great genius for architecture, and superior judgment, as every part of this noble structure will testify; for he changed the whole face of the building. He pulled down great part of the front next the garden, and turned the old Gothic windows into those spacious *sashes* which are now seen there." In another place he notes that a building has been "sashed in the Tuscan order," getting a little out of his depth, but still dwelling on the improvement of the sash over the old crazy casements of the earlier buildings. In these we get a clue to the whole architectural feeling of the time. We noted before how the old chronicler seized upon the "fornized" character of the dilapidated old manor-house.

Pepys, that ever-charming gossip, in dining with one of his many aristocratic friends at a country seat, notes the discomforts of the old mansion, that the doors have no fastenings, and blow and bang about, with the draughts which freely enter through the ill-glazed and ill-fitting windows. The years succeeding the Restoration mark the rise of a sense of fastidiousness in all the domestic arts and surroundings, and our ideas of comfort date from thence. The life of the house is no longer centred in the hall, and the inmates are no longer insensible to discomforts which their forefathers despised, inured as they were by their rougher outdoor lives, and finding a "natural and prompt alacrity in hardness." Consequently, the parlour and the closet, or private sitting-room, are now universal and indispensable, and we now almost for the first time find a library in every house of the most ordinary pretensions.

The novels of Richardson give us a clear idea of the ideal dwelling of the early years of the eighteenth century. We cannot expect to find

in the long, almost interminable, series of letters, of which his delightful fictions are composed,—letters for the most part written by one love-sick maiden to another,—very frequent direct references to the architecture of the day. "Their hearts were elsewhere." But we do get incidentally much positive information on that head. The idea of everything that is repellent and disagreeable is expressed by the "mounted house" to which Clarissa is to be sent and kept in durance vile. The only notions of excellence in domestic architecture which escape from the pens of his fair correspondents turn upon comfortably-appointed rooms. A "stately, well-ordered, and convenient house," with a pretty library added to make it "more commodious" is the highest reach of their ambition in this direction. The phrase, "a stately, well-furnished and convenient house" recurs frequently throughout Richardson's works, and formulates his views on the point quite exactly. The house which is to be prepared for the divine Pamela is to be more plain than rich, as well in its furniture as in its wainscot, the bed-chambers are to have oaken floors, the parlour doors are to have brass locks and hinges, and are to be so constructed as to fit as "close as a watch-case."—Mr. Peppy's view having now generally prevailed, you see! In the house for Pamela's aged parents the old bow-windows are to be preserved, but they are in this instance not to be shashed, only to have larger panes and more convenient casements to open and shut, and let in the sweet air and light; but this concession to the picturesque is to heighten the charms of the larger and more stately mansion when "Mr. B." shall return thereto. In the City, Mr. B., looking out for a handsome house, found it in the then new buildings "called Hanover-square." In the country he is engaged in cutting vistas through groves aligned upon windows and balconies,—in planting woods and walks, and building alcoves; and in all the writers of this age the same view,—a by no means unreasonable one,—of the essentials of a good house is held and expressed or implied in all they write bearing upon the subject. There is no thought of looking backward with regret at the irregular and fantastic beauties of the buildings with which their Stuart forefathers adorned the land. They regard their own doings with a serene and supreme complacency; and as they doubtless believed the preposterous hoops, the powdered head-dresses, and the rest of their costume the most elegant and becoming ever invented; so they, no doubt, considered the handsome new buildings in Hanover-square the highest reach of art. The fiction of this period is composed of love and gallantry, eating, drinking, and horse-play, and, beyond these, the writers and those for whom they wrote do not appear to have had a single idea. Richardson has by far the most refined mind of the great novelists of which he was the head and leader, and we have seen that now and then he lets us into the secret of his preferences in the art of architecture. Fielding would appear to have scarcely any appreciation of art,—he drops a few words in admiration of Greenwich Hospital, which give us a clue to his taste being quite in accord with that of his time so far as he may be said to have had any taste in art matters. Smollett simply ignores architecture altogether. He takes his heroes all over the Continent, and nearly all over the world, and passes Rouen, Amiens, Paris, Brussels, without the least indication of there being anything in the architecture of these places to call for a casual reference. He walks their antique streets with a constant leer not pleasant to note. His whole energies are bent upon the invention or record of low intrigues, laughable complications arising from the pursuit of what passed for love, and boisterous practical joking. This apathy need not strike us with surprise; there is not much about architecture in the "Pickwick Papers"; the object of the author was to raise a laugh, and neither he nor his audience were very particular as to the means employed; but the works which were most popular at the time give us an insight to the manners and morals of the time, and we see a temper of mind which is not calculated to receive the impressions of art, or to fit men for its highest achievements. The few who accomplished works of undoubted merit were rather a protest against the age in which they lived than a sample of their generation. After a season of remarkable apathy a reaction set in, and architecture formed one of the most universal and engaging studies of all

who pretended to any education. In considering the reviving claims of pure art we shall find ample materials,—materials which are absent from the works of the novelists of the seventeenth and eighteenth centuries, whose æsthetic creed, from Temple and Smollett, may be stated in their favourite formula, ease, convenience, elegance, and, in exceptional cases, magnificence, cold, formal, and stately. Of picturesque beauty they had no sense. Beyond personal ease and comfort a mechanical symmetry,—"the last resource of mediocrity,"—satisfied all their desires on the score of art.

IMPRESSIONISM IN SCULPTURE.

In considering this subject, it must be remembered that our distinct ideas of naturalistic, conventional, or what is now called impressionist treatment are essentially modern. They are the progeny of the original idea of imitation, which have become detailed and specialised in the gradual development of art. This law applies to all human workmanship; to poetry as well as to the arts of visible design. More than that, it is characteristic of the handiwork of nature herself, and is illustrated in a wonderful manner by the series of palæontologic forms.

The conventional form which, at so early a date, was assumed by Egyptian art, may probably be attributed to no more noble cause than the want of inventive skill on the part of the workman; that want being a characteristic of his race, and contrasting forcibly with the opposite quality in the Greek artists, among whom it has usually been more easy to invent or to modify, than slavishly to copy. We may see the same variety exhibited at the present day among children, or among those work-people who are still in a similarly undeveloped stage of art education. One youthful student, eager to produce work of an exactness that shall satisfy his eye, while it is beyond the skill of his hand, will work by templates. If he had a regiment of cardboard soldiers to make, he would trace them all from the first of the file, and would thus produce a regular, if somewhat unmeaning, series of mimic soldiery. Another lad, working with the same object, will give a somewhat different proportion and attitude to each of his miniature host. The Egyptian artists did the former. Having arrived, whether by the road that we suggest, or by any other, at a delineation of the form of a king or a god which was, if not altogether satisfactory, the best at their command, they endeavoured to perpetuate the symbol. This is not matter of opinion. We know the rules by which they worked. We have found, in some of the unfinished tombs, the lines by which the work was set out,—a series of parallel lines, intersecting the chief points of the figures; and during the long period that stretches back from the age of the Ptolemies to that of the first Egyptian dynasty the canon has only twice been varied. Conventional rule, thus slightly modified, has been adhered to in the Valley of the Nile for more than 4,000 years. But we regard this rule, not as in any way resembling the effort of the modern designer to give a certain degree of non-natural rendering to a vegetable or animal form for a definite purpose, but as having been resorted to as affording the readiest means by which workmen not naturally of great artistic gifts might carry on the traditions of the founders of their art. The forms are what we now call conventional. To the Egyptian they were the best imitation of nature at his command. He was not advanced enough to dissect the art idea,—to separate outline and colour, repose and motion. He reproduced an Isis or a Pharaoh as closely as he could as a copy of the Isis or the Pharaoh that had been venerated at least as far back as the time of the last previous change of dynasty, or of political and social order.

The Greek sculptor,—we know but little of the Greek painters,—passed in a lifetime through more study, thought, and change, than the Egyptian artist had undergone in, perhaps, several centuries. In so doing,—we know, from the Apollo of Tegæa and other ancient relics how near Greek art was to Egyptian art at the time of the birth of the former,—they separated the ideas of outline and of colour, of motion and of repose. Thus sculpture was born. We have lost very much of the intermediate history, owing to the fact that the education of the Greek sculptor was carried out by working in

bronze, and that the intrinsic value of the material led, in most cases, to the destruction of old works of art, in order to realise their metallic value. What Phidias and his school and successors did, in our opinion, was to introduce a new material, and to exert on the lovely substance furnished by the quarries of Paros and of Pentelicos the craftsmanship which the profession had acquired by their labours in clay, in wax, in bronze, and in the precious metals.

Of the wedlock between the art of Phidias and the marble of Pentelicos, sculpture, in its present and noblest form, was born. The moment was propitious. The degree of skill attained by the artist was not at its some, but was in its grandest stage. In the short time that elapsed down to the period of Alexander the Great, the art of cutting marble advanced very considerably. But the skill displayed was at the expense of the true art feeling. The wonderful excellence of portraiture attained by Pyrgoteles and his contemporaries was, in itself, greater than that of Phidias. But even the magnificent rendering of the features of Alexander, which was reserved to two or three specified artists (approached only since that time by some of the Italian medallists, and by the English die-sinkers of Carolinian times) is devoid of that sculptural grandeur which sits on the passionless features of the Phidian marbles.

It is possible that, from our present standpoint, looking at such magnificent fragments as are to be found in the British Museum, we may even form a purer idea of abstract sculpture than did the Greek masters in whose works we find the most signal examples of that excellence. For there is no doubt that gliding and staining were not altogether dissociated from sculpture in the time of Phidias. Even marble was so treated; and the chryselephantine statues, which we should not, with our present views, admit to be pure sculpture at all, were among the most highly valued works of Phidias and his school, not in the opinion of the masses alone but also in that of the artists themselves. Thus that elevated conception of sculpture which can see so much more poetry in a fractured torso than in a figure made presentable and perfect by the file and the cement of Bernini, is probably rather the result of a retrospect of the progress of art than an idea consciously wrought out by the first masters of antique sculpture.

From the days of these chryselephantine statues to our own, then, there has existed, side by side with whatever was present in the traditions of the sculptor of the day, the influence of the impure, of the mixed, of what may be called the impressionist. We see it wherever there is a mixture of materials, of variously-coloured marbles, of alabaster and bronze, of wood and gold. Works thus produced, while often displaying admirable skill, and even high taste of a certain order, are, in our view, rather furniture than sculpture. By the aid of adequate lighting such works may be made almost deceptions. But so can modelling in wax; and when a cast taken in wax from a face is put on a lay figure which may be attired in the actual dress of the person thus commemorated, deception, or, to revert to our starting-point, imitation, is carried to its acme. But it is not sculpture; nor is it, we hold, legitimate, or, at all events, high art.

The tendency to produce this bastard form of impressionist sculpture is rather on the increase than otherwise at the present day. We may refer to one item. Koublicac was at one time almost alone among sculptors as giving that indication of the iris, or pupil of the eye, which is found in some of his finest busts, notably in his autographic portrait, which is before us as we write. Even this mode of giving life to a face has been criticised, although, when work thus treated is compared with broad open eyes of uniform deadness between the lids, there can be little hesitation as to which is the finest work. But in the modern French *terra cotta*s, whether of a grotesque or of an erotic character, this rendering of the pupil becomes positively obtrusive. We find it in some of the Mediæval work, notably in the Della Robbia busts and figures, but nowhere do we find it so pushed to caricature as in the French *terra cotta* of the day. It has made its way into the Italian studios. In this we consider that we find not only impressionist sculpture, but work essentially of a base and ignoble character, although it may be a faithful and wonderful transmission of the idea which the modeller intended to embody.

We can mention another case, the experience of which is deserving of record and of attention. It was the case of the production of a very humble effect,—only the execution of a few wooden heads of about one-quarter life-size, for the purpose of a miniature theatre. The heads were designed and executed by an artist who usually wrought in ivory, a material which admits of a combination of boldness and of delicacy in a way attainable in no other instance. The little heads were set in a vice, and rapidly struck out with a carpenter's mallet and chisel. The effect, after a very brief time of work, was admirable. There was character,—the intended character,—in each. Not content with this, the artist then belooked himself to smooth off the rough parts, and give a fair finish to the heads. But as he did so, the life and fire departed, and finally he arrived at nothing but common-place dolls. The fault, we take it, lay rather in the material than in the workman. But in the rough heads there was the impressionist character of the sketch,—which presented a life and fire beyond that which wood could support if treated like a nobler material.

In sculpture, therefore, the artist is limited in his effects by the nature of the material on which he works, in a manner which none but a practical man can realise. Thus, if it be desired to produce a delicate design in an ivory relief, the work will be altogether different if executed in that pure delicate ivory known as "green ivory," in which the grain of the tusk is almost imperceptible; in the soft yellow grainless ivory, called Egyptian, which bruises almost like human flesh; or in the ordinary coarse-grained ivory of India. The effect of material in controlling style reacts on the artist, and the sculptor who succeeds in ivory will probably fail in wood; while, on the other hand, the process may be reversed, and most objects executed in ivory are essentially wooden in style.

What the crayon is to the painter, clay is to the sculptor,—the means of embodying his first thoughts in hastily-sketched outline. And as some of the sketches of the greatest artists,—we have in mind more especially a Saint Anne of Leonardo da Vinci,—may seem to breathe more of the true inspiration of art than does the finished rendering of the subject in oil, so it may be that a bit of baked clay has a beauty which evaporates in the attempt to translate it into marble. But such facts only show that the hand of the artist is not educated to the level of his imagination. The excellence of the sketch, instead of being regarded as an ultimate aim, should be taken only as a step towards the more perfect excellence of the finished work. Loss of fire or of grace in translation is due, not to the failure of the artist's conception, but to the imperfection of his mastery of his tools. And this brings us round again to the real secret of all those attempts at founding new schools of art amongst ourselves at the present day, in which, with more or less (generally less) excellence of workmanship there is always blended something that is obnoxious to criticism. The secret is, that the artist omits an essential portion of his proper work, in order to give more emphasis to another portion. Wishing to avoid blurred outline, for instance, he altogether omits aerial perspective. Anxious to avoid hard lines, on the ground that he cannot detect them in nature, he produces smudge. Wishing to preserve the freedom of a sketch in clay, he sends to the furnace an odious caricature.

For let it be remembered that there is a profound truth in the apothegm, *ars longa*. While science is rapidly advancing, art has long since reached an excellence in sculpture, painting, and architecture which our utmost hope can only be to maintain. Of all the gifts which the advance of science has placed at our command, we can only mention one which is of material service to the artist. That is the command of the mathematical theory of perspective, in which we have made a great advance since the time of Leonardo da Vinci. It is true that in some noble paintings,—remarkably in some by Rubens, where distant landscape is thrown in as background to portraiture,—the want of perspective knowledge is not apparent. The artist painted the landscape as he saw it, and he drew it truly. But, on the other hand, there is no certitude that such will be the case; and there are many examples to the contrary. In knowing, or having the means of knowing, how a given object will look from a given point of view, the student of to-day has, it is true, a great advantage over the master of three

centuries ago. But in other respects,—we may, perhaps, say in all other respects,—the student of the present day stands on lower ground than his predecessors. Even as to the manipulation and materials of the artist this is the case. Who can now dip his brush in the brilliant scarlets of Botticelli, or in the pure blues of Perugino? Why do the beauties limned by Sir Joshua look like pale and melancholy ghosts by the side of the ever buxom youth of Palma's daughter? Full as the history of art is of the efforts of artists to discover the lost secrets of the ancient colourists, it is but full of the record of failures.

The first advance, then, towards a true elevation of the art of the present day must be, it seems to us, rightly to understand where and in what respects the summit of excellence has already been attained, and faithfully to study the examples. It may be said that the artist should copy, not the works of art, but those of Nature. But what there is of truth in the remark is only truism of the most paltry kind. Who but the true artist ever sees nature? And what preface has the man to be regarded as an artist at all, whose imagination is not kindled by being enabled to look at nature through the eyes of those who were deep in her most cunning secrets? Study, no doubt, may be partial and misdirected. It is lamentable to see, for example, in the sketch-book of so refined a draughtsman as Flaxman, not one note of the living beauty of Italy; that is to say, of the women of Italy, in pages where every relic of Roman art, poor as it usually is, is so assiduously copied. Flaxman's eye was too coldly fixed on the reflection of departed grandeur. If he had drawn inspiration from the forms and faces which no one can dwell long in Italy without meeting, he might have given us the classical type as it yet lives and moves in Magna Grecia, instead of a reflection, in marble, of a faded copy, also in marble, of the heroic life of 2,000 years ago.

Those who think with us will not differ from the conclusion, that the impressionist is to be found in sculpture as well as in painting; that it may usually be characterised as "the slovenly"; and that the duration of any pretended school of which the *ratio artis* is the omission of one or more essential elements of true art, will be as transitory as its error deserves.

NOTES AS TO SOME COLOSSAL NEW RAILWAY BRIDGES.

MR. WILLIAM HEMINGWAY MILLS, M. Inst. C.E., in the course of an address recently delivered by him as President of the Institution of Civil Engineers of Ireland, said:—

There are so many large and important works recently finished, as well as others now in course of construction or approaching completion, that it would be next to impossible to follow up the history and particulars of each. There are, however, some of them which, from peculiarity of position or originality of design, are of special interest to engineers. In the Forth Viaduct, East River Bridge New York, and Kinzua Viaduct on the Erie Railway, we have three enormous works, each one of a totally different character.

The Forth Viaduct presents us with a striking departure from the generally recognised arrangements for long-span bridges. The hitherto unattempted great span of 1,700 ft. has led to the adoption of the system of cantilevers and central girders, and in the working out and completion of this great work we shall obtain valuable practical information of a system of which our experience has hitherto been limited to theory or experiment. The peculiar features of the undertaking have called for unusual care and attention to all matters of detail. The enormous surface and weight of the structure itself, taken in conjunction with what must be allowed for as a possible moving load, has demanded special consideration in all matters of foundations, strains on materials, lateral stability, and wind pressure. Steel will play an important part in the construction, as the use of this material, with its increased strength per square inch as compared with wrought iron, will result in the saving of a large amount of dead weight. In point of magnitude this viaduct will be unrivalled. Its length will be over a mile, divided into two spans of 1,700 ft., two of 675 ft., fourteen of 168 ft., and six of 50 ft. In the large or 1,700 ft. span, each cantilever will be 675 ft. long, with a depth of 350 ft. at

the piers, and each central or connecting girder 350 ft. long by 50 ft. deep. These enormous weights, placed at a height of 150 ft. above high-water mark, will be carried on substantial piers of masonry. It is estimated that this viaduct will cost between one-and-a-half and two millions. The undertaking of such a large and expensive work simply to avoid a detour serves to illustrate the growing importance that is attached to expedition in transit. Doubtless the commercial advantages to be gained in the saving of time and distance were well studied before the outlay was sanctioned, or we should not see the commencement of a work which must be not only exceptionally costly in its construction, but also a source of very heavy annual expense in inspection, painting, and maintenance in the future.

The East River Bridge, connecting New York and Brooklyn, is an example of the suspension principle on its grandest scale. The idea of connecting New York and Brooklyn by means of a bridge originated many years ago, but the difficulties and objections raised to a number of piers in the waterway caused the scheme to be laid aside, and it was not until the success of the great suspension bridges at Niagara, Cincinnati, and elsewhere, had been fairly established, that the project was again brought forward. The large spans and small obstruction to the waterway, offered by the suspension principle, together with the growing demand on the part of the public for more direct and expeditious communication between the opposite sides of the river, led to the revival of a scheme on a much larger and more comprehensive scale, and to this the world is indebted for a bridge which is not only the largest of its kind in every way, but may be fairly taken to represent all the latest improvements of details which previous experience have suggested. The total length of the bridge is 5,989 ft., of which the length of the main span is 1,595 ft. 6 in., and of each of the side or land spans 930 ft. The height from the lower floorway of the centre of the main span to the water-level is 135 ft. 6 in., and from the roadway at the piers to the water-level, 119 ft.; height of arch of the towers of the piers above the roadway, 117 ft., and total height of the towers above the roadway, 159 ft. The size of the towers at high-water level is 140 ft. by 59 ft., and at the top or roadway level, 136 ft. by 53 ft. The width of opening through the towers is 33 ft. 9 in. The full width of the floorway is 85 ft., carried by four steel wire cables, each 1½ in. in diameter. These cables are so arranged as to provide for a raised platform or promenade, about 15 ft. wide, for pedestrians, along the centre of the bridge. On each side of this promenade there is a line of rails for railway carriages and wagons, and outside of these are the roadways, 18 ft. 6 in. wide, one on each side of the bridge, to carry the ordinary carriage, cart, and tramway traffic. Each cable is 3,578 ft. long, and contains 6,434 steel wires. In splicing or coupling the wires of the cables, a different method was adopted to that generally in use. Instead of filing the two ends to a flat taper, and then binding with fine wire, the two ends were screwed, the one with a right hand and the other with a left hand thread, and then by means of a steel coupling tube with corresponding right and left hand threads, the two ends of the wire were brought into close contact, and a strong even joint was obtained. The cross girders, or floor-beams, are 85 ft. long, or the full width of the bridge. They are of the lattice type, and made of steel. Much time and money was expended in getting in the timber caissons and foundations of the New York and Brooklyn towers, and some idea may be obtained of their magnitude when we observe that the size of the former was 172 ft. by 102 ft., and of the latter, 168 ft. by 102 ft. The depth of the New York tower foundations was 78 ft. 6 in. below high-water mark; and this tower, as completed, contains 46,945 cubic yards of masonry. The depth of the Brooklyn tower foundations was 44 ft. 6 in. below high-water mark, and the completed tower contains 33,214 cubic yards of masonry. The cost of this great bridge, which combines accommodation for ordinary road traffic, foot passengers, tramways, and railways, is estimated at nearly 3,000,000, sterling, exclusive of the purchase and compensations of the land and building property.

The Kinzua Viaduct, on a branch of the Erie Railway, in the State of Pennsylvania, is remarkable for its great height and the lightness

and peculiar arrangement of the iron piers or towers. Situated at a high level, on a spur of the Alleghany Mountains, the roadway of the viaduct is 2,065 ft. above sea level. It may be interesting to note that this spur forms part of a water-shed whose waters flow north into the Gulf of St. Lawrence, east into Chesapeake Bay, and south into the Gulf of Mexico. Designed to save about eight miles of a *détour*, and to avoid long lengths of heavy gradients, this viaduct has been completed in very short time, and at a very moderate cost. The total length is 2,051 ft., and greatest height 301 ft. from rail level to bed of stream. It consists of twenty-one spans of 61 ft., carried on abutments of masonry and intermediate piers of light iron-work. The main girders are of the usual lattice type, and weigh about 6 tons each. They are placed at 10-ft. centres, and carry the roadway on the top. The piers or towers consist of iron columns, braced together horizontally by lattice struts, and diagonally by iron rods. These piers, each formed of four main columns, are only 10 ft. wide on the top in a transverse direction to the viaduct, one column being placed under each main girder, but they are 38 ft. 6 in. long in the direction of the viaduct. The columns have a spread or inclination outwards in the transverse direction of one-third of the height, so that the size of the base of the highest pier is 103 ft. by 38 ft. 6 in. at the level where the feet of the iron columns rest on the small piers of masonry. The roadway is, therefore, carried upon a series of lattice girders of spans of 61 ft. and 38 ft. 6 in. alternately. The proportion of span to height differs so much in this viaduct to what has hitherto been adopted in several works of a similar nature, as to form an interesting study for engineers. The piers or towers, however, claim our principal attention, as they introduce a novelty and boldness of conception which appears to have been carried out most successfully. Being for a single line, the width of pier on top had to be kept to 10 ft., the distance found to be the best for spacing the main-line girders, but by making the top length 38 ft. 6 in. and by giving so much rake to the columns in the transverse direction, each pier has a very wide base, especially arranged to insure stability and effectually resist any overturning influence. The weight of these lofty columns themselves, together with that of a passing train, taken in conjunction with the strains arising from the fact of the columns being placed one-third from the vertical, has called for unusual care and attention in the designing and proportioning of the different parts of the structure. The viaduct is calculated to carry a moving load of 3,075 lb. per lineal foot, with a factor of safety of 5. It is stated to contain 3,500,000 lb. of iron (1,562½ tons), and to have cost 275,000 dols. Besides the preceding there are many other bridges of recent construction embodying novelty in design and variety in application which must be of much interest to the profession.

The iron arch bridge over the Douro in Portugal is a striking example of one way of carrying a high-level railway over a waterway without the obstruction of intermediate piers. The clear span is 525 ft., and height from low-water mark to the underside of arch at the crown is 198 ft., being 30 ft. higher than the Falls of Niagara. The bridge is for a single line of railway, and consists of two ribs, placed 12·96 ft. from centre to centre at the crown, and 49·21 ft. from centre to centre at the springing. The weight of the ironwork in the arch itself is stated to be 504 tons, and of the girders, supports, and permanent way over the arch 223 tons, making a gross total weight of the central opening of 727 tons. The rolling load was calculated not to exceed 24 cwt. per lineal foot.

In the railway bridge over the Elbe at Hamburg we have a fine example of the double-bow girder. This bridge has three spans of 316 ft., and four spans of 70 ft. The roadway carries two lines of railway and two footways. The double-bow girders, of which there are two to each span, are wrought iron, and are placed between a line of rails and a footway. Local circumstances compelled the adoption of a low rail level, and on this account the underside of the roadway is only 6 ft. above the level of the highest-known floods. The total amount of ironwork in one of the large or 316-ft. spans is 572 tons, made up of 418 tons in the two double-bow girders, and 154 tons in the roadway and horizontal bracing.

We have a very handsome specimen of the simple bowstring principle in the bridge carry-

ing the North-Eastern Railway over the River Wear at Sunderland. There are two girders for the double line of rails. The clear span is 300 ft., with a depth in the centre of 42 ft. The height from high-water level to underside of girder is 86 ft. The girders, which are of wrought iron, are fixed at one end, and are free to expand on rollers at the other. Each girder weighs a little over 500 tons, or, taking the two together, with the cross-girders, roadway, and permanent way, the total weight of the superstructure is about 1,069 tons.

CONTINENTAL NOTES.

FAMILIAR as Italy and the many phases of its artistic history, there is, we think it will be admitted, a large field open to the new journalistic venture which commences its existence in Rome with the New Year. *L'Art en Italie* is to be published in French, and is to keep the world interested in matters artistic, fully acquainted with all the art doings of the Italian peninsula in painting, architecture, sculpture, archaeology; and, apparently on the principle of Nimrod's "dash of religion" in his sporting communications to a famous clerical journal of the past, there is to be a "dash of fashion" to please the more frivolous subscribers. With contributors such as those who have so far promised their support,—among these we may mention the well-known connoisseur *principi* Odescalchi, a familiar figure in the foreign colony of Rome,—the new venture should have before it a long career, with so rich a fund of material to draw upon as the artistic industry of Italy, Modern, Renaissance, and Classic.

While the art of France can be directly traced as an outcome of the art of Italy,—be this said in all due deference to the delicate artists who adorned the cathedrals of Chartres and Amiens long before the advent of the Pisan school,—it is none the less a fact familiar to all acquainted with the artistic history of Europe that France, after "the discovery of Italy" by Louis XII., succeeded the once classic peninsula as the world's arbiter in taste; and before long struck out an entirely original style. Nothing can more distinctly prove the marked originality of French art at its culminating point than the characteristic collection of eighteenth-century objects which, for the purpose of enriching a Parisian charity, has been gathered together at M. Petit's well-known rooms in the Rue de Sèze. The Rothschilds, the Emperor of Russia, Sir Richard Wallace, and a host of other connoisseurs, have generously laid the contents of their cabinets at the disposition of the organisers of the exhibition, and the success of the show is already immense. By a curious coincidence we in London are to see this winter a selection of characteristic creations of our eighteenth-century art, in the exhibition of works by Sir Joshua Reynolds at the Grosvenor Gallery, and in the several Romney and Gainsborough and other last-century masters brought together by the Royal Academy. The comparison is not uninteresting, and let us hasten to say, in the direction of pictorial art, singularly advantageous to England. The walls of the gallery in the Rue de Sèze may glow with historic portraits and charming *genre* subjects by Boucher and Greuze, by Nattier and Drouais, Chardin, Tocqué, Fragonard, Lancret, Watteau, and Pater. Madame du Barry may display her frail charms as depicted by the luscious brush of Boucher; such a show stands but poorly by the side of a gallery of Reynolds's characteristic, honest, solidly-painted, simple, truly English portraits of the men and women of the fashionable world of London a hundred years ago. In the specimens of French industrial art, such as the delicate *objets de vitrine* exhibited, we have, of course, to yield the palm to France, as all will frankly admit who are familiar with the skill of the French enamellers, the jewellers and goldsmiths, the chasers, the fan-painters, and the cabinet-makers, choice specimens of whose powers are exhibited in the Rue de Sèze. France has, of course, to some extent contrived till recent years to retain her reputation in the industrial arts; but, of late, the spread of art education in England, Germany, and the United States has largely tended to assail the long-admitted superiority of the French. The question, as our readers are mostly aware, has been well taken in hand. In addition to the Museum of Decorative Art, the lottery for the formation of which on a scale rivalling our

South Kensington Museum is occupying at the present moment no small amount of Parisian attention, the Paris municipality are actively encouraging the spread of sound industrial instruction. Within a few days past the Tenth *Arrondissement*, or parish, has opened a school of "applied art" in the Rue des Petits Hôtels, on the principle of that already existing in the Rue Ste. Elizabeth, and in which young workmen, in the morning and evening, are enabled to learn, gratuitously and with the encouragement of bursaries, drawing, geometry, modelling, and the history of art,—subjects which, in their application to industry, have each and all to be followed by the pupils. In the Tenth *Arrondissement* school the several industries of that busy neighbourhood, ceramics, glass, enamel, wood-carving, metal work, and tissues are especially studied. As a step in the same direction, we learn that a school will shortly be opened in the midst of the Faubourg St. Antoine, the great furniture neighbourhood, the Curtin-road of Paris, with a view to the special education of young cabinetmakers and upholsterers. The municipality have also determined on the formation of a large reference-library of works on industrial art. Competition, as some of our more advanced artistic philosophers have perhaps only too clearly proved, may have disastrous effects on art; but do we not see here a possible advantage in this awakening from the apathy of decaying tradition into which the industrial arts have been only too surely falling since those declining days of the Empress Josephine, in whose "cultivated court" a brilliant contemporary dramatist has told us that "art stopped short"? England, fortunately, has less to reproach herself with in this direction; France has frankly admitted she had much to learn from our system. Let but our young artists and art-workers resist the too all-involving,—some term it agnostic,—spirit of modern society, and all may go well for the near future.

The authority of experts in matters artistic has been rudely shaken of late in our country, and singularly inconsequent, ignorant, and impertinent have been the remarks which, within a few days past, have found their way into our leading journals respecting the discredited opinion of a representative body of Academicians. By a curious coincidence the authority of artistic experts is shortly to be appealed to in the French courts in the question of deciding the authenticity of a picture by Corot. Apart from the fact that such a decision is far more difficult in the case of a picture than in that of a piece of sculpture, we have not the least doubt that the opinion of the eminent expert (a member of the Institute) called in will be unanimously accepted. Such an inconsequence as believing that in matters artistic the practised eye of the professional artist is of no more value than that of the first comer would be impossible in a community trained to a proper appreciation of the serious nature of the artist's pursuit. The decision of the two trials, though dissimilar in character, will singularly serve to show the difference of the two societies gathered, one on the banks of the Thames, the other on those of the Seine.

With all its refinements, the civilisation of Paris none the less breaks down from time to time. Paris is suffering at the present moment in a manner very similar to the great English metropolis, and "horrible Paris," like "horrible London," shows to the observant eye, familiar only with the brilliancy of the Champs Elysées and the "strangers' quarter," that Paris, like every well-arranged French flat, has its *cabinet noir*. Doubtless from the fact that the French capital enjoys a centralised and rational form of government, crying grievances can be more readily attended to than in a community regulated like our own by an apparently inextricable confusion of conflicting authorities. A recent decree of the Prefect of Police is levelled at the terrible condition of the numerous *logements garnis*, or furnished lodging-houses, which serve as the home of a vast number of the floating population of Paris. Speculators, as in our country, have been battenning on the proceeds of acres of unwholesome and overcrowded dwellings,—a state of affairs which will be largely checked by the present law. No owner of property will henceforth be allowed to let out rooms the height of which is not at least 2½ metres (8 ft. 1½ in.), and containing a cubage of air equal to 14 cubic metres (something over 18 cubic yards) for each occupant. The flooring is to be of some completely non-absorbent

material, so as to permit of frequent washing. The rooms must be adequately ventilated by open gratings or other similar simple means; while as a further precaution the proprietors are to be held to some extent responsible for the conduct of their lodgers. Owing to the number of inspectors the French Prefect of Police has at his disposition, a number which will be increased for the new service,—there will be few of the difficulties which are encountered in our country by the absurd insufficiency in the staff of officers employed, and by the limited powers of inspection at their disposal, two of the features which the intelligent members of "the force" have never failed to bring forward as important reasons for the revolting yet unknown condition of many portions of "horrible London."

Our admirable metropolitan contemporary, the historic *Courrier de l'Europe*,—which takes a fresh lease of life with the new year,—announces a probable international exhibition at Brussels. In the mean time the *Courrier*, it may be mentioned as interesting to some of our readers, undertakes to manage all formalities of admission, space, &c., at the forthcoming Continental exhibitions of the next three or four years,—the electric exhibition at Turin in May, the Fifth international exhibition of 1885, the Berlin international exhibition of 1886, and that at Rome in 1887.

We learn that the bureau of the Paris Société Centrale des Architectes has renewed its "bureau" for the forthcoming year as follows:—president, M. Questel, of the Institute; vice-presidents, M. A. Normand and M. Joly; chief secretary, M. Lucien Etienne; treasurer, M. Feydeau; and censeurs, MM. Bailly, Uchard, and Henard.

CHIMNEY CONSTRUCTION.

CIVIL AND MECHANICAL ENGINEERS' SOCIETY.

At the second meeting of this society for the present session, held on the 19th inst., the paper read was on "Chimney Construction," conjointly prepared by Messrs. R. M. Bancroft and F. J. Bancroft. The paper was very completely illustrated by plans, sections, &c.*

The authors commenced by observing that since the reading of the paper on the same subject by Mr. R. M. Bancroft read, in January, 1878,† numerous inquiries had been received on the subject from all parts of the United Kingdom and America, owing to the interest and importance of the subject, and in consequence of these inquiries they had been led to continue their investigations in this branch of architectural and engineering construction.

Chimneys are constructed principally for two purposes,—firstly, to create the necessary draught for the combustion of fuel; secondly, to convey the noxious gases to such a height that they shall be so intermingled with the atmosphere as not to be injurious to the health of the neighbourhood.

A chimney-shaft when in work contains a tall column of heated air, which, being lighter than the outside atmosphere, is forced up by a corresponding column of atmospheric air pressing into the entrance of the furnace; thus a displacement of hot air is constantly being effected, and its place filled by normal air forcing itself through the furnace of the boiler, which in its turn is heated and displaced. The column of atmospheric air and the column of rarefied air in the chimney are somewhat like a pair of scales, or the two ends of a lever of which the boiler is the fulcrum.

Foundations.—In building large chimneys one of the most important points is the construction of the foundation. Very much will depend, of course, upon the nature of the ground. When we are on solid rock, it is only necessary to excavate to such a depth that the heat of the gases will not materially affect the natural stone, and to a depth sufficient to allow the necessary spreading of the base. In many instances, however, chimney stacks have to be built near rivers and on sites where the upper strata are of alluvial clay or made ground, and it is necessary to carry the foundation deep down until a stiff clay, hard sand, or rock bottom is reached; this frequently entails excavation 25 ft. or 30 ft. deep or even more, and it is not only requisite that the foundation should be large enough to carry

the superincumbent weight, but also that it should be of such an area that it will not allow the base to be forced into the yielding ground. These deep foundations are usually constructed of concrete. In some cases piles are driven in to form the foundation, as, among others, in a brick chimney erected at Boston and in an iron chimney constructed at Ohio, U.S.A. This is a measure on which the engineers must decide upon the advisability of using it, so as to economise material without risking unequal subsidence, which cannot be too carefully guarded against; and, in fact, it is the practice in the erection of tall stacks to construct the foundation and pedestal, if any, and allow them to stand some considerable time before proceeding with the shaft proper, in order that the work may set and any slight settling take place before a great weight is built upon it.* As a remarkable instance of the general settlement of the foundation of a shaft, we may mention a chimney which was built by Mr. Clegg, at Fulham, over a quicksand in which an iron rod sank to a depth of 15 ft. with little more than its own weight as pressure. During the erection the concrete foundation sank bodily 1 ft. 4½ in. without cracking the shaft or causing it to deviate from the perpendicular. From this it will naturally follow that in all cases the ground at the foundation should be equally resistant, or unequal settling will take place, as in the disastrous case of the Newlands Mill chimney, Bradford. Some of the pressures exerted upon the foundation are given under the respective descriptions of the chimneys.

Copings and Cornices.—The stone coping or cornice of a chimney will seldom require more to hold it together than two good cramps across each joint; they should be of copper, or double-dovetailed slate dowels. On no account should iron cramps be used, as they will oxidise and burst the stone. Heavy and large caps are often the source of great danger, inconvenience, and expense, as the cap at top in a gale of wind acts upon the shaft as a weight at the end of a long lever. The cap when finished should be a complete whole, or so bound together that the joints cannot open, and be so proportioned that its centre of gravity is within the outer circle of the shaft on which it rests, and it should be designed so that the wind striking against it is deflected upwards.

Bonds.—In large factory chimney-shafts, the longitudinal tenacity which resists any force tending to split the chimney is of more importance than the transverse tenacity, therefore, in these structures, it is advisable to have, say, three or four courses of stretchers to one course of headers. In some circular stacks a uniform header-bond for the outside courses of brickwork is adopted. This is a practice condemned by some authorities.

Wind Pressure.—It is usual in this country to estimate, as the maximum pressure, 55 lb. per square foot, but, as in 1868 the pressure of wind at Liverpool was registered at nearly 80 lb. per square foot, it is advisable to take a higher factor.

If the wind-pressure on a square chimney be taken as 1, that on an hexagonal chimney may be taken as 0.75, " octagonal " " " 0.65, " circular " " " 0.5.

Wrought-iron Chimneys.—Wrought-iron shafts have found great favour in America and Russia, but in England and the Continent generally, as far as we have been able to ascertain, they are an exception. In addition to the wrought-iron shafts detailed in this paper, we have been informed of the following:—Messrs. Witherow & Gordon, of Pittsburgh, Pennsylvania, U.S.A., have since 1876 built upwards of thirty wrought-iron shafts, varying in height from 100 ft. to 190 ft., and from 5 ft. to 9 ft. in diameter. The firm write us that these shafts answer admirably the purpose for which they were built. Mr. L. S. Bent, Superintendent of the Pennsylvania Steel Company, Steelton, Pennsylvania, U.S.A., states that his company have the following eight wrought-iron shafts in use, and have found them both durable and economical:—

No. 1,	170 ft. high, 6 ft. 6 in. diameter, built 1881.
No. 1, 165 "	" 8 ft. 6 in. " 1877.
No. 1, 135 "	" 7 ft. 0 in. " 1880.
No. 1, 112 "	" 8 ft. 0 in. " 1881.
No. 4, 110 "	" 7 ft. 0 in. " 1869, 74-5-6.

They are lined for 30 ft. with 9-in. firebrick, and

the remainder of height with 4-in. red brick. The Ravensdale Iron-works Chimney-shaft, Tunstall (Messrs. Robert Heath & Sons), is a circular wrought-iron shaft, not spread at its base. Its height from ground-line to top is 75 ft.; outside measurement at ground surface, diameter 6 ft.; ditto at top, diameter 6 ft. Seventy-five wrought-iron plates were used in the construction of this shaft, the thickness being ½ in. The plates have a lap of 2¼ in., and are riveted together with ¾-in. cup-headed rivets. The shaft is lined its entire height with firebrick. The shaft carries off the fumes from three boilers. The wrought-iron chimney of Messrs. Francis & Co., of The Nine Elms Cement Works, Cliffe Creek, Rochester, was erected in 1878. It was designed by Mr. V. de Michelle, C.E., and constructed by Messrs. Fielding & Platt, Gloucester. The shaft is circular, and parallel throughout, and is constructed of wrought-iron plates. The plates vary in thickness downwards from ½ in. to ¾ in. Its height from ground-level to top is 180 ft.; external diameter throughout, 5 ft.; internal diameter throughout, 4 ft. 6 in. It is lined with 3 in. firebrick its entire height. The chimney is stayed against the wind by four 3½ in. steel guy ropes. This chimney was erected over the centre one of a row of nine cement kilns, which are all connected to shaft by a wrought-iron horizontal flue 4 ft. in diameter. Two additional ones have since been added, and the chimney now carries off the gases from eleven cement kilns. Round the outside of centre kiln on ground level is fixed a cast-iron curb or base-plate. On this base stand four cast-iron standards or supports having their lower ends butting on to and secured to base-plate. The standards incline inwards until their upper ends meet to support a cast-iron circular chimney-base which forms the top of the centre kiln. The wrought-iron chimney proper commences from top of this circular cast-iron base, directly over which the 4 ft. horizontal flue is connected to shaft. For the construction of this chimney a timber stage was erected at the level of the kiln tops, and upon this stood the rivet fires. Four winches were worked on this stage, and to them were led guy-ropes, after passing round blocks at convenient distances. A hydraulic press, with a 4-ft. stroke, was then fixed over the centre kiln, and the top length of 20 ft., which had previously been riveted-up on the ground, and raised to the stage level, was placed upon the ram. The ram was then pumped up, and the 20-ft. length raised a height of 4 ft., the guy-ropes being slackened out to the required extent, as the 20 ft. length gradually rose. A 4-ft. ring of plating was then riveted on with ½-in. snap-head rivets and the usual lap, the ram was then again pumped up, and the now 24-ft. length raised the necessary height; another ring of plates was then riveted on, and the operation repeated, until the chimney had reached its required altitude. The cost of this chimney was about 1,000l., including long wrought-iron flues.

Messrs. Wessensfield & Co.'s Chimney, Chemical Factory, Barmen, Prussia.—This has a square brick pedestal and an octagonal brick shaft. Its total height from foundation to top is 345 ft.; height from ground line to top, 331 ft. The pedestal is 20 ft. sq. by 40 ft. high by 7 bricks (equal to 5 ft. 3 in.) thick. The octagonal shaft is 291 ft. high, 17 ft. outside diameter at the base by 5 bricks (equal to 3 ft. 9 in.) thick; 11 ft. outside diameter at the top by 2 bricks (equal to 1 ft. 6 in.) thick. The shaft diminishes 2½ in. every 10 ft. in height, or 1 in 48. The internal octagonal clearance is 8 ft. throughout. The foundation is on a bed of hard and coarse gravel, and made of large flat quarry stones bedded with "terrazas" mortar in the proportions of 1 lime, 1 river sand, and 1 "terrazas" (a kind of pozzuolana). The pressure on the lowest part of chimney proper is equal to 21,335 lb., or 9½ tons, per square foot. The pedestal and shaft were built with bricks and ordinary mortar, composed of 1 of lime to 2 of river sand, prepared every morning by the masons themselves. On rainy days cement mortar was used in the proportion of 1 cement to 2 river sand. The courses of brickwork were flushed up with cement as construction proceeded. The crown of the shaft was built with cement exclusively. The foundation and pedestal were built in the summer of 1867, and the construction of the chimney was successfully completed in October of the same year. According to the original design it was intended to build to a height of 260 ft., but, as the erec-

* We are asked to state that the authors intend to extend the paper considerably for separate publication, accompanied by illustrations, tables, &c., so as to make it useful as a work for reference.

† Printed in the Builder for that year, pp. 461, 490.

building cavity chimneys, and a novel design by Mr. Holroyd Smith, of Halifax,—a sort of missing-link between brick and wrought-iron, being, in fact, a vertical shaft of brickwork trussed with wrought-iron rods. Several photographs were also shown to the members, depicting the Steeple Jacks at work repairing shafts and church-steeple, and fixing lightning-conductors.

A vote of thanks to the authors having been unanimously passed, the meeting adjourned.

SOME ART NOTES IN THE MUSÉE PLANTIN.

THE many drawings and fine engravings exhibited in the Musée Plantin-Moretus form an admirable complement to the painted works of great and small masters, which one sees in the museum or churches of Antwerp.

The story of Christopher Plantin and Jean Moretus, his good apprentice, is more or less legible in "Baedeker," and is deciphered, no doubt, by all travellers in Belgium; that wild ocean-child who wantonly comes from Harwich; the weak hydrophobist going deviously over by Calais. The mere story is not to detain me here. From the excellent catalogue of Max Rooses I wish only to select some few matters of interest.

If any one is ignorant of Low Country art it is not for the want of accessible information. He has Sir Joshua Reynolds for a guide, and Descamps; he may read the enormous "Catalogue raisonné" of Smith, the random notes of Lord Gower, the dallying critique of *dilettante* Crowmen, or the dismal analyses of Crowe. From all those authorities he will learn, and quite slight observation will enforce the lesson, that Flemish painting of the time between Quentin Matsys and Rubens wants interest and sterling value. After Rubens, again, was a swift decline. The Musée Plantin abounds in examples of a meretricious art.

Adam van Noort was a precursor of Rubens, who shared with Otto Vonnus the distinction of being his master. We are told by Professor Springer, and allowed by Mr. Crowe to believe, that no works of this painter are preserved. As many as fourteen of his drawings, however, are in this museum, and there is one in the collection at Rotterdam. In the absence of any more important performance, his drawings must be allowed to be interesting, though in view of the statement that Van Noort was "a thorough master of his art," they certainly seem to be poor.

Of greater value, as bearing, one would say, directly upon the study of Rubens, and yet more, of Vandyck, are the many designs of Martin de Vos. The art of Italy was assimilated slowly, and but partially, by the diligent, uncouth Fleming. A better man than his master, Frans Floris, Martin de Vos came nearer than he to an effective blending of the Italian with the Flemish ideal. In drawings he is seen at his best. In these the Italian love of space and balanced composition is strongly felt. We think of Perugino, of the stupendous simplicity of Fra Angelico, of the distinguished groups of Raffaele. In view of some great human maelstrom by Rubens one often is tempted to wish that the Society for the Preservation of Open Spaces had had an earlier existence, and had extended its operations to art. Vandyck, so reserved in manner, so strong in feeling, has not this fault. The drawings of De Vos, in their simplicity and direct pathos, remind me of him. The great pictures in the Antwerp Museum have hardly the interest and none of the charm of these skilful swift compositions.

Hubert Goltzius was another precursor of Rubens, who was studied to some purpose by the great painter. Amongst the archives of the family a deed is preserved by which Rubens makes over to Plantin, for 4,920 florins, no less than 328 "examples of the works" of this artist. From this transaction there might be some moral deduced. Perhaps the worthlessness of Goltzius was not fully revealed to Rubens till suddenly in some strait he bethought him how saleable not the less were his works.

Rubens himself was variously employed by the firm between the years 1610 and 1625, and received for his work in that time 1,103 florins. The Plantin Museum boasts fourteen portraits from his brush. Of these there is little to say. His splendid supremacy in this department of

art is not strengthened by any of these effigies of his friends and employers. The portrait of Justus Lipsius is interesting, of course. Another of Jeanne Riviere is exceedingly fine. There is no drawing by Rubens of remarkable interest. The great ledger shows that he designed (and was paid for) some twenty-five frontispieces, and a large number of these are exhibited. One slight drawing of Samson taking Honey from the Mouth of the dead Lion we shall meet again when we follow Max Rooses upstairs to the "Salle des Cuivres."

Though I may not, I would have my reader linger in the rooms which show old Christian missals and manuscripts of nameless worth, and early printed books of inexpressive *luna*. In this sacred vicinage there is no solace but in the wisdom of Antoninus,—"Cast away the desire after books that thou mayest not die murmuring."

The principal attraction, in regard to art especially, of the rooms on the upper floors is the great collection of engravings of the Flemish School, the interest of which is heightened by the circumstance that in a vast number of cases the impression and the plate or block upon which it is taken are exhibited side by side. Before passing to some notice of these, I may call attention to some effective water-colour drawings by a Dutch painter, Jacques de Wit. These have an interest beyond their excellence as being copies of the designs executed by Rubens and his pupils in the Church of the Jesuits at Antwerp. The church was burned down in 1718, and no record, save only some sketches, remains of all that work but the drawings of De Wit, which preserve the memory of 36 out of the original 39 compositions.

In the "Galerie des Cuivres," which contains amongst many things a set of the "Passion" of Lucas Van Leyden, I pause only to mention a fine etching by Ferdinand Bol of "Luna in her Car." There is no influence of Rembrandt in this. It is, indeed, a marvel how an artist who, in the first instance, followed his master so closely, should in the end have been able to liberate himself so entirely.

The longest halt will be made in the rooms numbered 22 and 23; the former given up to engravings after Rubens, Vandyck, and Jordaens, the latter to the engravers of Antwerp. None of these categories, it should be observed, are exclusive. The room we have passed,—the great "Salle des Cuivres,"—is full of the works of engravers we now meet with again. Naturally, also, the engravings after Rubens and his school are often *chef-d'œuvre* of the engravers of Antwerp.

The unspent force of a great creative painter is sufficient, it seems, to give life to a strong following of reproductive engravers. For Raffaele, there was Marc Antonio; for Sir Joshua Reynolds, the mezzotint masters. Certainly Rubens was not less fortunate than these. Thirty-five splendid engravings by the Bolawerts, Paul Pontius, Peter Jode, Luke Vosterman, and others, do all that mere ink could do (*pace Herr Unger*) for the fame of so glorious a master of colour. To the student of art in Antwerp it is much to have here side by side such good reproductions of paintings which he would have to scour all Europe to see; and they are not here alone. The same engravers have done their very best for the promising pupil, Jordaens. Vandyck, beneath the faithful burin, is little marred. A masterpiece of brilliant engraving is that by Pierre de Jode of the Three Graces of Rubens; that again of his Massacre of the Innocents, by Paul Pontius; and that, especially, after Vandyck, by Cornelius Vermeulen, "Portrait of Marie Louise de Taxis."

The engravers associated with the Italianised art of Flanders were all artists of Antwerp. The Sadeliers, John, Egidius, Joseph, Raffaele, and some more; the brothers Wierix or Wierx, John, Jerome, Hieronymus, and Anthony; John, Cornelius, and Theodoro Galle; Jerome Cock, who would surely be related to these; these names, with one more,—the versatile Crispin van den Passe,—rise at once (as they say) to our minds.

In some distant time of headlong youth, when to collect old prints seemed not vanity, I have seen and reverently handled choice prints of these masters, hallowed by the admired signature of P. Mariette. Sharp and true was the burin of a Wierix; Crispin van den Passe could be all things to all men; Raffaele Sadeler has a dainty grace. Hardly in any

time of art has the engraver's work been better done than by those little masters of Antwerp. They had not under their hands the great task of the "little" Germans, the graphic portrayal of discovered truth and recovered culture, but they did that which was given them to do and did it with their might. The good Christopher Plantin and his family enjoyed a grateful monopoly in the publication of liturgical works. His faithful engravers lent their aid to moribund Popery: so they gave less than its meed to the world, and great length of days to Martin de Vos. Many not much in sympathy with the *motif* of that art will linger admiringly over these brilliant engravings of its masters.

David Teniers, because of his cosmopolitan fame, is less closely associated with Antwerp than the brothers Wierix. The careful Max Rooses, however, will not let us forget that here was his domicile of origin. Teniers, the elder, is represented by two etchings. The younger, great David's greater son, has four. These etchings of the Teniers, father and son, have always seemed to me to be bad; not comparable, to take only one instance, with those of Ostade, but odious comparisons do not come into my plan.

An excellent etching of St. Catherine by Rubens will not be left unnoticed. Our catalogue says that probably there is no other from his hand. This is a matter I know nothing about, and am all at the mercy of Max Rooses, than whom no one knows more. In taking my last leave of Rubens I may mention that there is here, in this *salle des graveurs antérieurs*, a print after Rubens by Schelte, a Bolawert, of the "Miraculous Draught of Fishes." It is a fine engraving and remarkable inasmuch as the engraver has made important additions to the picture as one sees it in the Church of Notre Dame at Malines. Out of pure compassion, we may suppose, he has supplied a bow ear to the sacred craft, which is cruelly over-loaded in the original; and upon the other side of the picture has added two more to the number of those who are hauling the net. Certainly in point of mere numbers the disciples were well repaid for their toiling all night, though it is hard to imagine a vicinage so destitute as to be willing to eat any fish in that seine. The Galilean idea of a "few small fishes," if Rubens may be taken for a guide, must have differed not a little from our own. These additions upon either side give to the print the oblong shape which the picture only has when seen in conjunction with its two wings (separate subjects representing upon one side St. Peter taking his tribute money from the fish, on the other Tobit and the angel).

Vandyck is here too in what many will call his glory, in his etchings to wit of the Breughels, Peter and John, of Adam van Noort, who (*v. sup.*) gave Rubens to the world, of Erasmus and Suetermans, and others.

These are but the stray notes of a passing visitor. They may serve to suggest to those who know not the place that there is there some matter of interest, in regard to which I have simply recorded, whilst yet they are fresh, the impressions received by my mind.

ERNEST RADFORD

INSTITUTION OF CIVIL ENGINEERS.

ANNUAL MEETING AND ANNUAL REPORT.

THE Council of the Institution of Civil Engineers, and the corporation itself, are to be congratulated on the plain straightforward report laid before the annual meeting on the 18th of December (see p. 841, ante), on the steady progress of the Institution, and on the facilities it affords, not only to its own members, but to those of five other independent engineering associations, for professional intercourse and instruction. The noble theatre of the institution, which is probably the room best adapted for the purpose of audition and speaking in London, has been gratuitously placed at the service of the Meteorological Society, the Telegraph Engineers, the Iron and Steel Institute, the Gas Institute, and the Society of Chemical Industry. Thus a point of rallying is afforded for the different cognate branches of a most important profession, the advantage of which is great, and may hereafter prove to be still greater. When to this advantage of a hall of meeting is added that of the fine library of the Institution, now containing 19,000 volumes, and increasing at the rate of 800 volumes a year,

while the Proceedings of the Institution, now forming four stout octavo volumes in the year, amount to seventy-four volumes to date, it will be seen that the Institution is on the high road to be regarded more in the light of an engineering university, or, at all events, faculty, than as a purely voluntary association. Thus, with regard to the admission of students, "the Council have of late years required candidates to furnish some account of their scholastic career, and generally to afford information as to their fitness." Thus a certificate of some recognised engineering school may soon be expected. There are now 722 students on the books, as against 707 at the corresponding period of last year.

Exclusive of the students, the corporate members of the society, including honorary members (20 in number), members, associate-members, and associates, amount to the number of 3,558, being an addition of 203, or 6 per cent., to the number on the roll at the close of 1882. The receipts for the year were 18,541*l.*, including interest on the sum of 57,892*l.*, invested by the corporation. The expenditure was 17,431*l.*, of which the large share of 5,768*l.* has been expended in the preparation and publication of volumes 71, 72, 73, and 74 of the Minutes of Proceedings. The care with which these volumes are prepared and edited, the numerous and accurate drawings and diagrams with which they are illustrated, and the abstracts which they give of engineering publications in France, Belgium, Austria, Germany, and Italy, are such as to render the volumes issued at so serious a cost a source of professional information of the highest value.

The year's expenditure on the library is 381*l.* The sum of 460*l.* is expended in prizes and premiums for contributions of a literary character, besides 66*l.* spent on medals and diplomas. For the annual dinner, which may compete in importance with any banquet of the sort held in London, only 216*l.* is charged to the Institution, so that the office of president must, in this respect, involve a considerable personal outlay.

In the last year the new feature of lectures on special engineering subjects was introduced, and six lectures, on the practical applications of electricity, were given by as many lecturers on the alternate Thursdays from February 15th to May 3rd. A second course of six lectures, two of which have been already delivered, has been arranged for the present session, the subject being "Heat in its Mechanical Application." These lectures will be printed, and issued to the members. The Council are to be congratulated on "having faithfully discharged the trust committed to their care by the corporation."

EDINBURGH.

THE new church for the rapidly-increasing suburb of Merchiston, the progress of which was duly referred to by us, was formally opened on the 28th ultimo. It is a handsome edifice, designed by Mr. John Honeyman, of Glasgow, in the Early English style, at a cost of about 15,000*l.*, and consists of a nave with aisles, transepts, and quasi-chancel, having attached thereto a hall, beadle's residence, &c. The church, which measures 130 ft. by 62 ft. 6 in., and 70 ft. high to the ridge, will accommodate a congregation of 1,000. At the north-west angle there is a tower, rising to the height of 130 ft., which is, in the meantime, capped by a low, slated roof, but which it is proposed to surmount by a brooch spire. At the base of this tower is placed the principal entrance, which is deeply moulded and richly decorated with the dog-tooth and other ornaments of the period. The east end is lighted by three lofty lancets, beneath which is a blank arcade with dog-tooth enrichment. The interior presents the aspect more of an episcopal church than of what we are usually accustomed to associate with the Presbyterian form of worship. The pillars which support the clearstory are cylindrical, with moulded caps, and the arches are also richly moulded. The north transept is reserved for the organ, and rises into the clearstory so as to allow the free access of sound from the instrument. The pulpit is placed against the western pier of this transept, and at the opposite side is placed a reading-desk. Against the east wall, under the triple lancet, there is a reredos with illuminated panels containing the Creed and Lord's Prayer. The pulpit and reading-desk are formed of walnut,

and are adorned with paintings upon a gold background of the fruits mentioned in the Bible. The hall, Sunday-school, and other accessories at the west end are designed so as to form an effective group, and, from the position which it occupies, the church forms an important object in the approach to the city from the south-west.

The subscriptions for a testimonial to the Duke of Buccleuch have reached the sum of 8,000*l.*, but it is expected that the sum of 10,000*l.* will ultimately be obtained. At a meeting of the subscribers, held on the 28th ult., it was resolved that the best mode of disposing of the fund would be the erection of a statue or monument in Edinburgh, as the capital of Scotland, on the most convenient and best site to be obtained. Objection was taken to the word "statue" in the resolution, it being maintained that the city was already over-weighted with statues, not of very high artistic merit. To those in the secret this objection is of considerable weight, seeing that, if a statue is to be the outcome of the proceedings, it is a foregone conclusion who the sculptor will be. Two sites were mentioned as suitable for the proposed memorial—one to the west of St. Giles's Cathedral, and the other in the Princes-street-gardens. To both of these sites there are manifest objections; that to the west of St. Giles's has been claimed, and is a more appropriate place, for the contemplated statue of Temple Bar; and the site in Princes-street is much too conspicuous and important to be appropriated to a memorial of the kind; it should be reserved for a monument of equal importance to the Scott monument. If we might venture to offer a suggestion, it appears to us that it is a mistake to crowd all public monuments in the New Town. There are many eligible sites in the Old Town where such would appear to great advantage. A group of statuary in Nicholson-square, or an arch at the entrance to the Meadow-walk at Forrest-road (both in the proximity of Buccleuch-place), would be appropriate. If the first were resolved upon, the memorial would gain and not lose in dignity by the fact that the square is not of large dimensions, and it is likewise a conspicuous position in the main line of traffic southward. Then, again, Edinburgh does not possess a single triumphal arch. One upon the site indicated at the south end of Forrest-road, with the Royal Infirmary on one side and the Medical College at the other, and having a background of foliage formed by the avenue of the Meadow-walk, could hardly fail to prove effective.

The church in Bread-street, vacated by the United Presbyterian congregation, which migrated to a more fashionable neighbourhood at Viewforth, has been acquired by the West Church parish, and formed into an auxiliary place of worship, under the designation of St. Aidan's. The interior has been overhauled and decorated, and it now presents a much more cheerful aspect than before. The United Presbyterian Church in Arthur-street, one of those ugly Puritanical places of worship at one time considered the proper thing by Nonconformists, has been overhauled and rearranged from plans prepared by Mr. David Robertson, architect. The square-headed windows have been converted into double round-headed windows, with Norman detail, and the galleries, &c., in the interior have been altered to match. Additions have been erected in the rear of the church, containing a hall, vestry, &c.

The Gillespie School, a large edifice in the Batty Langley style of Gothic, erected about a century ago, has proved inadequate to the requirements, and an addition is to be erected thereto at a cost of 1,500*l.*

The dome of the Bank of Scotland has for some time been undergoing repairs, under the directions of Messrs. Kinmar & Peddie, the oak timber used in building the lantern having been found to be in a state of decay. Messrs. Kinmar & Peddie have taken advantage of this circumstance to effect an improvement upon the design of the lantern. The lines of the dome proper are not very happy, and the lantern set upon it in a very unsatisfactory manner, having been corbelled out from the apex so as somewhat to suggest the idea of a spinning-top. The narrow neck has now been spread out, and at each angle of the octagon scrolls have been added which unite the two members in a more satisfactory manner than before. The groups of statuary designed by Mr. Bryce to surmount the piers of the loggia still remain unexecuted.

ST. MARY'S CHURCH, PADDINGTON.

"Pitt is to Addington
As London is to Paddington."—CLARETTE.

HAVING determined to improve, plant, and re-open their disused burial-ground for public resort, the Paddington Vestry request the owners of vaults and graves to place the monuments and gravestones in a proper condition of repair. Of the antiquity of this locality there can be no question. The village could boast of its own place of worship as long ago as the beginning of the thirteenth century. That was, in all probability, "the old and ruinous church," which, taken down in 1678, is supposed, from its painted window, to have been dedicated to St. Katharine. It was replaced by St. James's, built by Sir Joseph Sheldon and Daniel Sheldon, to whom Sheldon, bishop of the diocese, leased the manor. This church again,—being that in which, on the 23rd of March, 1729, Hogarth married Jane Thornhill,—was removed just a century since when St. Mary's, the new structure, was erected close by upon the Green from the then greatly admired designs of John Plaw. Once "finely embosomed in venerable elms," St. Mary's stood near the parish stocks, an ancient yew and a double-leaved elder flourishing in its churchyard. Many celebrated names occur in the register. The lists of interments in the graveyards comprise John Bushnell, who carved the four statues for Temple Bar; Vivaros, John Hall, and Lewis Schiavonetti, engravers; George Barrett and William Collins, painters; Thomas Banks and Joseph Nollekens, sculptors. Mrs. Siddons, removed from No. 27, Upper Baker-street to her pretty cottage by Westbourne Farm, was buried here in 1831; and near to her grave is that of Haydon who, at his residence, No. 1, Burwood-place, Edgware-road, on the 22nd of July, 1845, terminated with his own hand the unhappy "forty-two years which he devoted to the improvement of the taste of the English people in high art." Nor should we neglect to mention Michael Bryan, author of the "Dictionary of Painters and Engravers," or Caleb Whiteford, the Papyrus Cursor of the daily press, whose memory lies embalmed in Goldsmith's "Retaliation" and Wilkie's Letter of Introduction. Of the later churches, St. James's, at the southern end of the Grand Junction-road,* became the parish church in 1845. Connaught Chapel, now St. John's, in Southwick-crescent, was built in 1826; Holy Trinity, one of the most beautiful of our modern churches, in Bishop's-road, 1844-6;† whilst All Saints, in Cambridge-place (1847), occupies the site of the waterworks reservoir at the end of Star-street.

It is curious to read, in a work published barely sixty years ago, that Paddington had then less than 1,900 inhabitants, and possessed many rural retreats as retired as though they were many miles distant from the metropolis. The renown of the White Lion, dating from the year 1524, and the Wheatsheaf, a beloved haunt of Ben Jonson, both in the Edgware-road, is as dead as is that of the Red Lion by the Harrow-road, where Shakespeare is said to have played, or of the other Red Lion by the bridge, over the Westbourne, which is described in an inquisition of King Edward VI. Yet some may yet be living who can remember how Miles's pair-horse stage, at a 3s. fare, took more than three hours to reach Holborn-bars from the Green; the tedium of the journey relieved by his boy's tales and faddling; or recall the water trip to Greenford-green and Uxbridge, with the pleasant drive out to Harrow by Westbourne-green, across the Bourne, and so by Green-lane through Kingsfield (Kensal) to Harlesden. Very little indeed remains in the last two mentioned localities of the scenes which George Morland drew. The making in 1801 of the basin and canal to join the Grand Junction Canal at Bull-bridge, Norwood, near Heston, succeeded and in a measure superseded by the Great Western Railway,‡ combined with the Waterworks of 1812, tended to destroy the attractions of the locality nearer town. The Saxons

* The foundation-stone of the new building was laid by H.R.H. Princess Christian, 11th Feb., 1832. Oxford and Cambridge terraces perpetuate the benefactions of the Lady Margaret, Countess of Richmond, to 11 one universities.

† In the Perpendicular style, by Thomas Cundy, architect, at a cost of 18,000*l.* The richly-crooketed spire rises from a pinnacled tower to a height of 219 ft. The crypt is level with the chimney-tops of Belgrave-square, 75 ft. above Trinity high-water mark at London Bridge.

‡ Opened to Maidenhead, 1838; to Twyford next year; and to Bristol, 1841.

Pædings lay between the ancient British causeways now known as the Bayswater and Edgware roads and the West Bourne in its course from West End through Kilburn wells to the manor of Hyde. This stream, crossing the Edgware-road by Godwin the Hermit's Priory* and the Harrow-road at Nine Acres flowed westwards of the modern Gloucester-terrace (formerly Ranelagh-street) through Coalbrook-dale to the manor of Hyde. The Pædings settlement seems to have been cleared from the vast northern forests soon after the Conquest, with pasture for the villagers' cattle and the wood-fruits for their hogs. It is not mentioned in the Book of Domesday, and we should place slight trust in the charters of King Edgar professing to grant lands here to West Minster. Newcourt cites the grants in his "Reperitorium," adding that they were confirmed by King Henry I. and his next two successors on the throne. The earliest authentic document is that of 31 Hen. III., whereby Richard and William of Paddington transfer their "tenement" to the Abbot and Monastery of Westminster. From the end of the thirteenth century all the temporalities, the rent of land, and the young of animals, being valued at 8*l.* 16*s.* 4*d.*, were devoted to eleemosynary purposes. Tanner speaks of Paddington as a parish temp. Richard II., whilst, according to Henry VIII.'s Valor Ecclesiasticus, the rectory yielded, like to the manor, a separate revenue to the Minster; by the Subsidy Roll of that reign the population scarcely exceeded 100 souls. At the Dissolution both manor and rectory alike went to the endowment of the Westminster see; this abolished, King Edward VI. gave them to Ridley, bishop of London, and his successors for ever, they then being let for 4*l.* 6*s.* 8*d.*, besides 20*s.* for the thirty acres of Paddington Wood. In King Charles II.'s reign the population numbered about 300; and during the following hundred years nearly the whole of Paddington had become grazing land, being upwards of 1,100 acres; on the bishop's estate, whence Bishop's-road, Blomfield-road, &c., were kept several hundred cows. For a long time the gallowes and gibbet contributed to its charms in the eyes of the vulgar; and Connaught-terrace marks the site of a large number of wooden cottages which were built, circa 1790, for a colony of artificers. The actual site of Tyburn Tree, which stood at Dendry-Never-green as early as Henry IV., is a moot point with topographers: some assign it to Connaught-place, others to No. 49, Connaught-square. In the wooden premises adjoining the house which stands over against the Dudley Arms, M. C. Wyatt modelled and cast the now dishonoured equestrian statue of the late Duke of Wellington. Westbourne-place, swept away by the railway, was built by Ware, and contained much material from old Chesterfield House, May Fair, which he was employed to rebuild for the celebrated earl of that title. Ware quitted the ignoble trade of a chimney-sweeper, and, studying architecture, became a man of science and taste, editing Palladio's works with various kindred publications.

In a Parliamentary grant, 1653, of the abbey and chapter lands, the common field at Paddington is set forth as situated "near to a place commonly called Baynard's Water." Again in 1720 that same common field is stated to be occupied by one Alexander Bond, of Bear's Watering, in the parish of Paddington. In this watering-place, and one, indeed, that from the earliest times had supplied Western London with water, we have to recognise the present Bayswater. Long noted for its springs and conduits, it still preserves the name of Bainardus, a follower of the Conqueror, and founder of Baynard's Castle by St. Paul's, who held land here of the Abbot of Westminster. Bayswater as part of Paddington parish calls for little remark, since it assumed its present aspect as recently as 1839-49, when the last of the original springs was covered in at Craven Hill, which takes its name from the following singular circumstances. Soon after the outbreak of the Great Plague, William, first Earl of Craven (of the older title), established on the east side of Carnaby-street a lazaretto of thirty-six small houses, with an adjoining cemetery known as the Pest Field,† for the

afflicted inhabitants; some thousands of interments were made in the then cemetery in Marshall-street. When the ground became covered with houses, the third Lord Craven received (1722) in exchange a plot in Paddington, which he dedicated to similar uses. But the latter site in its turn rising in value, application was made to Parliament in 1845 to remove the field further away, and Craven Hill Gardens was built over the ground. In the Crace collection is a valuable freehold plan of the estate, dated 1779, which, when produced by the late Mr. Crace in the Court of Chancery some years since, is understood to have virtually settled the question at issue as to the ownership of the Craven Hill property.

SHOP AND COTTAGE, SUTTON COLDFIELD, WARWICKSHIRE.

The illustration given in this week's issue is of a corner shop and warehouse intended for a basket-maker, with the house planned to be let distinctly.

The ground-floor will be built with red bricks; the upper with timber framing, filled in with brickwork, and rendered with plaster; the roofs covered with Broseley tiles.

The building is about to be erected for the Rev. W. K. Riland Bedford, Rector of Sutton Coldfield, from the designs of Mr. Thomas W. Cutler, F.R.I.B.A., 5, Queen-square, Bloomsbury.

MISSION HALL, ST. FAITH'S, STOKE NEWINGTON.

The Mission-hall of St. Faith, Stoke Newington, was opened on Sunday, the 7th of October. A great want and hindrance was felt in the parish not having a room for school and mission purposes, as there is not a room to be hired in the neighbourhood, so it was determined to make a start in commencing the room, which is 63 ft. long by 33 ft. wide, with two large class-rooms under part of the room, which will be also used for a soup-kitchen in the winter. As it is erected by the side of St. Faith's Church, it was impossible to have windows except at one end, as there is only a narrow passage between them; so, therefore, to obtain more light, there are four sky-lights in the roof, which is an open-timbered one, as on two sides the room abuts against gardens to houses. The hall is built of yellow stock bricks, with Bath stone dressings; and the flat is covered with thick zinc, and the sides of the roof of the slates. An economy of cost was desirable a bell is erected in one of the chimney-stacks. The architect is Mr. J. Martin Brooks, 35, Wellington-street, Strand.

GRAFTON HALL, CHESHIRE.

THIS Mediæval mansion and demesne belonged to the Massys of Grafton in the reign of Henry VIII. The house was rebuilt and greatly enlarged about the latter end of the sixteenth century, but had lately fallen very much to decay. For some years past the structure has been undergoing a complete restoration, from the designs and under the superintendence of Mr. Birch, architect, of John-street, Adelphi, London. Messrs. Laing were the builders, and Mr. W. Crockett the general foreman of works. The additions and alterations have been made entirely in the style and spirit of the old work. All the handsomely-carved and moulded oak panelling peculiar to the work of this period has been carefully restored, and the Mediæval character of the Hall has been strictly preserved, and combined with modern ideas of comfort and convenience. The building is of red brick and stone dressings, covered with Westmoreland slates, and presents a façade broken up by boldly-projecting gables, with double, treble, and four light mullioned and transomed windows, of very fine proportions, flanked at each end by quaintly-fashioned towers. The original idea of the forecourt has been retained, and the old triumphal archway, with its Elizabethan carvings and adornments, has been carefully restored, and a perforated stone balustrade, with piers, carved finials, and escutcheons has been substituted for the old wall. The garden façade is effectively broken up by gables and embattled projections, commanding an extensive view of the surrounding country. The garden-entrance is placed in a recessed portion, which bears panel-stone and

coat of arms, is embattled, and surmounted by a massive angular chimney-stack, giving much dignity and importance to this elevation. The principal staircase is executed in wainscot, with panelled and moulded dados and soffits. The large drawing-room is wainscoted to the ceiling, and the remaining finishings throughout the house have been executed in oak and pitch-pine.

NEW BUILDINGS, MIDDLE TEMPLE.

OUR illustration represents a block of chambers which have lately been rebuilt and are now completed. The block, measuring 121 ft. by 33 ft., is divided into two buildings, viz., No. 4 Brick-court and No. 5, Essex-court, each building containing two sets of chambers of four rooms each on a floor, making a total of twenty sets, with water-closet, lavatory, and laundress accommodation to each, and ample cellars on the basement.

The building is of red brick with Portland stone dressings. The staircases are lined with white glazed bricks, the steps and landings are of Penryn granite. The floors throughout are of Dennett's fireproof construction.

The works have been executed by Messrs. Patman & Fotheringham, of Theobald's-road, London; the carving by Mr. Earp. Mr. G. Goodchild acted as clerk of works.

The whole has been carried out from the designs and under the superintendence of Mr. J. P. St. Aubyn, architect to the Honourable Society of the Middle Temple.

A WORKING MEN'S CLUB.

WE give an illustration this week of the new premises of the "Nelson" Working Men's Club, Warwick, the cost of which has been generously defrayed by the firm of Messrs. Nelson, Dale, & Co., and which were opened a week or two since. The building is situated at the farther end of Wharf-street, and in close proximity to Emacota Mills. The accommodation provided includes entrance-hall, office, bar, and smoke-room, all on the ground floor. To the left of the hall is the staircase,—leading to a suite of billiard and other amusement rooms,—the reading-room, and the lavatory. Attached to the bar is the caretaker's cottage, consisting of a "living-room," two bedrooms, and a scullery. Under the greater portion of the building there is extensive cellarage. Off the entrance-hall is the large entertainment-room, 90 ft. by 30 ft.; 26 ft. in height to the collars of the roof, and 16 ft. to the wall-plate. This is intended to serve also as a dining-room for the workpeople at the Mills; and to meet that end a kitchen is attached, in which is fixed one of Grove's patent kitcheners. The entire building is supplied with Boyle's patent ventilators, and warmed throughout with hot water apparatus by Mountain & Co., of Birmingham. On the second floor is a large billiard-room, fitted with two tables, purchased from Messrs. Burroughes & Watts, of London. To the right and left of this compartment there are two other rooms. The roof is open-timbered, like that of the entertainment-room. The elevation is of bricks of the neighbourhood, with moulded brick architraves round the doors and windows of a darker tint. String-courses, cornices, and flowers of white and red bricks are here and there introduced. The window-heads and sills are of Bath stone, and the roofing is of red tile, with an ornamental ridge. No contractor was engaged, Mr. George Nelson himself undertaking that office, while the actual work of building has been carried out exclusively, and in a most commendable manner, by the *employés* of the firm, from plans prepared by Mr. F. H. Moore, architect, of Northgate-street, Warwick. The iron brackets were supplied by Messrs. Macfarlane & Co., of Glasgow, and the gas-fittings by the Warwick Gas Company.

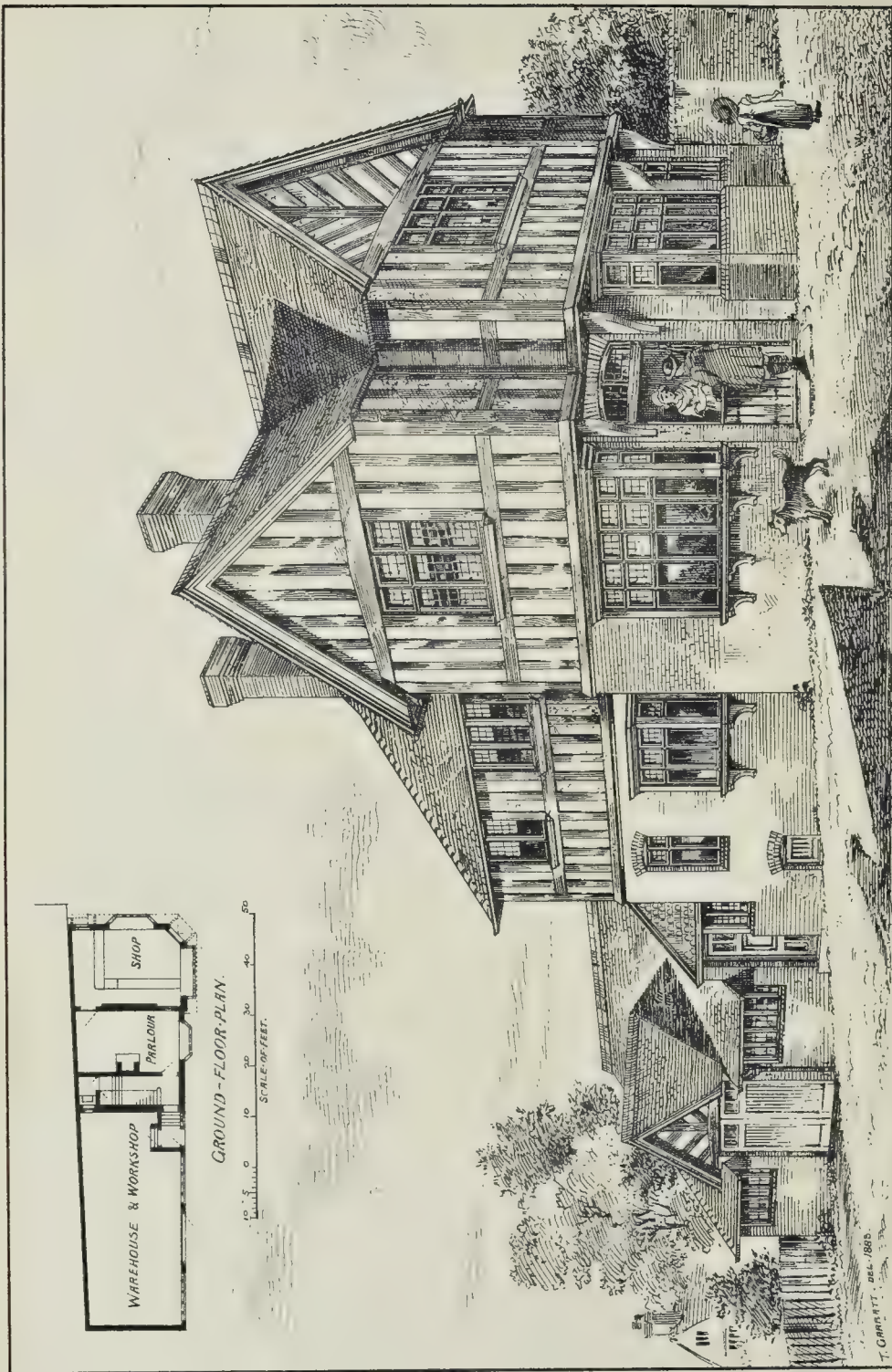
A Coloured Wood Pavement.—A diachromatised wood pavement has just been completed at Pollokshields U. P. Church, Glasgow, by Messrs. Henry Chalk Webb & Co., Worcester, of which the Rev. Alexander Brown, the minister, writes "it has a fine effect and is very solid and comfortable for use." The special characteristic of the work consists in employing colour so as to saturate the wood throughout its thickness, instead of being a superficial application only, thus giving the colour some of the permanence of an inlay.

* See the Builder, vol. xlv., p. 625, where, however, by an error in transcript, "Aye," was written for "West Bourne."

† At what is now the south-western corner of the junction of Marlborough and Poland streets.

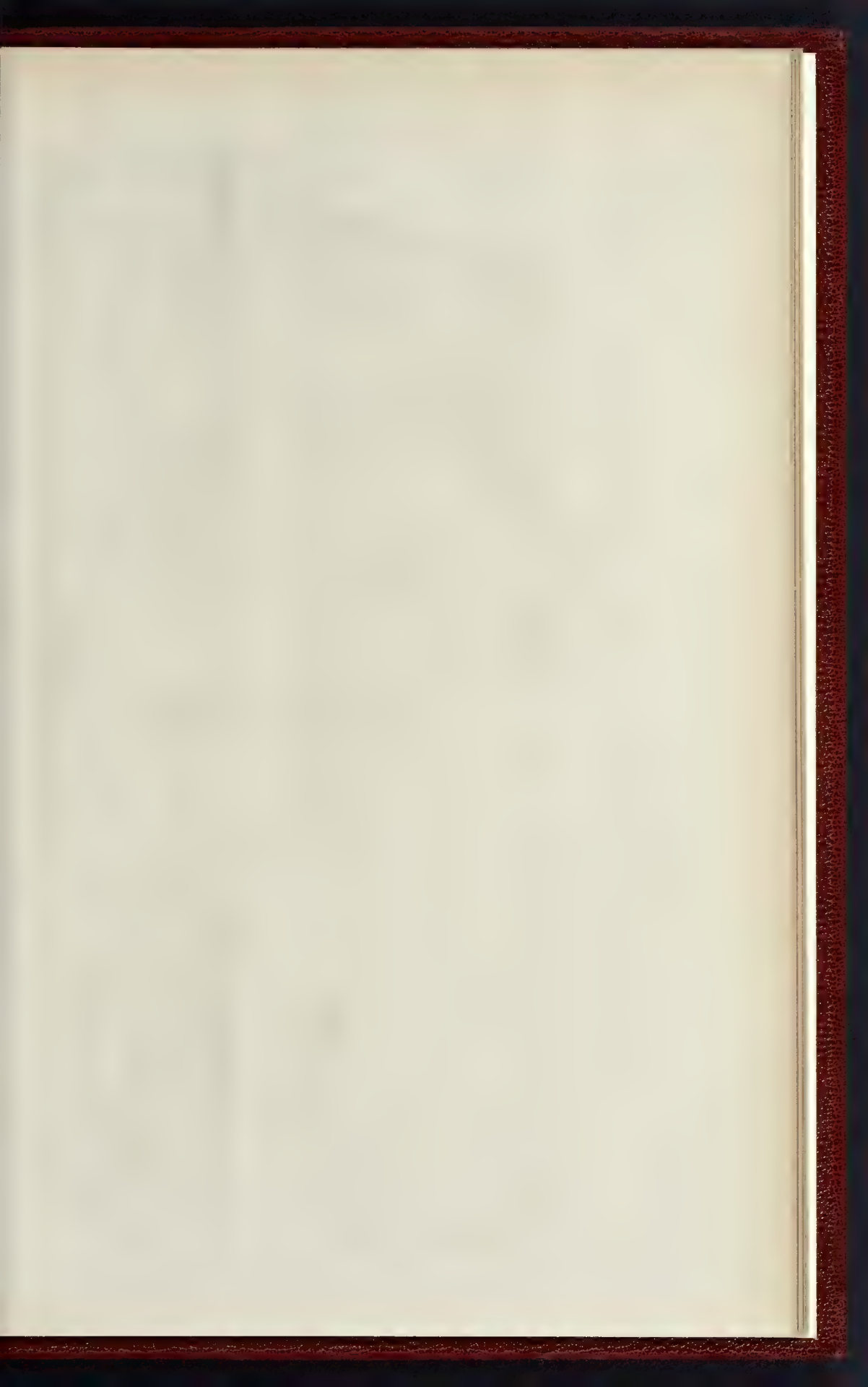


THE BUILDER, DECEMBER 29, 1883.

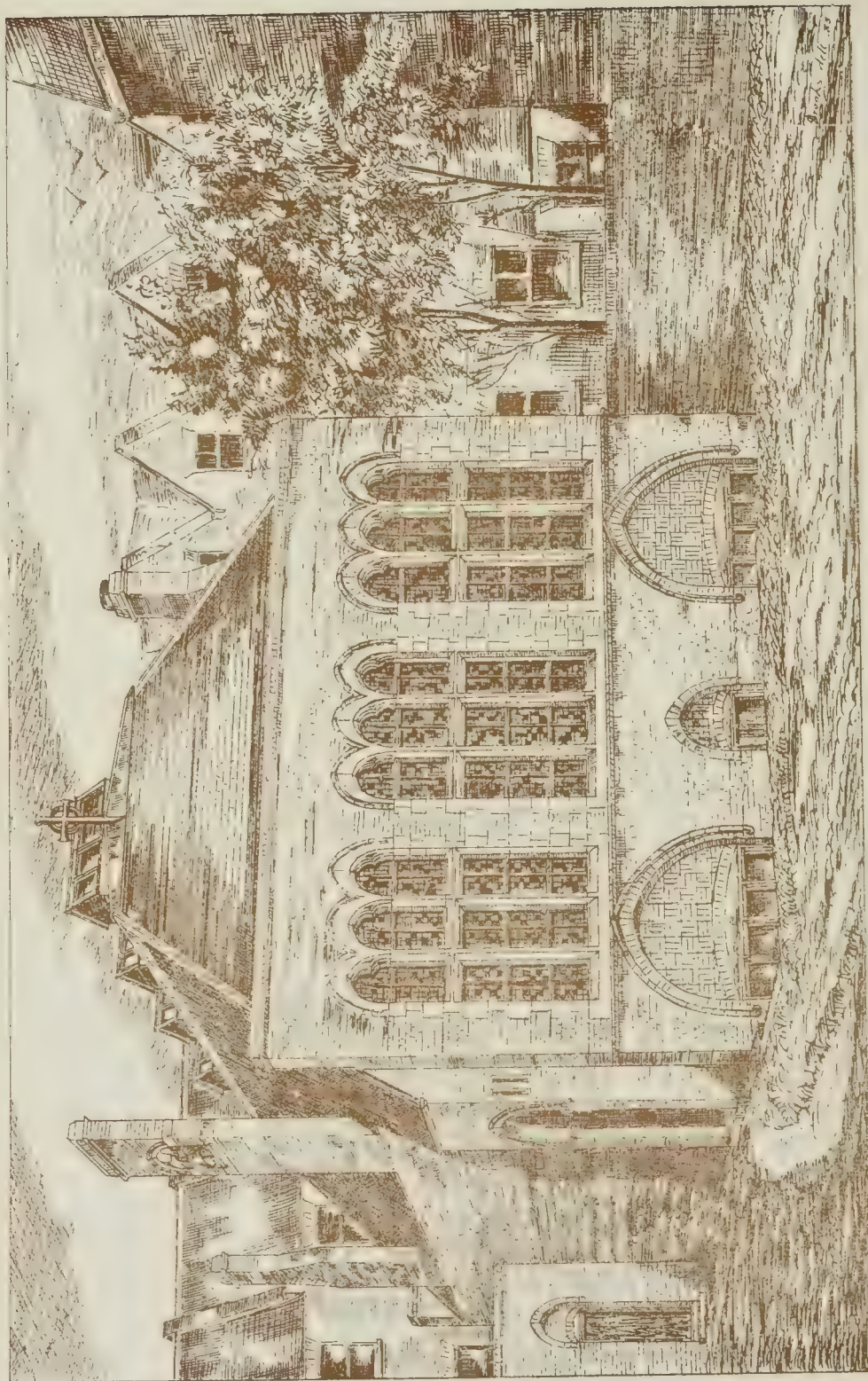


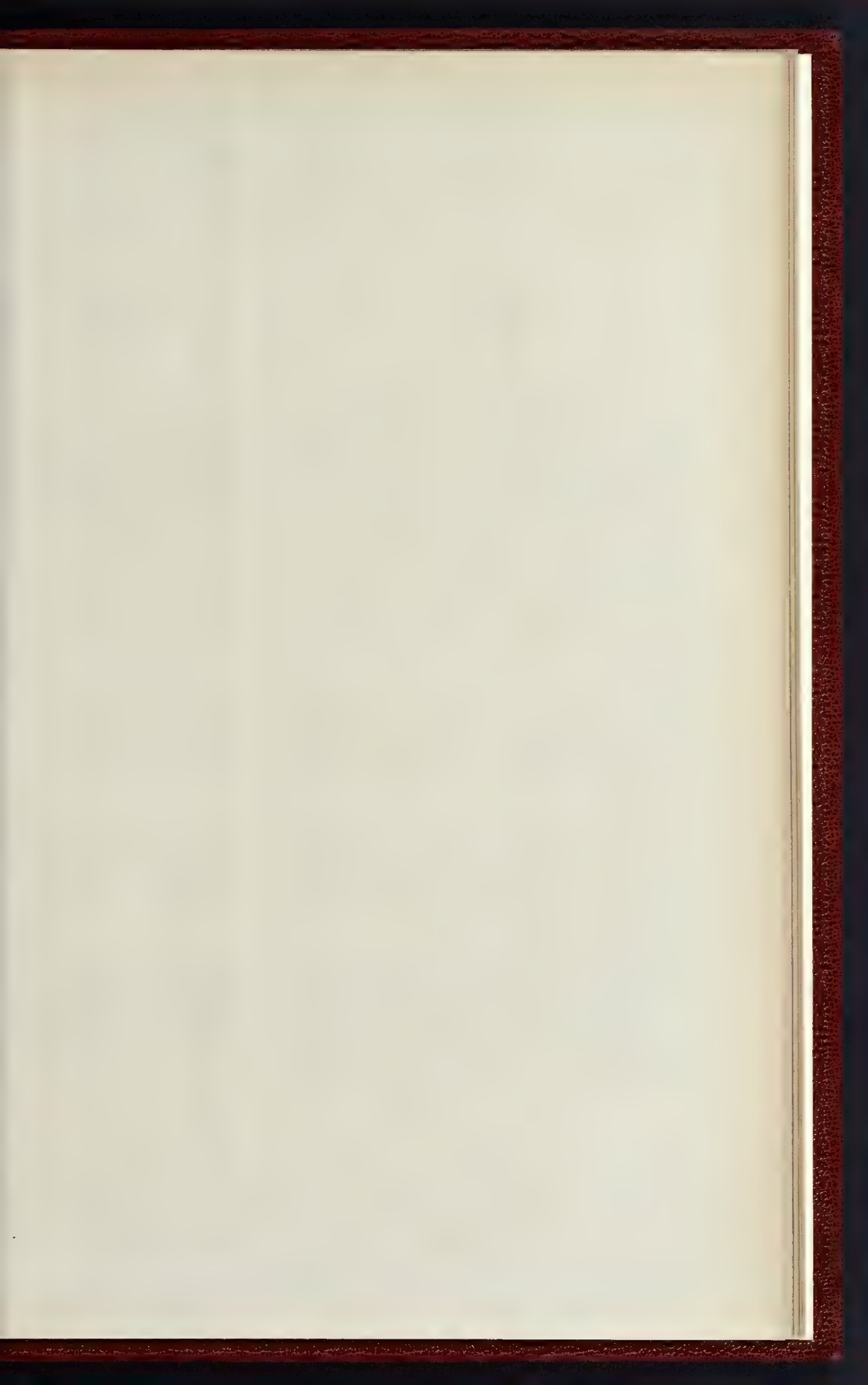
SHOP AND COTTAGE, SUTTON COLDFIELD, WARWICKSHIRE.—MR. T. W. CUTLER, F.R.I.B.A., ARCHITECT.

Wm & Sons Printers Queen St



THE BUILDER, DECEMBER 29, 1882.







SOUTH E

Wyman & Sons, Photo-litho

NEW BUILDINGS, BRICK COURT, TEMPLE



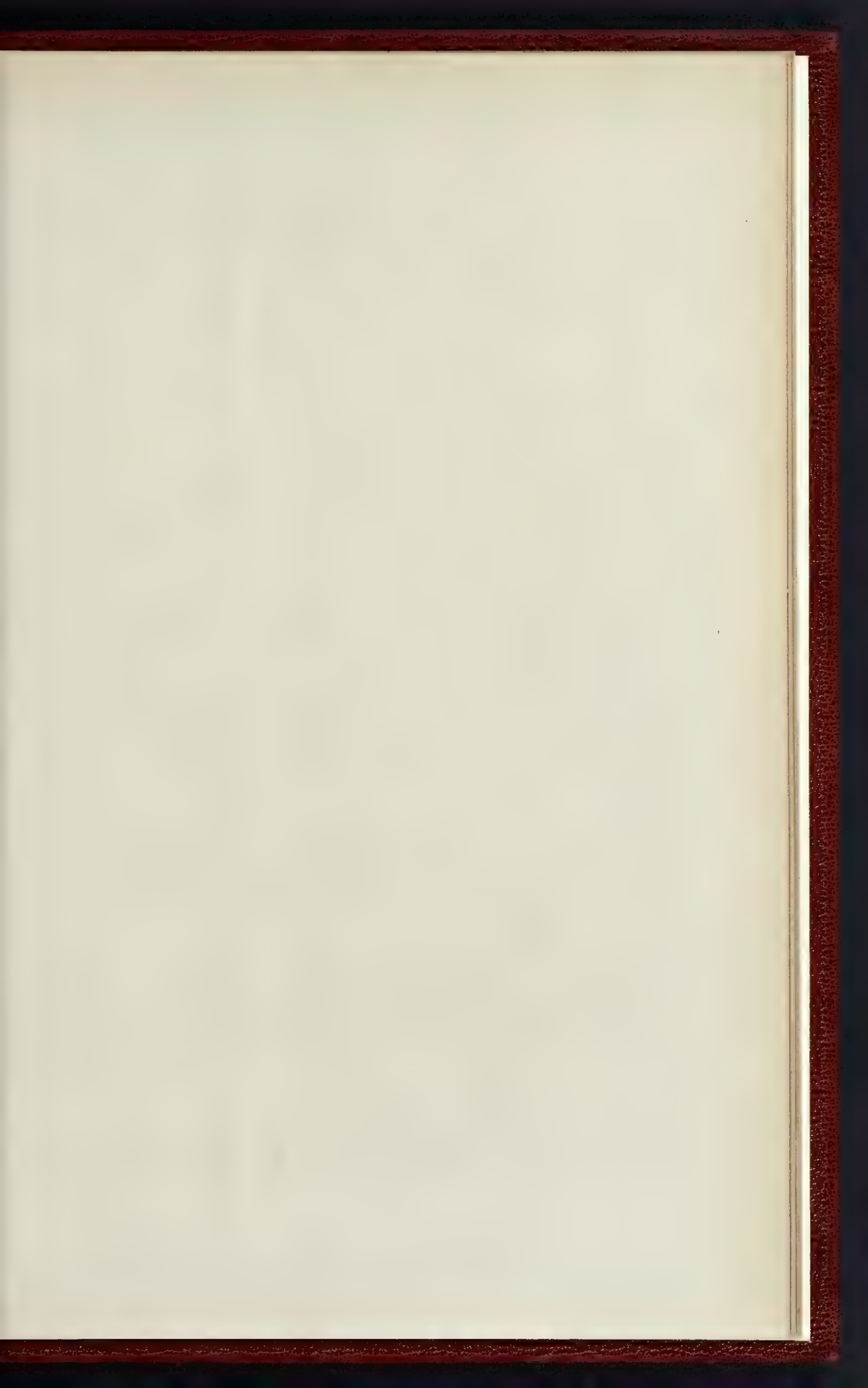
TION

30

40 FEET

O'Quinn St London, WC

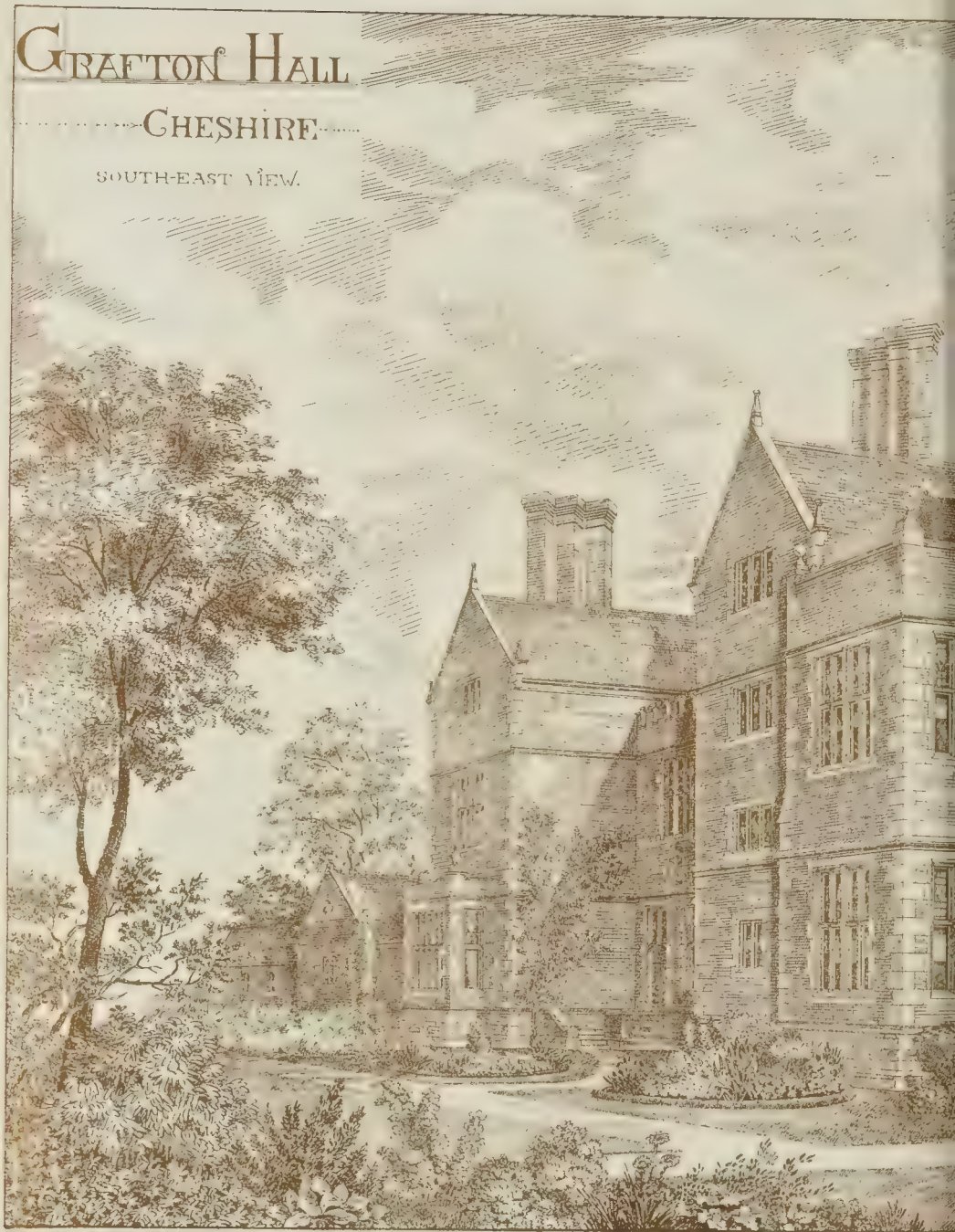
PIERS ST. AUBYN, F.R.I.B.A., ARCHITECT.



GRAFTON HALL

CHESHIRE

SOUTH-EAST VIEW.



As built by Messrs. P. & S. 1840. See also modern.

AS RESTORED BY MR.



ARCH. ARCHITECT.

THE BUILDER, DECEMBER 29, 1883.

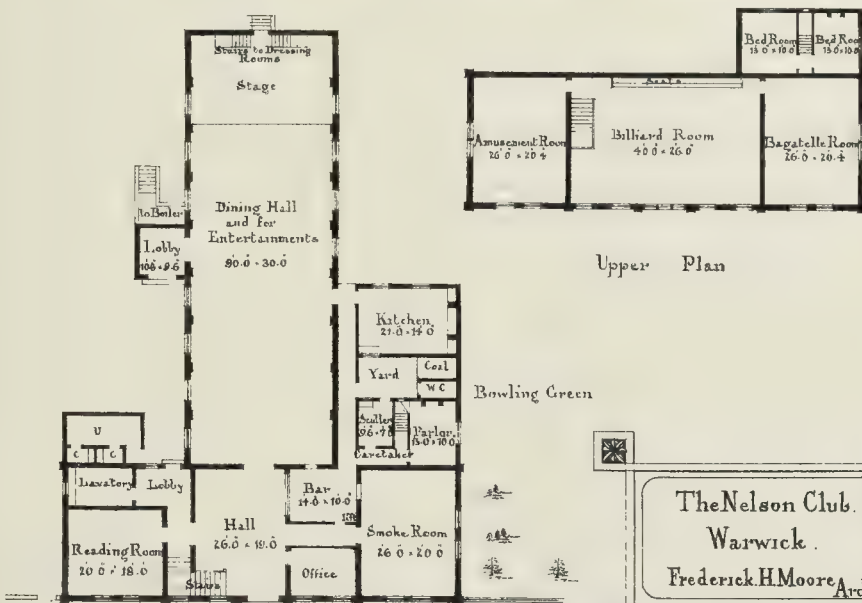


NEW CHURCH, DOVERCOURT.—MR. J. E. K. CUTTS, ARCHITECT.



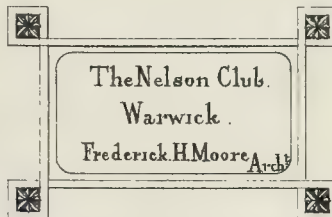
Front Elevation

Scale 8 Feet to an Inch



Ground Plan

Scale 16 Feet to an Inch



LOWER DOVERCOURT CHURCH.

THIS church, which stands on the rising ground overlooking the river, is being built to supply the wants of the population which is being brought to Lower Dovercourt by the building of large docks at Parkston adjoining, which are now used for the large Channel steamers instead of Harwich. The building is to consist of nave of five bays, aisles, chancel, and chancel aisles, vestry, and tower and spire, the ground floor of which is to be used as a baptistery and porch. It is designed to seat 446 people. It is being built of red brick externally, and plastered inside, with the arches and jambs of red brick. Only about half the church is being built in the first instance, the contract for which is 1,595*l*. The estimated cost for the complete building is 4,500*l*. Mr. J. E. K. Catts, 25, Southampton-street, Strand, is the architect, and Mr. Dobson, of Colchester, the builder.

THE WORK OF ART STUDENTS.

AT the delivery of prizes to the students of the Birkenhead School of Art recently, Mr. Walter Smith, Art Director of the Technical College, Bradford, delivered an address to the students on the spirit in which their studies should be carried on, and advantages to be derived from them. After remarking that in going through England and examining the most prominent art schools, he had seen no better school and no better exhibition of drawings than in the Birkenhead school, Mr. Smith proceeded to say:—

"The successful students need to be reminded that their greatest prize of all they share with those who, having received none of those prizes which you can see and touch and carry away with you in a parcel, fancy themselves unsuccessful, for this greatest of all prizes is the formation of character, the discipline, the continued effort, the pursuit through difficulties of that which is good and admirable in itself, the devotion of leisure to self-improvement, and the tone of thought and habit of mind thus developed. That is the great prize. Let not those who have produced beautiful drawings suppose that they have in the works of art which received medals and prizes the treasures and rewards of study. It is not so. If all these drawings which I see around me were collected together and made into a bonfire, and their destruction should decrease the results of the education given in this school, then the teaching has been very bad, and that I know to be untrue; for the real value of the education you have received is in your heads, minds, and hands, and not upon these canvases and papers, and that education has been received by those who lose as much as by those who win prizes, and will show itself, or its beneficial results, in time.

I would also like to give a warning note to the successful. As a master of a normal or training school for teachers, it has been my business to study the philosophy of education, in order that I might prepare those who had in the future to have charge of Public Schools. No two students are exactly alike, and, indeed, any two will be found to be very different in some things,—in character as well as in attainments, but chiefly in the power of learning and assimilating instruction, some being sensitive and of rapid mental action, and others dull and slow. Those who do well, and do it easily and succeed quickly, are said to be brilliant, whilst those who get on with difficulty and improve slowly are said to be stupid. But allow me to remind you of the historical fact that, with a few marked exceptions, early brilliancy has often not developed into mature excellence, being like personal beauty, a dangerous gift, whilst many of the greatest men the world has yet produced have been decidedly stupid as boys; that is, they have been called so. This should be as much a warning to the prize-takers, as it should be encouragement to those who have temporarily failed to take prizes. Only, as a matter of fact, every great artist, or poet, or teacher has improved as he learned; the craftsman has got on, the student has learned, and the best works of all great men have not been those they produced because they were born artists, but those which, having exhausted their failures, they wrought, after being made. It matters not whether they were self-taught, or taught by others: the only difference being whether things taught them or men

taught them, and this is circumstance only. What is the common characteristic of great men in all professions or occupations: wherein do they all resemble one another, or is there any common characteristic? Carlyle defined genius as the ability to do any amount of work. It is certain that the most common element of character in great men, no matter what their occupation may be, is perpetual work,—first, last, and all the time between, and that they found their pleasure in it. Thus Michelangelo was found studying his profession from a fragment in the Colosseum, after he was eighty years of age, and this fact accounted for his being the greatest artist of his time, if not of all time, which is more than probable. Thus I say that for ever learning and for ever working is the sign of genius; and let me ask you, can you not always learn and work, if you choose? It rests with you to answer this in your daily lives.

Then I want also to say to the unsuccessful prize competitors that they are safe and on the right road if dissatisfied with their work. Guard against the moment when you become satisfied with that which you have done, for that means halting in your march; and spurn with contempt the feeling that you could do no better or not so well if you tried again, for that indicates that you have passed the meridian of your lives as students and thenceforward are going down. Whilst you are growing as artists you must have many despairing and dark hours, the sense of inferiority and hopelessness, and if you have them not there is no hope for you. These are the artist's "growing pains," and are signs of expansion, which not to have would indicate that you are shrinking back to nothing. Without forming a habit of hugging sorrow, you may be sure that a certain amount of misery is necessary to your progress, and be also sure that self-satisfaction is a deadly assassin which destroys without even short shrift. If you are very miserable at your progress, and regard the work you can do with such contempt that you have no heart to go on, try to see some of the early and inferior work of the modern great artists. When I was a student and worrying at a subject I could not master, and suffering from these growing pains, I used to go with a fellow-sufferer and examine the early efforts of a genius who crowned the galaxy of Royal Academicians like a giant, and that gave us a little kindling of hope. That gave us courage to go on, inspired us with the gift of continuance, roused our spirits, and made us remember that the kingdom of art is like the kingdom of heaven, which the strong take by force.

To all of you I would say that this study of art will be profitable, either in your occupations as craftsmen or in your lives as human beings. Those who require a knowledge of drawing in their business will find that they will be better servants with skill of hand and eye than without it, more profitable to their employers and themselves, and infinitely happier men; whilst others who do not expect to employ their art power as a means of earning their livelihood, will fit themselves by art study to receive a revelation of the beautiful, that is the divinest gift a human creature can receive. I pity the man or woman who does not know how to draw, who goes through life without being able to enjoy the beautiful with understanding, whose eyes have never been opened by study of form and colour to the loveliness of God's creations on this earth, who look but never see, or see only as the man whose eyes were being opened by the divine touch, see men as trees walking. For the sense of sight is but a sense, but the faculty of vision is an exceeding great reward, that comes to us from patient, humble study in the studio of the great Creator of all things; a faculty we all have, though few of us ever develop it, and it can only be raised into healthy action by the study of art. To you who study art with humility and hope will come this divine revelation of the beautiful, as surely as have come to you the revelations of life and labour, and in due time will come to you the revelation of immortality, when you will see, not as through a glass, darkly."

"Two Exhibitions of River Painting."

In the article bearing this title in our last (p. 820) a serious typographical error somehow escaped detection. Mr. F. Myers Boggs's oil studies are being exhibited by Messrs. Goupil & Co., of New Bond-street.

THE FACADE OF FLORENCE CATHEDRAL.

SINCE our remarks last week (p. 820) in regard to the facade of Sta. Maria del Fiore, and the two proposed methods of completing it, we learn that the point has been decided in favour of the basilican termination, without the gables and pinnacles. A few nights since the Florentine Artists' Club, to which the decision of the question had been unanimously submitted, elected by 88 votes to 11,—and three abstaining voices,—the basilican termination as that most in accordance with the general design of the building; a decision in absolute opposition to the last wishes of the architect. We can hardly say, perhaps, that the success of De Fabris's design is so great in itself as to entitle his opinion to all the weight that might otherwise have attached to it; but he perceived what a good many people apparently do not, that there is much more Gothic than Classic element in the details of the building. People keep talking about Brunelleschi as if he designed the building, instead of having merely completed the crossing. However, we presume the point may be considered settled, and that the work will be continued in accordance with this determination; and before long visitors to the banks of the Arno may expect to see the beautiful Duomo entirely freed of its mask of scaffolding. To English travellers there will always be a singular interest in the connexion of the great work with their country, and on the facade the heraldic emblazements of more than one famous English family will serve to remind the Florentines that to some extent England has paid back a portion of that long outstanding debt which, a *sindaco* of the Tuscan capital not so long since revealed to the world, England had been owing ever since the brilliant days of Edward III. *Tempora mutantur*. Florence now is so poor that she has scarcely been able to contribute a *soldo* towards the completion of her marvellous cathedral.

THE DWELLINGS OF THE LONDON POOR.

THE following letters have passed between the Council of the Royal Institute of British Architects and Mr. Mark H. Judge, one of the Directors of the Artisans', Labourers', and General Dwellings Company, who are stated to be the largest owners of improved cottage dwellings in the world:—

"8, Park-place-villas, W. Dec. 12, 1883.

JOHN MACVICAR ANDERSON, Esq., Honorary Secretary, and WILLIAM HENRY WHITE, Esq., Secretary of the Royal Institute of British Architects.

Dear Sir,—The important question of the condition of the habitations of the underpaid industrial classes and the abject poor, who may be described as the children of the community, inasmuch as they are powerless to help themselves, is now fortunately attracting the earnest attention of the public, and it therefore becomes of the utmost importance that reliable data should be forthcoming in order that the desire to improve the present state of things may bear fruit in wise action before the present wave of just indignation has spent itself.

I therefore venture to suggest to the Council of the Institute whether they would not be fulfilling a most important public duty at the present juncture if they could be the means of obtaining this reliable data. The question is one which cannot be solved without the knowledge and experience of the profession, and I beg, therefore, to ask the Council to consider the following proposal, viz.: That the Royal Institute of British Architects appoint a Special Committee to inquire into, and report on, the condition of the dwellings of the London poor.

I am, dear Sir, yours faithfully,

MARK H. JUDGE, Associate."

"Royal Institute of British Architects, 9, Conduit-street, Hanover-square, London, W. December 20th, 1883.

MARK H. JUDGE, Esq.,

Dear Sir,—We duly submitted to the Council of the Royal Institute of British Architects your letter of the 12th inst., in which you suggest that the Institute should appoint a Special Committee to inquire into and report on 'the condition of the dwellings of the London Poor.' We are to state in reply that, however much the Council may concur in the general wish to ameliorate the condition of those dwellings, the

means at the disposal of the Institute for such a purpose are too small to penetrate the mass of difficulties which surround the question.

A generation ago a member of the Council made a noble effort to call public attention to the then state of things, and those efforts have been since renewed from time to time. Persons in authority, just awakened to the facts of the position, may, perhaps, be astonished at finding so much already done by Mr. George Godwin to throw light upon a subject, which, at last, appears to have been taken up in earnest. Indeed, the probability of an almost immediate appointment of a Royal Commission, to inquire into the condition of the dwellings of the poorest classes in London, is, perhaps, a proof of the magnitude of the task which you invite the Institute to undertake,—a task which seems to us to concern the metropolis at large, and to be the duty of a responsible government to organise and carry through.

We are, dear Sir, yours faithfully,
J. MACVICAR ANDERSON, Hon. Secretary.
WILLIAM H. WHITE, Secretary."

THE DESTITUTION OF THE POOR IN LONDON.

We have received a copy of a pamphlet on this subject by Mr. Hugh MacCallum, commenting on the mutual disadvantages, social and moral, arising from the massing of rich and poor respectively in opposite neighbourhoods of London; a rich quarter in one place, a poor quarter in another. We quote the following portion of the paper:—

"There seems to me to be very much to fear from this isolation in which we have compelled the poor to live. We have made them a class by themselves, with all class prejudices, ignorances, and jealousies. They are so far off from most of us, that to go into their midst is like going into a strange country, where you never expect to meet any one you know, and where you are received with toleration or cold indifference. To labour amongst the poor in London requires almost the same moral discipline and self-denial as to go out to India or China as a missionary, we have made, and are still making them, so much a race by themselves. To the average members of West End society, St. Peter's, London Docks, Mint-street, Borough, and the eastern fringes of the city are as remote as the Land's End, nay, to a large section of the community of the wealthier kind they are more remote and less known than even the lands beyond the sea. Yet, from Charing-cross, half-a-crown would take you in a hansom-cab to any of them.

Is this remarkable distribution of the various classes in London a satisfactory one? Is it safe for the community to have miles upon miles of streets where there is not merely plenty, but luxury, and then in another part to have nothing but miles upon miles of houses where there is not simply the absence of all the comforts of life, but, beyond this, all the accompaniments of waste, want, and wretchedness? What organisation have we that could possibly grapple with an outbreak of cholera next summer amongst one of the vast collections of poor people to which I have alluded? You could not perfect the sanitation of the district in a few months. Would public opinion, backed by popular panic, sanction the removal of the people, and the destruction by fire of the infected tenements? Very likely it would. But what would meet the difficulties of the case if ever the two millions of poor in London find a teacher and a leader such as other countries have sometimes found? What if the whisperings of discontent, that find but occasional utterance and hearing now, ever burst out into the loud and passionate cry of a people's despair at making no progress?

No progress in material comfort; no progress in social advancement; no progress in the fight after a share in the profit of their labour. No progress in aught but poverty and a weary length of years.

It seems to me that at such a time the thousands that we now drive together as into a pen would prove a strange and fierce army to overcome. Of course they would be overcome, but at what a cost!

Mixed up with all the poor in London we have compelled the respectable and struggling artisan of the lower class to live; and so that narrow border-land that separates self-respect and self-reliance from that lower stratum where both

those qualities are despised, has been made common ground, and all its landmarks destroyed. I need not stop to prove these statements, they are facts within the knowledge of most of us, they are known to every Metropolitan officer of health. They should be known by the heads of the Local Government Board; whether they are, or not, is more than I can venture to say."

We cannot think that this state of things, this separation of rich and poor, is, as Mr. MacCallum seems to imply, a specially modern state of things. We concur with him in thinking it leads to selfishness on the one hand and hopelessness on the other, but this kind of classification of inhabitants has been a tendency of all great towns at all times, and is ruled really by some almost unavoidable practical influences which have little or nothing to do with social morality or responsibility. It is an example of the illogical manner in which people, with the best intentions, reason on these subjects, that the author repeats the cry raised by Lord Salisbury against railway and street improvements, as causes of the increased misery of the poor of London at present. This is in a paper the special object of which is to urge the importance of fuller and more frequent intercourse between poor and rich. Now it is an absolute fact that the existence of the Metropolitan railway has done more than any other practical fact to promote and render possible this very intercourse between East and West London which the author recommends. There is at present an amount of interchange of visits for social and philanthropic motives alike, between the regions around Aldgate and the West End, which, before the extension of the railway to Aldgate would have been simply impossible for a large number of persons, from the expense of transit. In the case of new streets also, the "partial evil" (exaggerated, we believe) is certainly "universal good" in the main.

PROJECTED PUBLIC WORKS.

RAILWAYS, PIERS, DOCKS, HARBOURS, AND TOWN IMPROVEMENTS.

THE private Bill legislation of the session of 1884 promises to average that of previous years in the time which it will devote to the consideration of projected public works of a varied character. The total number of Bills of every kind for which notices have been given is 248, a large proportion of which are in respect of railway undertakings, there being no fewer than 113 of this class, being nearly one half of the entire number of applications. Tramway projects contribute thirty-five (including Board of Trade applications for Provisional Orders). There are likewise thirty-six applications in respect of gas and water supply. New docks, piers, and harbour undertakings, add thirty-two to the list; whilst town improvement projects of a comprehensive character in different parts of the country, contribute twenty-two, the aggregate number of applications being made up of projects of a miscellaneous character. Classifying the Bills relating to railways, fifty of them are promoted by existing companies, who seek powers for the construction of additional works, and thirty-five are applications for the incorporation of companies, with powers for the construction of entirely new railways. Of the entire number of the railway Bills, eighteen are in respect of projects within the metropolitan area. Ten of the tramway Bills are likewise connected with the metropolis, and two of the gas and water Bills; five Bills are promoted by the Metropolitan Board of Works for various objects; four are promoted by the Corporation; and there are likewise fifteen Bills of a miscellaneous character connected with proposed undertakings in the metropolis, amongst them being a Bill by the Trustees of Sion College, for powers to purchase a site on the Thames Embankment, for the erection of new college buildings; a Bill by the United Telephone Company, for powers to break up streets, and erect posts, and carry wires for telephonic communication over or under any houses, streets, and land, within the City of London, and the limits of the metropolis; also two Bills promoted by companies proposed to be incorporated for constructing bridges across the Thames, one from Tower Hill to Horselydown, and others between the Tower and Stepney, and Greenwich; likewise a Bill for the construction of a subway under the Thames, by a new company, commencing at King

William-street in the City, and terminating near Newington Butts; whilst another body of promoters have a Bill relating to the improvement of the Thames ferries and roads communicating therewith, applying for powers to make a new cut or channel between Blackwall and Limehouse, with locks and weirs, two swing bridges, between Poplar and Greenwich, and also powers to establish a steam ferry across the Thames. A Bill is promoted by the London Financial Association, as owners of the Alexandra Palace, seeking powers to sell the palace and grounds free from existing restrictions. There are thus altogether fifty-four Bills having reference to metropolitan undertakings, the principal railway projects amongst this number being one by the Metropolitan Company, for constructing a railway under the Royal Parks, between Præd-street and Parliament-street. There are also Bills for a railway between Hampstead and Hendon; between Dulwich and Croydon; London, Reigate, and Brighton; Croydon and Kingston; to Croydon direct; between the Ladywell station of the Mid-Kent branch of the South-Eastern and the Crystal Palace; between Tooting, Balham, and Brixton; and an electric railway from the west end of Oxford-street to the Royal Exchange; all promoted by new companies. The London Central Electric Railway Company also apply for powers to construct an electric line from Charing Cross and the Regent's Circus, to the Post Office. The two metropolitan railway companies promote a Bill for the construction of a subway from the South Kensington Station to the Albert Hall. The Bills promoted by the Metropolitan Board of Works include one seeking powers for constructing a subway under the Thames at Wapping; another Bill containing various powers as to new streets and metropolitan commons; also a Bill for powers to repeal the Metropolitan District Railway Company's Act with respect to ventilators in Victoria-street and on the Thames Embankment; a Bill for expanding the 14th section of the Metropolitan Management Act, in relation to water-supply by the companies; and likewise a Bill in reference to the Fire Brigade expenses. The Bills promoted by the Corporation of London include one for amending the present Acts relating to the water-supply of the metropolis; another Bill authorising the Corporation to establish free ferries across the Thames; a third Bill sanctioning the continuation of the Metage and Grain Act, in order to provide open spaces and recreation grounds, and a Bill authorising the Corporation to sell or exchange lands in Epping Forest, and to convey lands to local authorities for preservation as open spaces.

As regards the provinces many of the Bills promoted are of an important character, including railway undertakings; gas and water projects; the construction of docks, piers, and harbours; numerous town improvement Bills; and other projected works of a miscellaneous nature. Of the railway Bills twenty-four are for the construction of entirely new railways by companies proposed to be incorporated. Amongst them is a Bill for the construction of a new line between Liverpool, Southport, and Preston; also a Bill for the construction of a new coast line from Preston, and through Lytham, to Blackpool; whilst the West Lancashire Company, whose present line is between Southport and Preston, seek powers for the extension of their system to the Preston docks, and through Lytham and St. Anne's-on-the-Sea, to Blackpool. There is a Bill for the construction of a new line between Aldershot, Farnham, and Petersfield; likewise a Bill for a new line between Walton-on-the-Hill, Banstead, and Caterham; together with Bills for several new railways in Monmouthshire, Glamorganshire, Denbighshire, and other parts of Wales. The London and North Western, Midland, Great Northern, London and Brighton, Great Western, Lancashire and Yorkshire, South Eastern, Manchester and Sheffield, London, Chatham, and Dover, and others of the leading companies promote Bills for extensive additional works at different points on their respective systems. Amongst the tramway Bills is one promoted by the Liverpool Corporation for the construction of tramways in different parts of the city, to be let on lease. There are also two Bills promoted by proposed new companies for the construction of tramways in Manchester and the several towns and districts around, with clauses authorising the use of steam power.

The gas and water Bills include, amongst

others, a Bill promoted by the Stockton and Middlesbrough authorities for the construction of new waterworks, including a pumping station, aqueducts, and reservoirs; and the King's Lynn Corporation promote a similar Bill. A Bill is promoted by a proposed new company for the construction of waterworks for the supply of water to Rickmansworth and other parts of Hertfordshire, and also certain districts in Middlesex, including parishes in the Harrow district not supplied by the Harrow Company. The Southwark and Vauxhall Water Company promote a Bill for extending their limits of supply to Ham, Petersham, Richmond, Kew, East Sheen, Roehampton, Mortlake, Barnes, Putney, and Wimbledon.

Amongst the dock, pier, and harbour projects is a Bill for the construction of a new pier and other works at Ventnor; also Bills for a new dock at Wisbeach; for new piers at the entrance to Swansea Harbour; for the construction of a central pier at Brighton between the two existing piers, by a proposed new company; for the extension of the south pier at Blackpool, 500 yards seaward; for a new pier at Weston-super-Mare; for the erection of a new pier and promenade at Hove; for the incorporation of a new body of Commissioners to construct and maintain a pier and harbour at Newlyn; also for new piers and other works at Folkestone, Dawlish, and Cromer. There is a Bill incorporating a company for the construction of new docks at Northfleet, consisting of a main dock 417 yards in length, and 200 yards in width, with two branch docks, each 400 yards in length, and 83 yards in width, together with river-walls, piers, and jetties; also a railway from the proposed docks in connexion with the South-Eastern line. It is proposed to incorporate the "North Sea Fisheries, Harbour, and Dock Company," with powers to make a tidal harbour, dock, piers, and other works, at Sutton-le-Marsh, in Lincolnshire, and also powers to take water from the North Sea. The London and St. Katharine's Dock Company promote a Bill for the construction of a new entrance to the Royal Albert Dock at Gallion's Reach, together with two piers and jetties. There are two Bills in connexion with the improvement of the River Dee. One of these Bills is for the constitution of a Conservancy Board, and the transfer to them of the rights and privileges of the River Dee Company and the River Dee Commissioners, with respect to the navigation of a canal in the bed of the channel. The other Bill is of a similar character, authorising a conservancy Board consisting of commissioners or trustees to restore the depth of the River Dee, and to improve the navigation. The Manchester Ship Canal project, which was rejected last year, is included in the list under this head.

The Town Improvement Bills include a comprehensive project by the Brighton Corporation. It authorises the Corporation to construct and maintain a running wall, promenades, piers, and landing-places, with tidal, swimming, and other baths; also the building of shelter arcades, conservatories, and other works in the Madeira-road, on the sea-shore; the construction of lifts for carrying passengers up the face of the cliff, from the seashore to the Marine Parade; the erection of a wholesale provision market; also the erection of municipal offices, an arcade or bazaar, and other buildings; the transfer to the Corporation of 105 acres, known as "Tenants' Down, in order to be laid out as a recreation-ground for the use of the public. The Bill contains clauses regulating the traffic of vehicles through the streets; powers prohibiting persons carrying advertisement-boards through the streets, also for prohibiting processions without the consent of the Corporation. Town Improvement Bills are also promoted by the Corporations of Leeds, Leicester, Longton, Dewsbury, Jarrow, York, Birkenhead, Croydon, Bristol, Chester, Bury, and Ventnor, and by the Local Board of West Derby, Liverpool, in all of which powers are sought for the widening of existing streets, the construction of new streets, increased powers over the construction of buildings, and general sanitary powers. The Birkenhead Corporation, by their Bill, seek powers for the widening of thirty-one streets and the formation of several new streets, also powers to purchase 131 unsanitary houses for demolition. The Croydon Corporation Bill contains clauses empowering the construction of new waterworks in Addington and Beddington. The Bristol

Corporation, amongst other powers, ask for authority to prevent the construction of dwellings on lands in the city liable to floods, likewise powers as to the construction of the foundations of houses. The Bill promoted by the Dewsbury Corporation seeks powers for the erection of a new town-hall and municipal offices, court-house, and gaols; also for the erection of a museum, and the construction of public baths and public parks. The Jarrow Bill contains clauses for the erection of warehouses and machinery, and the construction of bridges over the North-Eastern Railway. The Bill of the Chester Corporation contains clauses empowering the Corporation to purchase the Dee bridges, and frees them from toll. The York, Chester, and Bury Bills contain powers for the extension of the boundaries of those boroughs, and the re-arrangement and increase of the number of aldermen and councillors.

CRYSTAL PALACE ENGINEERING SCHOOL.

THIS school completed the eleventh year of its operations on Saturday last, when the certificates awarded to the students by the examiners were presented by Field Marshal Lord Napier of Magdala, G.C.B., G.C.S.I., R.E., in the lecture-room of the school, in the south tower of the Palace. There was a large attendance of the friends of the students and of the school.

Lord Napier congratulated the students on their entering on the profession of civil engineering, which was taking every day a higher position in all parts of the world. Great works had already been executed by engineers, notably in the United States of America, but he thought that some engineering works in Great Britain had not yet been surpassed. He considered the medical and engineering professions nearly on a par in importance; each was instrumental in saving life, and the tear and wear of life; the engineer also saved time, abridged space, and changed the geography of the world. He considered architecture the branch of their profession that most pressing claimed attention. We fell short in the production of structures combining grandeur and beauty with comfort, convenience, and adaptation to their intended purposes. He would press this point upon their consideration as demanding the attention of the engineers of the day. It was impossible to foretell what wonderful works remained to be achieved by the engineer. He had recently been giving some attention to the great bridge across the Firth of Forth, which was a remarkably bold work, spanning 1,600 ft. of sea by a structure 300 ft. above the water. Probably in the even not distant future that may come to be regarded as only an ordinary work. Reverting to architecture, he thought there was great room for improvement. It was important that they should make the most of their opportunities for observing both works of art and the operations of nature. Some of the greatest things in engineering were the work of practical men, elaborated by the mathematician. The mode of construction in the Forth Bridge, in the projection of the successive beams of a series, was a scientific development of a principle to be seen in structures in Tibet and Cashmere. Lord Napier concluded by wishing the students success in their careers, and expressing a hope that they cherished the gratitude that was due to Mr. Wilson and his assistants for their valuable services. Lord Napier then presented the certificates.

The lectures for the term were on "Materials and their Manufacture." Thirty-five students attended the lectures, thirty-two were eligible for examination, and twenty passed. The highest number of marks attainable was 273; Mr. T. B. F. Sam, a young gentleman of colour, was first, with 215; he was also second in merit for work in the fitting shop. The other students, who received lecture examination certificates, had from 208 down to 105 marks.

Thirteen certificates were awarded in the Drawing Office, Mr. J. F. Gage first. Eleven certificates were awarded for work in the pattern shop and foundry, Mr. H. W. Rogers first. Ten certificates were awarded in the fitting shop, Mr. C. J. Barley first. In the civil engineering section for students in the first term,—surveys, levelling, plans, and estimates for Parliament,—eight certificates were awarded, Mr. P. F. Oddie first. Second term,—working sections, specifications, working plans, calculations, estimates, details, &c., for a rail-

way and dock,—five certificates were awarded, Mr. G. O. Burton first. Third term,—original designing, lattice, plate girder, warren, and other bridges,—four certificates, Mr. C. T. Spencer first, and Mr. F. J. Pigott second. These two students were specially distinguished by the examiner in his report as having such "acquaintance with this advanced branch of engineering as will inevitably give them a favourable start when they commence their professional career." Seven certificates were awarded to students in the colonial section, who during the last term have, amongst other work, made a very neat 4 horse-power horizontal engine. In the section for electrical engineering a certificate was awarded to Mr. A. J. Allen.

The examiners for the term were Mr. T. B. Lightfoot, C.E., M.E., and Mr. J. C. Coode, C.E. The reports of both gentlemen, written and given orally to the meeting, were highly favourable as touching the work and attainments of the students generally, and as to the value of the school and the efficiency with which it is conducted.

The number of students in attendance during the last term has been 76, being six more than the number attending in the term preceding, and the highest number reached since the commencement, when the school opened with nine students. The exigencies of the school have sent the lecture-room up to a higher floor in the tower, five floors in which are now occupied by the school.

REFORM AT THE INSTITUTE OF ARCHITECTS.

SIR,—If you can spare a corner in your next issue for such a purely parochial purpose, I would respectfully invite Mr. Barry or Mr. Whichcord, or any other leading supporter of the reformed system of administration at the Institute, to give us, before the meeting of the 7th proximo, some idea of what is really found to be the advantage derived from the innovation. I observe that a motion is to be brought forward on the 7th, which seems to be meant to initiate a return to the old system; and there will be just time for a reply to this letter. The old executive scheme was this:—A president was selected for dignified influence, either an amateur of distinction or a professional man of exceptionally high standing; three vice-presidents from amongst the seniors; a Council otherwise composed of members of average age, to represent the great class of ordinary working architects; and two active honorary secretaries, one especially qualified for home business, and one for foreign; the secretaries holding office nominally *en permanence*, but obviously being unable to devote more than a very few years to their work, and the others changing in the usual way of such societies, by the retirement of a certain number annually. The new system, introduced some seven years ago by Messrs. Barry and Whichcord, is, on the contrary, this:—A Council composed exclusively of the very foremost members of the profession, holding office permanently, and each individual rising in turn to the dignities of vice-president and president, to retire after occupying the chair for two years into the supremely honourable order of past-presidents. I happened to be an absentee through illness at the time the change was made, and I have never been able to understand what were the arguments adduced by Messrs. Barry and Whichcord in favour of it; but I have been told that the meetings for its discussion were very thinly attended, and that apathy was their chief characteristic. The same apathy has been manifested in the matter ever since, the only exceptional instance being the enthusiastic election of the late Mr. Street to the Presidency a few months before his lamented death. But I must go on to explain that the change of character contrived for the Council was supplemented by a change of character contrived for the meetings, it being ordained that no business whatever should be allowed to be done at these assemblies of the members except the reading of papers and their discussion,—a change which virtually deprived the guild at large of all opportunity for participating in the transaction or discussion of affairs, or even for requesting information of any kind from the Council, and which, in fact, converted the Council into a secret board of directors and the mass of members into a passive body of shareholders. Now, we have no difficulty in remembering the charming activity and enterprise which were manifested at the fortnightly meetings

In the days of Professor Donaldson and Sir William Tite, and under such secretarial direction as that of Mr. Nelson, Professor Lewis, and Sir Digby Wyatt. Neither is it easy to forget the vigorous publication of the Institute in those times when Cabinet Ministers received deputations of its members, when professional manifestoes were issued with effect, when an intimate correspondence was maintained with kindred societies all over the world, and complimentary courtesies freely exchanged with them, and when at least one famous victory in the Legislature itself was achieved through the instrumentality of the Institute's direct action upon public opinion. We can also recall the gracious way in which the nomination of new members of council was so contrived as to bring every man into notice in his turn, so soon as he had attained a certain professional standing, and thus to confer upon him a mark of recognition which was not only most welcome to his *amour propre*, but, if the truth must be told, duly beneficial to him in business. The question I have to put, then, is simply this:—Have these ends been better served by the reformed system of administration, or have they been not so well served?

I am regarding the Institute, of course, as a public and not a private institution, a learned society, an artistic, scientific, and literary guild; and I am bound to say that I love to look back upon the old system, with its undisturbed equality and consequent fraternity, its freedom, generosity, activity, and general usefulness. I can see nothing in the new system to compensate for the surrender of all this; and when I go to the meetings (which is seldom, for they seem to have lost interest to the men I used to see there), and survey the circle of the Council sitting as a melancholy caste apart, and apparently doing nothing, I am sorry to feel that the vanishing ambition of Messrs. Barry and Whichcord has simply "o'erleapt the selle and fallen on th' other side." Pray let me put into shape a few plain questions. Have the promises of Messrs. Barry and Whichcord been realised or not, that the Council would be continuously composed of the very foremost men of the profession, to whom office would be "an object of ambition," and whose artistic, scientific, and literary pre-eminence would confer a new dignity and lustre upon the Institute? What are the nature and extent of the influence which the Council is now actually found to possess with the learned societies, the foreign academies, the national and municipal authorities? What is the work which the Council performs, now that the constituency is unworthy to participate in it, or even to be informed of it? Are the meetings at Conduit-street as attractive as they used to be? as genial? as interesting? Do the members of Council produce the papers, or even lead the discussions? What compensates those gentlemen who during the last few years have been denied the honour of being placed in their fair turn on the Council, as a right of professional recognition of which their predecessors in seniority had always enjoyed the very considerable benefit? Perhaps it is very much to the credit of the Institute that the mere selection of office-holders has never been a bone of contention. It is a peculiar merit of this guild that its members are all men of business, all in harness, and all pretty equally qualified by the nature of their everyday work to manage affairs. It matters very little, therefore, who holds office or who does not. The "house list," for this reason, is scarcely ever interfered with. But I think the necessity is all the greater for the acceptance of a general policy based upon the especial avoidance of bureaucratic reticences, of invidious and spurious distinctions, and, above all, of everything that savours of the repression of individual earnestness, the material out of which all corporate influence has to be made. We have given the new system a fair trial, and if it cannot be shown to have advanced the true interests of the society and the profession, it is high time we tried the old system once more, which used to work so well.

ROBERT KEER.

St. Philip's, Southport.—We hear from Southport that upwards of fifty designs have been sent in competition for the new church for St. Philip's Parish, Southport, the whole of which will be publicly exhibited in the Atkinson Art Gallery, Southport, on and after New Year's Day, when the Committee have decided on the successful design.

THE CONSTRUCTIONAL VALUE OF IRON AND CONCRETE IN COMBINATION.

SIR,—Although agreeing with Mr. Fajia (p. 804) that the preparation of concrete deserves the most careful attention, I must take exception to the statement in his letter that "the combination of two such different materials" as are concrete and iron "in one member must result in the entire uselessness of one or the other." Your footnote, sir, expresses the theory of the combination of iron, as a tensile member, with concrete, as the compressional member. That the truth of this theory is sustained in practice, I will endeavour to prove. I find in my notebook the following particulars of experimental tests of concrete and concrete and iron beams, made by Mr. Kirkaldy for Mr. Hyatt. (The latter gentleman, I believe, deserves the credit of first practically applying the theory of the combination of iron and concrete):—

Testing Mark.	DESCRIPTION.*	Weight of Iron Used.	DIMENSIONS.			TEST.		Unit of Beam Strength.
			Length.	Width.	Depth.	Bearing.	Load.	
K 5,544	Cement only	lb.	ft.	in.	in.	ft.	lb.	lb.
K 5,537	Concrete only.—Proportions, one of concrete to two of crushed stock-bricks	6	12	8	5	3,192	20.7
K 5,548	Concrete beam with five 1-in. round iron ties at bottom, below the neutral axis	10	6	12	8	5	9,274	87.4

* Only the best London Portland cement used. The beams were tested two or three months after being made.

The foregoing experimental tests are evidence of the value of iron as an auxiliary to concrete.

By structurally analysing a beam composed entirely of concrete it becomes clearly evident that the limit of its strength is only equal to its weakest characteristic, viz., that of the tensile strength of the part below the neutral axis of the beam. The tensile strength of concrete composed of the best London Portland cement, in the proportion of 1 of the former to 1 of clean river sand and 2 of aggregate (clean crushed stone), is equal to 500 lb. per square inch nine months after being made, whereas the compressional strength may be taken as equal to 1,800 lb. per square inch. In order, therefore, to fully utilise all the strength possessed by concrete, when applied for girder purposes, such additional strength, in the form of wrought-iron tie-rods, must be made to the part of the concrete beam or girder below the neutral axis, and subjected to a tensile strain as will make it equal to the superior compressional strength of that part of the concrete beam above the neutral axis. This principle of adding to the tensile strength by means of the rods, is only another form of trussing as applied to wooden beams.

In the absence of more extended data as to the strength of iron and concrete applied in the manner described, I have arranged the following formulae, which I submit with deference, for ascertaining the strength of concrete and iron beams, where, by the addition of iron, the tension and compressive strength have been made to equal each other:—

For a concrete and iron beam, both ends supported, and with a distributed load. Note, concrete composed as follows:—1 part of Portland cement, 1 of sand, and 2 of aggregate.

L = length between bearings, in inches.

B = breadth of beam, in inches.

D = depth of beam.

W = breaking weight, in cwt.

$K = 2.7$.

$$\text{Then } \frac{8 K B D^2}{L} = W.$$

When the ends are supported, but with the load in the centre of the concrete and iron beam,

$$\text{then } \frac{4 K B D^2}{L} = W$$

$$\text{Safe load } \frac{W}{4}$$

Approximately the ultimate strength of a beam composed entirely of concrete may be taken as equal to $\frac{W}{10}$.

The following are some of the great advantages possessed by a carefully prepared concrete and iron beam:—

It is incombustible.

It is fire-resistant; has practically no factor of expansion and contraction.

It is incorrodable, as the iron is well protected from oxidisable influences.

It is comparatively inexpensive.

It is very durable.

It has the characteristically monumental appearance of stone.

It can be effectively decorated, and is, in my opinion, the *gilder par excellence* for architectural work, where monumental beauty, combined with strength, durability, and low cost are the desiderata.

B. H. THWAITE.

SIR,—Is Mr. Fajia's theory that "concrete being composed of materials which are of themselves incapable of tension or deflection, the concrete itself must therefore be, and is, of the same inflexible nature," correct? Mr. Fajia gives no information as to any experiments that have been made with a view of substantiating that theory.

In testing a concrete floor by dropping heavy weights upon it, the vibration is very sensible when no fracture has occurred. Lieutenant-

Colonel Seddon, R.E., some years ago made some experiments with concrete, and one of these was with a slab 6 in. thick, having a clear bearing of about 14 ft. 6 in. by 7 ft., and resting on walls 18 in. in thickness. The result, as given by Lieutenant-Colonel Seddon in his own words, was—"Began to 'bend' with 15 tons, rising off outside edges; with 32 tons, it cracked slightly; load increased to 43½ tons, with no appearance of crack altering. The slab had tilted up about three-quarters of an inch."

This latter portion of the result appears somewhat extraordinary, and, except from so trustworthy a source, would scarcely appear credible; and as nothing further is stated relative thereto, we are led to infer that the slab remained unbroken.

This accords to me to entirely negative Mr. Fajia's theory "that as soon as deflection commences, so does fracture, and that the end is not far off."

THOMAS POTTER.

Alresford.

ARCHITECTS' ASSISTANTS.

THE status of the architectural assistant can scarcely be considered apart from the question of professional education, of which the present system appears to have given rise to so much dissatisfaction. Practising architects have been accused of accepting premiums for imparting instruction to pupils; whilst the latter, it is said, are completely left to their own devices during their period of apprenticeship, and at its close are launched upon their professional career without those qualifications which are necessary to enable them to procure their own livelihood. Further, it is alleged that some practitioners are quite unscrupulous as to the number of pupils they receive into their offices, and that in many instances, duties that ought to be delegated to a paid staff are performed gratuitously by those who, according to their own account, have paid premiums merely to be victimised, while their brethren, whose education is supposed to be finished, are, to parody a well-known verse, "ruined by pupils' cheap labour."

Now, with respect to the former charge, it is a very grave one to bring against a professional body, since it amounts to no other, in plain English, than that of obtaining money under false pretences. We do not, however, suppose that the disappointed ones whose voices have been raised so loudly in protesting against the existing state of things ever seriously contemplated such an interpretation of their outcries; we merely point out that such is the logical tendency of many of the complaints that have been made. The position of an architect's pupil is often a perplexing one. The profession embraces such various branches of study, that a student may well feel puzzled at the array of subjects demanding his attention. He does not know where to commence, if he be left to himself, and he really stands in need less of actual instruction than of

timely counsel and guidance. He may not relish the dull routine of office work that is put before him, because he cannot see that its performance can serve to qualify him for the position he hopes one day to occupy. A young man with a taste for drawing, and a head filled with high-flood ideas, is too often prone to think his time wasted upon such prosaic functions as copying specifications, or tracing contract drawings; and so, from neglect or implied unwillingness to fulfil such duties, many a pupil has been left to run his own course, instead of profiting by the experience placed within his reach. Let us not be misunderstood; we do not, for a moment, wish to discourage youthful ambition. Probably a student who does not start with some Utopian dreams may become a useful man, but will never prove himself a very talented one; for it is the misfortune of genius often to commence at the wrong end of the chapter, and the most unpropitious beginners have sometimes made the greatest successes in after-life. But those pupils who think that their period of probationary study would be more advantageously passed in some academy, where design and construction could be taught upon systematic principles, lose sight of the importance of acquiring that practical knowledge of business routine which can only be gleaned in an office, where a young man will commonly best serve his own interests in the long run by making himself of real service to his master.

There is no doubt that many architects have derived benefit from the labours of intelligent and industrious pupils; such benefit is sure to be mutual, and no time or attention bestowed upon the instruction of those who display aptitude can ever be regretted. Certain it is that the receipt of premiums is a consideration to many in these days of keen professional competition, and those who wish the custom to continue will not neglect to perform their part, and to make the advantages of a professional introduction well worth paying for. But a busy man cannot be expected to sacrifice his time to the instruction of those who are indisposed or unable to profit by his teaching, and who have only themselves or their guardians to thank if they have adopted a profession for which they are by nature unfitted.

It has been said that some architects fill their offices with artful pupils, by whom those duties are performed that might otherwise be done by paid assistants. We should like to know what those duties are. Gentlemen can scarcely be blamed for not employing salaried clerks, when they can obtain gratuitous help so easily; but if the work of an assistant can be done by a pupil, who more or less untaught, what is the value of his services? We constantly hear that the profession is greatly overstocked, and the number of advertisements for "situations wanted," to be seen in our journals bears testimony to the fact. There is no doubt that many assistants are out of employment from time to time during the year, and that the fact is, in a great number of cases, due to no fault of their own; still it is impossible to be blind to the unsatisfactory character of much of the assistance rendered by those whose qualifications are often most ostentatiously set forth in advertisements. The gentleman who is clever in Gothic or Classic design, a first-class perspective draughtsman and colourist, thoroughly well up in construction, capable of taking off quantities, and well acquainted with surveying and levelling, and whose terms are moderate, is frequently to be met with upon paper; but it is likely that he can in reality excel in so many branches of professional activity, and yet find it difficult to obtain employment, except upon "moderate terms." We fear that some of the younger men, in their eagerness to secure engagements, are sometimes tempted to overstate their qualifications, and if they do not succeed in giving satisfaction in the too great variety of duties they undertake, are apt to lay themselves open to the suspicion of being incompetent in all. Far better would it be for architects' assistants, if they would content themselves with working each upon those lines for which they find themselves specially fitted. By so doing, they would narrow the limits of competition, and we should then hear fewer complaints of the alarmingly overcrowded state of the profession.

Suggestions have from time to time been put forward as to the adoption of some system of combination among architects' assistants upon the trade-union principle. We do not

think that any such scheme is likely to meet with general approval. We cannot close our eyes to certain evils inevitably resulting from the organised protection of labour,—evils that are felt to a more marked degree in proportion as the particular class of labour excels in degree of complexity. In the case of bricklayers, for example: we know that a first-class bricklayer, with the assistance of a labourer, can lay as many as 800 bricks per day, while an inferior hand might not lay more than 350, and that these two men are both placed upon the same level by trade-unionism,—both perform the same work, and strike for the same wages. Here is a practical discouragement to all effort at individual excellence; but perhaps, in the case of bricklaying, this is not a very serious consideration. To maintain that one man is as good as another in a branch of industry where there is not a very great scope for the display of personal merit may not be productive of much harm, although the result must always be demoralising; but in the comparatively complex function of an architect's assistant, the principle of equality between man and man could not be admitted without disastrous consequences. Protection could only mean protection for the incompetent.

We trust we shall never see practising architects and assistants drawn up in two hostile armies, each against the other. We think such a state of things exceedingly improbable. The wiser among both classes know too well how far their interests are identical. Patient, conscientious effort on the one side, kindly recognition on the other, sympathy and forbearance on both sides,—there is much of these: may there be more.

HULL GENERAL INFIRMARY.

This building is to be entirely remodelled, and to have two new wings added to it, in accordance with the plans prepared by Messrs. H. Saxon Snell & Son, architects, of London.

The plan of the present structure, erected in the year 1784, is such that the administrative offices and sick wards are all contained under one roof, with the result that a large proportion of the officers are continually reported as suffering from hospitalism. It is, in consequence, proposed to cut two gaps through the principal front, and place the officers' rooms and kitchen offices in the centre block so formed, and the sick wards in the detached portions at either end, and when to these are added the proposed new wings, the building will accommodate 262 patients. An out-patients' department is also to be erected as a detached building upon a site adjoining the Infirmary grounds, but with a public entrance from Brook-street.

THE NEW BOROUGH ASYLUM FOR HULL.

This important building was opened on the 8th inst., by the Mayor. The building occupies a site, on rising ground, midway between Cottingham and Willerby. It has a frontage of 760 ft. and a depth of 440 ft., but the buildings are not lofty, being spread over so large an area. The *Hull Packet* describes the plan as that of a composite structure, forming an oblong but little developed from a square. Consider the frontage as making one of the sides of this oblong. Pierce the centre of the one side and produce to the other. This will run in a direction from south to north. The southern central position begins with the administrative block, and is the chief entrance to the place. It projects in front of the rest of the asylum. Next to this is the dining and recreation hall, a lofty apartment with open roof, and having at the upper end a platform or stage, and ante-rooms. It will accommodate about 700. Next comes the kitchen, divided by a corridor from the dining-hall and sculleries, together with the bakery, flour stores, general grocery stores, vegetable and potato room, larder, and dairy. The rooms are fitted up with the most modern appliances, and the cookery department especially, by having the excellent kitchen fittings and stoves of Messrs. Benham & Son. Over the larder, dairy, &c., are the bedrooms for the cook, kitchenmaids, housemaids, and the patients employed in the kitchen. On either side of the kitchen run the connecting corridors, through which the patients pass to the dining and recreation hall. Into these open the

attendants' mess-rooms, one for each division, and conveniently placed in close proximity to the kitchen, with the cook's room adjoining. Next, in the middle line running down the structure, is a suite of rooms, comprising the surgery and patients' visiting rooms. These, with the kitchen and corridors, inclose a square, in which stands the detached meat larder. A sub-way opens also into the square, and allows the meat and vegetables and other provisions to be readily brought to the kitchen and general stores. Finally, there is the block which contains the general stores, the clerk's office and sitting-room, the porter's room, general waiting-room, committee-room, and superintendent's office. Over these are placed the clerks' bedrooms, two spare bedrooms, the chaplain's room, library, and porter's bedroom, &c. This completes the central portion terminating at its northern extremity. The building incloses on either side two open quadrangles of considerable extent, and laid down in grass. These are airing courts, one division being appropriated to the male and the other to the female patients.

The infirmary blocks are at the north end, or transversely with the administrative department and dining hall, and have two stories. The floors provide all necessary accommodation for patients, including a central day-room, with four small dormitories, six single rooms, two attendants' rooms, a kitchen and scullery, and a small visiting-room on each floor. The bath-rooms, lavatories, and water-closets are in a detached building on the north side of the infirmary, with a lobby which admits of cross ventilation.

The block for violent and troublesome patients is placed on the outer side of the square, and consists of a large day-room with two adjacent corridors, which can be closed by glass doors, and used as separate day-rooms if found necessary. In connexion with this ward are twelve single rooms and two attendants' rooms. The store-rooms, closets, urinals, and lavatory are in a detached block, with gallery and cross ventilation. The blocks for chronic and working patients have on the ground-floor three large day-rooms, opening one into another, together with a spacious lavatory and bath-room, stores, and attendants' rooms. The general bath-room is closely adjoining, and with its roomy dressing-room is so placed as to serve for both those and the preceding blocks. The water-closets are detached as in the other blocks, with cross ventilation between them and the day-room. On the first floor are the dormitories, lavatory, a single bath, store-room, and attendants' rooms. The blocks for recent cases are built out in front of the connecting corridors, so as to enjoy a southern aspect and to leave the corridor free for traffic, and to avoid what the architects consider the worst feature of some modern asylums, viz., a sub-way or covered way. They consist of a suite of rooms on the ground-floor, a day-room, dining-room, and dormitory, seven single rooms and two attendants' rooms, a scullery, store and bath rooms. The lavatory and water-closets are detached as in the other blocks.

On the first floor are the epileptic and suicidal dormitories, single rooms, attendants' rooms, lavatory, and closet. They are designed in accordance with the Lunacy Commissioners' suggestions. No special day-room accommodation has been set apart for the epileptic patients, the architects being of opinion that it is better on the whole to divide the epileptic population over the general wards, according to their peculiar dispositions. The violent would, therefore, be placed in the ward for the more troublesome; the quiet and well-behaved in the working block; the feeble in the infirmary.

The general dining-hall, recreation hall, and attendants' mess-rooms are placed in the position which is most convenient; that is, near to the kitchen and sculleries.

Most of the wards are provided with verandahs for air and exercise without exposure; this feature is especially useful in the infirmary and receiving-wards.

The laundry is situated on the north side of the corridor, near to the female working and receiving blocks. It is fitted up by Messrs. Bradford & Co., of Manchester. Externally, the building is of red brick, with slate roofs. The corridors are of stone, as are also the staircases.

Messrs. G. Jackson & Son, of Hull, were the general contractors. The other contracts were taken by Messrs. Haden & Sons for the

general engineering; Messrs. Benham & Son for the kitchen fittings and stoves; Messrs. Bradford for fitting up the laundry; Mr. J. E. Elwell, Beverley, for the church fittings; and Messrs. Porter & Co., of Lincoln, for the gasworks.

The cost of the building was thus stated by Alderman Witty, chairman of the Asylum Committee.—Land, 12,770l.; contracts for building, &c., 55,795l.; estimated cost of additional work, 3,397l.; furniture, 5,410l.; total, 77,372l.

The architects are Messrs. Smith & Brodick, Hull.

INTERNATIONAL HEALTH EXHIBITION.

THE following sub-committees, appointed by the Executive Council of the Exhibition, have met at the Society of Arts:—

FOOD.—GROUPE I.

Monday, December 17th.—Present: Sir J. B. Lawes, bart., LL.D., F.R.S., in the chair; Professor Church; Professor George Fleming, LL.D.; Sir B. T. Brandreth Gibbs; Professor H. R. Mowley, F.R.S.; Dr. David S. Price; Mr. John M. Thomson; Dr. Voelcker, F.R.S.; Mr. H. Trueman Wood.

THE DWELLING-HOUSE.—GROUP III.

Friday, December 14th.—Present: Sir Robert Rawlinson, C.B., in the chair; Dr. Alfred Carpenter; Mr. H. H. Collins; Mr. C. N. Cresswell; Mr. T. W. Cutler; Mr. J. Bailey Denton; Mr. W. Eassie; Mr. R. E. Farrant; Mr. Rogers Field; Mr. Inst. C.E.; Captain Douglas Galton, C.B., F.R.S.; Mr. George Godwin, F.R.S.; Mr. E. Hoole; Mr. Baldwin Latham; Mr. Shirley F. Murphy; Dr. G. V. Moore; Mr. George Shaw; Dr. Thorne Thorne; Mr. E. Turner, F.R.I.B.A.; Mr. George Vigers; Mr. H. Trueman Wood.

Wednesday, December 19th.—Present: Captain Douglas Galton, C.B., F.R.S., in the chair; Mr. A. T. Atchison; Mr. W. R. E. Cole; Mr. H. H. Collins; Dr. Corfield; Mr. Thomas W. Cutler; Mr. Heisch; Mr. Baldwin Latham; Professor T. Hayter Lewis; Professor Chandler Roberts, F.R.S.; Mr. Frederic Scott; Mr. George Shaw; Mr. George Vigers; Mr. Grenville Williams, F.R.S.; Mr. H. Trueman Wood.

THE SCHOOL (GROUP IV.), AND EDUCATION (GROUP VI.).

Tuesday, December 18th.—Present: Mr. E. N. Buxton in the chair; Mr. B. St. John Ackers; Dr. T. R. Armistead; Mr. J. G. Fitch; Dr. J. H. Gladstone, F.R.S.; Major-General Hammersley; Mr. T. C. Horsfall; Mr. A. C. King; Colonel W. R. Lewis; Deputy-Inspector-General F. J. Mount; Mr. E. R. Robson, F.R.I.B.A., F.S.A.; Mr. H. Trueman Wood.

THE WORKSHOP.—GROUP V.

Saturday, December 8th.—Present: Dr. G. Buchanan, F.R.S., in the chair; Dr. A. Dupré, F.R.S.; Mr. Alexander Redgrave; Mr. Gilbert Redgrave; Mr. H. Trueman Wood.

Saturday, December 15th.—Present: Dr. George Buchanan, F.R.S., in the chair; Dr. Edward Ballard; Mr. J. H. Bridges; Mr. A. Redgrave; Mr. G. Redgrave; Mr. H. Trueman Wood; Mr. W. Woodall.

SICK AND AMBULANCE.

Tuesday, December 18th.—Present: Director-General Crawford, in the chair; Deputy Surgeon-General Bostock, C.B.; Brigade-Surgeon W. G. Don; Surgeon-Major G. J. H. Ewart; Mr. John Farley; Deputy Inspector-General F. J. Mount; Director-General John W. Reid; J. C. Steele, M.D.; Mr. H. Trueman Wood.

OBITUARY.

M. Lesueur.—The Times Paris Correspondent announces the death of M. Lesueur, the distinguished French architect. Jean Baptiste Cléon Lesueur, who was born in 1794, at Clairefontaine, near Rambouillet, entered the École des Beaux Arts at seventeen years of age, took the second prize for architecture in 1811, and the grand prize in 1819. After a sojourn of a few years at Rome, he returned to France, and was engaged to construct the parish church at Vincennes. He was also the architect of the Conservatory of Music at Geneva, and of a number of private buildings. In 1846 he was elected an Honorary and Corresponding Member of the Royal Institute of British Architects, of whose Gold Medal he has been a recipient. In the same year he was elected member of the Institute of France, and was shortly afterwards appointed professor at the École des Beaux Arts. M. Lesueur was also known as the author of several books on architecture.

Mr. Thomas Holloway.—We regret to an-

nounce the death of Mr. Thomas Holloway, which happened on Wednesday last, in his eighty-fourth year. Mr. Holloway will be remembered as the munificent founder of the Sanatorium at Virginia Water and the College for Ladies at Egham, both of which buildings have been illustrated in former volumes of the Builder.

THE HOSPITALS ASSOCIATION.

UNDER this title an association has been formed, the constitution of which was finally adopted at a meeting held a few days ago at No. 1, Adam-street, Major Ross, M.P., in the chair; and steps were taken for still further enlarging the committee in order to give it as representative a character as possible. The Lord Mayor has shown his sympathy with the movement by placing at the committee's disposal the use of the Egyptian Hall for a meeting to be held in the month of January, when the objects of the proposed association will be brought before the public. Meanwhile, as a result of an inquiry of a wide-spread character, instituted in the metropolis and the provinces, there is now no doubt that the Hospitals Association will shortly be in full working order. Officers of individual help and support are being daily received, and with a fully representative council, the new association will be launched under circumstances which augur well for its future usefulness and success. The objects of the association, as set forth in its constitution, are to be (1) to facilitate the consideration and discussion of matters connected with hospital management, and, where advisable, to take measures to further the decisions arrived at; and (2) to afford opportunities for the acquisition of a knowledge of hospital administration, both lay and medical. It is intended that the association shall afford facilities for the reading, discussion, and publication of approved papers; for the delivery of lectures, and for the holding of conferences on hospital administration, hospital management, medical relief, medical education in relation to hospitals, free and provident dispensaries, and other kindred subjects; and it is to found a library, consisting of works on hospital administration, construction, finance, and statistics.

Mr. J. L. Clifford-Smith has been appointed secretary of the association.

ARCHITECTURAL SOCIETIES.

Edinburgh Architectural Association.—At the fortnightly meeting, held on the 26th inst. in the Professional Hall, 20, George-street, Mr. D. McGibbon, president, occupied the chair. Mr. E. Calvert, architect, read a paper entitled "Technical training in the collateral trades a great factor to success," in the course of which he remarked that many youths are apprenticed to the architectural profession through mistaken ideas on the part of their parents, who imagined that their sons were adapted for architects because they had shown a "taste for drawing," forgetting that more than mere drawing was required. He also referred to the large number of youths who completed their apprenticeship without having acquired a thorough knowledge of construction,—being, in fact, little better than copying machines. Had they received some training in the collateral trades they might have developed into useful practical men, instead of swelling the ranks of an overstocked class in the profession. It was to be regretted that no technical schools existed in this country, where students of architecture could be initiated in the technique of those trades so inseparably connected with the profession. The lecturer concluded by advising those who desired to gain this practical knowledge to work side by side with mechanics,—a course which, he said, had been again and again adopted by some of the most distinguished architects, who had considered no post too humble or probation too severe.

Glasgow Architectural Association.—The fourth of this session's series of lectures was delivered on the 21st inst., by Mr. Robert Scott, the subject being "Building Contracts." The president, Mr. P. M. Chalmers, occupied the chair. The lecturer urged that greater attention ought to be given to the preparation of both plans and schedules, and every requirement fully expressed. He then considered in detail the five principal clauses constituting the usual Glasgow building contract, pointing out

some common instances of conditions which, he urged, were not only inequitable but also legally untenable. After some discussion, a vote of thanks was awarded Mr. Scott.

BUILDING PATENT RECORD.*

APPLICATIONS FOR LETTERS PATENT.

5,781. P. M. Justice, London. Compounds for plastering, mortar, &c. (Com. by N. F. Potter, Providence, U.S.A.) Dec. 18, 1883.
5,796. A. Lorrain, Richmond. Apparatus for producing fluid currents for ventilation, &c. Dec. 18, 1883.
5,821. G. M. Morgan, London. Working marble, stone, &c. Dec. 20, 1883.
5,824. A. M. Clark, London. Metallic plastering surfaces. (Com. by J. J. Stanley, New York, U.S.A.) Dec. 20, 1883.

NOTICES TO PROCEED

have been given by the following applicants on the date named:—

Dec. 18, 1883.

3,975. J. Templeman, Glasgow. Manufacture of fire-lighters, &c. Aug. 16, 1883.
5,022. F. Parker and W. Parker, London. Hinges, &c. Oct. 22, 1883.

ABRIDGMENTS OF SPECIFICATIONS.

Published during the week ending December 22, 1883.

2,129. T. J. Palmer, London. Manufacture of decorative materials for walls. April 27, 1883. Price 2d.

The paper pulp is passed through rollers together with a thick endless blanket which absorbs the moisture and from which this moisture is afterwards expressed. The paper material then passes on to another blanket, and is again pressed, and then passes on to wire cloth, on which it is assed through rolls to be embossed, &c. (Pro. Pro.)

2,208. E. R. Palmer, Beckenham. Self-acting flushing apparatus. May 1, 1883. Price 2d.

A syphon is placed in a tank and a ball-valve is so fitted that when the tank is empty the water passes in very slowly, but as the water raises the ball-valve, the influx of water increases until it fills the syphon and the tank is emptied. (Pro. Pro.)

2,293. H. J. Hadden, London. Compound for rendering textile fabrics, wood, &c., fire-proof. (Com. by S. Gimenez and J. Yrigoyen, Pamplona, Spain.) 5th May, 1883. Price 2d.







This consists of the bark of iron wood steeped in water, and mixed with sea-salt. To this water is then added sulphate of zinc, alum, sal ammoniac, and fish glue, and the whole is well stirred together and heated, when it is allowed to cool, and is ready for use. (Pro. Pro.)

"THE" AND "YE."

Sir,—During the course of transcribing "a Booke of Register whearin are conteyned the names of those wth have bene Christened wedded and buried wth the pishe of Wilton from the yeare of our Lorde God 1558 unto the yeare that nowe is 1590 and so folowinge continually" I was struck with the way in which the definite article, or, as I believe it is now more correctly termed, distinguishing adjective, was written, as not bearing out the popular notion that our ancestors wrote "ye" when they meant "the."

Although the entries begin with the year 1558, it is evident that those for the first thirty-two years were copied in 1590 from an earlier document. The register is continued to the year 1714; it is, therefore, to the period of 124 years between these two last-mentioned dates that my observation has been confined.

Various forms of the word which occur in the period referred to are:—

1590.	1608.	1637.
		
A.D. 1639.	1678.	A.
		

They show that originally the word was written with three clearly defined letters t-h-e; that afterwards, as in 1637, when carelessly written, the peculiar down-stroke which formed the "h" had certainly in connexion with the "t" the appearance of being intended for "y," but that such was not the case is evident from an

* Compiled by Hart & Co., Patent Agents, 186, Fleet-street.

examination of the "y" of the same year which is of the form shown at A; and that later, when the "th" and "y" more closely resembled each other, the third letter "e" was written above the other two, apparently to show that "th" or an abbreviation equivalent thereto, was intended, and not "y."

The gradual transition in the original document is very interesting to notice, and seems to show that the interchange of these two parts of speech, which is so often affected in the present day when adopting the phraseology of an older period, is not borne out by this contemporary manuscript. J. HOUGHTON SPENCER.

ELM BLOCK FLOORS.

SIR,—I am inclined to think Mr. White, in his letter on page 842, seems to attach undue importance to the thickness of 2½ in. for the blocks. Cases have been mentioned to me in which 1½-inch blocks have been used without any trouble from turning up, although some were rendered loose by a large amount of shrinkage.

I believe much care was exercised in preparing the bed for the blocks, a layer of rough asphaltum was put upon concrete and then a layer of cement, and the blocks were dipped in Stockholm tar. Can it be that the shrinkage of elm does not cease till after a long time of exposure? It would be desirable to put down the elm blocks hot from the drying-room and try the effect in some space near a fire, or where there would be a considerable change in temperature. W.

RE PARTY WALLS.

SIR,—It will, I think, be a benefit to the profession generally if Mr. Leo will state on what authority or decision he bases his remarks in your last issue [p. 842].

Unless specially mentioned as otherwise in the leases or covenants, I understand that a party wall is held in undivided moieties by the adjoining owners, and therefore, neither party can say that one particular half of the wall is his own property.

And, further, Clause I, Sec. 35, Part 3, of the Building Act as applied to Sec. 83 of the same part, seems to refer to party walls generally, however held. J. BROOKES HUNT.

LIGHT CASES.

RUSSELL V. WATTS.

JUDGMENT was delivered on the 21st inst., on this appeal from a decision of Vice-Chancellor Bacon, which was argued in the course of last month. The parties occupied portions of a building originally erected in Liverpool by Mr. J. E. Jeffery, and known as Compton House. He had intended to erect one large building on the whole of the site for the purposes of his business, but was compelled by the insurance companies to alter this, and to erect seven blocks which communicated with each other, and could be entered as one building. Some of the rooms in the blocks were lighted by means of windows looking upon deep-well holes or shafts covered with skylights. The blocks were described as A, B, C, D, E, F, and G. The buildings were mortgaged to different individuals, and, since Jeffery's failure, had been in the possession of different individuals. The plaintiff was now in possession of block B, and the defendants of block C. The plaintiff's premises were in part lighted by windows which opened on a well-hole situated on the defendants' premises, and the defendants, in May, 1880, blocked up their windows by nailing boards over them, and afterwards by tarring them over. The action was brought to restrain the defendants from committing acts of trespass, and also to restrain any obstruction of the plaintiff's light derived through the windows in question. The Vice-Chancellor granted an injunction, and the defendants appealed.

Judge Justice Cotton said (we quote from the report in the Times) the question was whether there was any implied reservation of an easement of light when the grant was made by Jeffery in June, 1866, to the defendants' predecessors in title. There was an enormous difference between a grant and an implied reservation. As a general rule, a man could not reserve from his own grant. As regarded a reservation, the matter stood in an entirely different position. The object of an implied reservation was to derogate from the grant, to render it less beneficial to the grantee. There were, no doubt, exceptions to the general rule, as in the case of an essential easement, such as an easement of mutual support of two houses, or the case of a way of necessity, as if a man sold the land surrounding a field which he did not sell. It would be assumed that he intended to use that field, and a way of necessity to it was said to be reserved by implication. There was also another case, which was not really an exception; when several grants were made by the same grantor, not actually contemporaneously, but so as to form really one transaction, then each

grantee was held to have the benefit of an implied grant or reservation of those easements which were really necessary to the enjoyment of the property granted to him. His Lordship was of opinion that there was nothing in the mortgage to Messrs. Moon to lead to an inference that it was intended there should be any reservation, nor did he think that any reservation was to be implied from the circumstances. He was also of opinion that there was nothing to justify the conclusion of the Vice-Chancellor. The defendant Duckworth had done nothing to interfere with the plaintiff, and ought not to have been made a defendant, and as against him the action must be dismissed with costs. There would be no costs of the appeal.

Lord Justice Lindley differed. He said that the case was not that of a vendor of a piece of land attempting to derogate from his own grant. It was more like the case of several persons interested in several pieces of land, and agreeing to build upon them in a particular way so as to accommodate one another, and of one of them afterwards, when the buildings are up, insisting on rights which were quite inconsistent with the enjoyment of the buildings as erected. There was no authority to show that in such a case any one of such persons could afterwards build on his own land so as to obstruct his neighbour's light, and in the absence of such authority he was of opinion that he could not do so. In such a case, it appeared to his Lordship that the cross easements which were created in the first instance were impliedly granted in equity, if not at law, and if such easements were apparent, no purchaser could protect himself against them by alleging that he bought without notice of them. So far as the defendant Watts was concerned, his Lordship was of opinion that the decision of the Vice-Chancellor was correct, and that the appeal ought to be dismissed.

Lord Justice Coleridge concurred with Lord Justice Cotton. The Vice-Chancellor had characterized the conduct of the defendant Watts in blocking up the plaintiff's windows as "brutal," and his Lordship did not differ from that view, and he thought that the defendants ought to have no costs of the appeal.

CASE UNDER THE EMPLOYERS' LIABILITY ACT.

HILL V. SCOTT.

In the Queen's Bench Division of the High Court of Justice on the 17th inst., this case came before Mr. Justice Mathew, sitting with a jury, to recover damages for the death of the plaintiff's husband, who was killed through the falling of a "jib" of a crane belonging to the defendant (the appellant in the present case), a contractor; and the jury returned a verdict for the widow, with 135*l.* damages. The negligence complained of was that the crane was improperly constructed, and with a defect. The defendant in the course of his business had contracted to do certain excavating work, and the crane was his property. The jib had fallen down two or three days before the accident, and had been replaced by the appellant's men. The deceased was in the appellant's employment as a workman, but at the time when he met his death he was lending a hand to the men of a sub-contractor named Stafford, who were at work on the same ground building a wall.

A rule for a new trial has been granted on the following grounds: 1. That there was no evidence to show that the deceased had ever the right or duty to be where he was; that he was at most a bare licensee, and that the defendant had no duty at the time towards the deceased to provide a proper crane. 2. That there was no evidence to show that the crane was connected with or used in the business of the defendant.

Mr. Gainsford Bruce, for the respondent, argued that the deceased did not cease to be a workman in Scott's employment because he happened to go a few steps beyond the spot where his particular duty led him. The appellant (Scott) was standing by at the time of the accident, and neither he nor any one else sought to prevent the deceased from rendering assistance.

Mr. McIntyre pointed out, on behalf of the appellant, that the deceased was in Scott's employment, and that Scott had entered into a sub-contract with Stafford to build a wall; that by the terms of the sub-contract Scott was to bring the stone used in the erection of the wall down to the crane, and that Stafford, by his men, was to unload the stone. Part of the unloading consisted in attaching the chain from the crane to the stone, and it was while he was doing this that the deceased was killed. The learned counsel contended that if the deceased had been Stafford's servant he might have had a right of action against Scott, but that as Scott's servant he had no business at the spot.

Mr. Justice Mathew.—If Stafford's men had been employed, and one of them had been killed, they would have been an action against the defendant. Why is Scott in a different position because this man

happens to have been in his own employment? The case is complete against the defendant, because he must have contemplated that somebody should do the work. Scott had an interest in the expeditious execution of the work; he was present, and did not interfere.

After some further argument, their Lordships unanimously discharged the rule.

PROVINCIAL NEWS.

Hull.—On the 11th inst. the old Grammar School, Hull, which has been restored by Messrs. Smith & Brodriek, architects, and converted into a mission-room in connexion with Holy Trinity Church, was opened by his Grace the Archbishop of York. On the motion of the Mayor, a resolution was passed expressing the satisfaction of the meeting at the preservation of the picturesque old building. The Mayor stated that the school was just four centuries old, having been founded in 1486. Its founder, John Allcock, was a merchant, and had filled nearly every municipal office. He held three bishoprics in succession, and became ultimately Lord Chancellor of England. Alderman Gee, who in the sixteenth century served three times as Mayor, was the restorer of the school, having given 80*l.* and 80,000 bricks for the purpose, and also some bequests. At that time a new school was built to the westward of the old one, which was thereafter used as the master's residence. The Corporation was said to have added a second story, which was used by day as an Exchange, and at night as an Assembly-room, our merchants having thus learned to combine business with pleasure. He had the authority of Mr. McCormick for saying that Henry VIII. danced in this room; but, unfortunately, Mr. McCormick and chronology were at variance, for the Assembly-rooms were built in 1585, while Henry VIII. died, if he remembered rightly, in 1547. The building has been preserved and converted to its present use at the suggestion of the Vicar.

Birmingham.—A new building for business purposes, situated in Ernest-street, Holloway Head, Birmingham, is now approaching completion. The structure consists of a merchant's warehouses, offices, strong-room, covered yards, &c. The various rooms are conveniently arranged, and lofty, and a considerable portion of the building is covered over with rolled plate glass. The lift and strong room fittings have been supplied by Messrs. Clark, Bunnett, & Co. The offices are approached by a wide stone staircase and landing. The front elevation is in the Early Gothic style, with rubbed and ganged arches, ornamental red brick cornices and strings, stone labels, lintels and tympana, polished red granite column, carved bosses, &c. Over the gateway entrance is an ornamental iron grille. This building has been erected for Messrs. Wallace & Co., merchants, Birmingham, by Mr. Thomas Hughes, builder, Baker-street, Small Heath, from plans, &c., prepared by Mr. John Statham Davis, architect, Birmingham. The total cost approaches 2,000*l.*

Walsall.—Extensive alterations to the skating-rink here have just been completed for "General" Booth, at a cost of 400*l.*, the same having been converted into "barracks" buildings by the Salvation Army staff, Mr. George Brick acting as clerk of the works under the superintendence of Mr. E. J. Sherwood, architect.

Basingstoke.—On the 20th inst., Messrs. Raynbird & Sons, of this town, held a large and important sale of valuable freehold building land at "The Red Lion" Hotel. The first lots offered were two plots in Chapel-street, having extensive frontages to the Junction-road. The biddings for these lots were slow, but they were eventually sold at about 3*l.* per foot frontage. Lot 3 comprised the premises situate in Wote-street, occupied by Mr. C. F. Cooksey. This lot, with a frontage of 99 ft. and a depth of 115 ft., was sold for 800*l.* Lots 4 to 8, situate at the south end of the town, and known as the "Hackwood-road Nurseries," containing about 2a. Or. 15p. were offered together, and after some spirited bidding the whole were purchased by Mr. A. Deards, builder, London, for 1,840*l.* Lots 10 to 25 were situate in the parish of Eastrop, adjoining the town; they were known as "Chequers' Close," and arranged in convenient lots to suit purchasers, with frontages ranging from 50 to 150 ft. The biddings for these lots were slow, but nearly all were disposed of at good prices amounting to about 2*l.* per foot frontage and over 600*l.* per acre.

* A very unhealthy system.—Ed.

STAINED GLASS.

Rochester.—The ceremony of unveiling three memorial windows to the officers, non-commissioned officers, and men of the corps of Royal Engineers who were killed in action or died from disease in the South African campaigns of 1878-81, Afghan campaigns of 1878-80, and the Waziri expedition of 1881 was on the 19th inst. performed by Field-Marshal Lord Napier of Magdala in Rochester Cathedral. No fewer than nine memorial windows had been previously placed in the cathedral to the memory of distinguished Royal Engineer officers, and the present ceremony related to three additional ones, viz., the great west window of the cathedral, 30 ft. by 20 ft., in commemoration of the whole of the officers and men who fell in the various expeditions, and two smaller windows, one on each side of the larger one, dedicated to the memory of Colonel A. W. Durnford and Lieut. R. T. Henn respectively; to the former "for bravely fighting to the last and dying with his faithful followers in the gap, endeavouring to cover the retreat on the fatal day of Isandhlwana," and to the latter officer "for gallantly struggling to the end and dying with his native sappers and some members of the 66th Regiment, the last left on the field of Maiwand, in Afghanistan." The subjects chosen for illustration by Messrs. Clayton & Bell, by whom the window has been executed, are all taken from the sacred writings,—chiefly Old Testament history,—some two hundred of the principal Biblical characters and events being introduced. The whole is surmounted by a representation of the Star of India, with grenades, &c., near which are depicted the rose, thistle, leek, and shamrock. In the centre are the Royal arms, flanked by figures of St. George, St. Patrick, St. David, and St. Andrew. The names of the whole of the officers and men are inscribed on brasses.

Northfleet.—A stained-glass window has been placed in this church representing the subject of the Presentation in the Temple. The work is by Messrs. Warrington & Co., of Fitzroy-square.

VARIORUM.

"LONDON CRIES," sent to us by Messrs. Field & Tuer, is a volume on the subject of old London street cries (which are more attractive in their historical past than in their real present), which derives its chief value, as the author admits, from its illustrations. These include reproductions of some very pretty pictures of children, "six charming children," carrying on various trades in street merchandises, originally published in 1812 by S. & J. Fuller, at "The Temple of Fancy, Rathbone-place." There are also some reproductions of small coloured plates by Rowlandson, illustrating the same subject.—"English Etchings," Part XXXI. (issued by W. M. Reeves) contains three plates,—"Dryden's House in Fetter-lane," by Mr. Percy Thomas; "The Farmer's Boy," a subject from Bloomfield's now nearly-forgotten poem, by Mr. A. M. Williams; and "The Yew Tree's Shade," by Mr. H. Pope. The latter is the most powerful in effect, and represents best the special powers of etching as a form of artistic expression; "The Farmer's Boy" is one of the engraving-etchings, as one may call them, very delicately worked, but wanting in the vigour and freedom in which etching has the advantage over engraving. The three are issued in one cover for a price which is remarkably low (3s. 6d.) for such good art as this, and we join in the wish, expressed in a quotation from a contemporary, that the "lower middle class," if they want cheap pictures, would take such work as this rather than the horrid things in the way of oleographs and chromo-lithographs which they are often content to frame.—"Painting on China," with twelve descriptive lessons, by Mrs. Conyers Morrell (Kennedy & Brown), is a useful and very compact little manual for those who wish to amuse themselves with this pretty and attractive form of artistic work.—The *Leisure Hour* for January contains some good and some poor illustrations; among the former a coloured print after Mr. Caldecott, "The Professor's Class."—The *Boys' Own Paper* and *Girls' Own* ditto, published at the *Leisure Hour* Office, are very spirited and liberal in their illustrations, for sixpenny publications of such extent.—Among publications rather useful than ornamental we have "Book-keeping in accordance with the Bankruptcy

Act," by Mr. Henry Feast (Feast & Hole); "The Artisans' Year Book," Simpkin, Marshall, & Co.; "The Railway Diary and Officials Directory," McCorquodale & Co.; and "The Diary for 1884," published in connexion with the *Sanitary Record* and the *London Medical Record*.—The *Journal of Progress* in Wood-working appears to be really a kind of illustrated catalogue raisonné, issued by Messrs. Goodell & Waters, of Philadelphia, builders of wood-working machinery; it contains some carefully-executed illustrations of machinery.—Calvert's "Mechanic's Almanac" intersperses a good deal of useful information among its tables.

Miscellaneous.

The Disease of the Money-Counters.—A Washington correspondent, says the *London Medical Record*, visiting the Treasury Department, noticed that many of the women employed in counting bank-notes looked ill, and had sores upon their hands or heads. The superintendent gave the following account of the trouble:—"Very few," he said, "who spend any considerable time in counting money escape the sores. They generally appear first on their hands, but frequently they break out on the head, and sometimes the eyes are affected. We can do nothing to prevent this. All of the ladies take the greatest care of themselves in their work, but sooner or later they are afflicted with sores. The direct cause of the sores is the arsenic employed in the manufacture of the money. If the skin is the least abraded, and the arsenic gets under the flesh, a sore will appear the next morning. The habit that every one has of putting the hand to the head and face is the way the arsenic-poisoning is carried to those portions of the body. 'See here,' said one of the officials, stopping by the side of a young lady, and picking up a glass vessel containing a sponge, 'this sponge is wet, and is used to moisten the fingers while counting the money. You see how black it is. That's arsenic. Every morning a new piece of sponge is placed on the desk of each employée, but before the day is over it is as black as this. I have known half a dozen cases where ladies have been compelled to resign their positions. There are three ladies who were here six years before they were afflicted with sores. About three months ago they were so visited by them that they had to quit work. They have been away ever since, and the physician's certificate in each case says that their blood is poisoned with arsenic.'

The Hampstead and Fulham Hospitals Litigation.—It is stated that the Metropolitan Asylums Board and the litigants at Hampstead and Fulham have come to terms, by which the inhabitants of London will be spared the expense of further litigation in the matter of the hospitals for fever and smallpox at Hampstead and Fulham. The Fulham case is to be closed by the payment of damages proved to the amount of 6,000*l.*, and the hospital will remain where it is. The case of the hospital at Hampstead will be a good deal more costly. After protracted negotiations between the Asylums Board and Mr. Pearson Hill, the Board offered to purchase the property adjoining the hospital at a price to be settled by negotiation. Mr. Hill at first demanded 31,500*l.*, and the Board offered 15,000*l.*, but at last both parties agreed on the intermediate term of 22,500*l.* For this sum Mr. Hill's claims for costs and damages will be satisfied, and his property, consisting of two houses and upwards of three acres of land, will be transferred to the Board. A new and convenient access to the hospital will also be obtained under the same arrangement.

Church Decoration, Loughborough.—Some decorative panels have just been added to the east wall of All Saints' Church, Loughborough, Leicestershire, one on each side of the window and one on each side of the reredos. The panels have been painted by Miss Agnes Saunders, lately a student at the School of Art, South Kensington. The two upper panels contain life-sized figures of the four Evangelists, who point to the figure of the Saviour in the window. The lower panels are filled with a conventional design, to accord with the centre portion of the reredos. The material employed is the same as was used in painting the wooden ceiling of Ely Cathedral. The work is a gift from Archdeacon Fearon to the church.

Mortuaries for the Metropolis.—Whatever differences of opinion may exist as to the most promising remedy for the overcrowding of the poor, now attracting so much public attention, there can be none as to the urgent and pressing need of increased mortuary accommodation. An inquiry made some time ago revealed the startling fact that in the great majority of metropolitan sanitary districts there was no mortuary accommodation at all, and where it does exist it is commonly administered on the narrowest parochial principles. Thus, at the conclusion of an inquest held a short time ago on the body of a lad who had lost his life by the overbalancing of a boat, the coroner's officer stated that having found the body in the parish of Aldgate, where the mortuary has been demolished by the Metropolitan Board of Works, he carried it to the adjoining parish of Wapping. Here he experienced great difficulty in placing it; and the mortuary keeper told him that he would not in future receive any bodies from without his parish. In answer to the officer's application to know how to proceed in future cases, the coroner stated that what he had just heard was a great public scandal, which ought not to be allowed to exist. It was the duty of the parish officers to provide a resting-place for the bodies of those found dead, and he directed his officer, should such a case arise again, to take the body to the house of one of the churchwardens, and, failing that, to the police-station.—*The Sanitary Record*.

Meteorology.—The third of a course of lectures on "Meteorology," by Mr. W. Marriott, F.R.M.S., was delivered on the evening of the 20th of December, in the reading-room of the Society of Engineers, Victoria-street, Westminster, Mr. A. T. Walmisley, member of council, in the chair. This lecture was devoted to the consideration of atmospheric pressure. Having referred to Torricelli's experiment proving that a column of water 32 ft., or of mercury 30 in., is in equilibrium with the pressure of the atmosphere, the lecturer explained the construction of the barometer, and described the Fortin, Kew, siphon, aneroid, and other forms of this instrument. As the pressure decreased with altitude, it was shown how the barometer could be used for the measurement of heights. It was pointed out that there is a diurnal range of atmospheric pressure, which consists of two minima about 4 a.m. and 4 p.m., and two maxima at about 10 a.m. and 10 p.m. This phenomenon is most marked in the tropics. Having referred to the connexion existing between the changes of atmospheric pressure and the flow of underground water, and also colliery explosions, the lecturer explained the construction of isobaric charts, and by the aid of such charts showed the distribution of pressure over the globe during the months of January and July.

Ventilation of the Hospital Ship "Castalia."—The Local Government Board have approved the adoption by the Metropolitan Asylums Board of Messrs. Robert Boyle & Son's Patent Self-acting Air Pump Ventilators for the ventilation of the twin-ship *Castalia*, which, having been acquired by the Board, is being converted into a Small-pox Hospital. We understand that this is one of the largest ventilating contracts that Messrs. Boyle have yet undertaken, there being twenty air-pump ventilators 6 ft. in diameter, and sixteen 3 ft. in diameter, included in their contract, which embraces all the necessary shafting, fixing, &c., &c. When the work is finished, owing to the elaborate and complete nature of the arrangements it is expected to be one of the most unique examples of ventilation. The Air-Pump ventilators are also being applied to the transport steamers attached to the *Castalia*.

Cremation.—The great difficulty about cremation and the principal obstacle to its general adoption is the danger of affording facilities for the commission of murder by poison. Would it not be possible to organise a system of post-mortem examinations in every case of intended cremation so as to get rid of the difficulty? Beyond question it would be a good social policy, so far as health is concerned, to burn bodies instead of burying them; but it will not be possible to adopt cremation as a general practice until society has safeguards against the terrible danger to life which cremation undoubtedly creates. Such hideous crimes as those committed by Smethurst, Pritchard, and other notorious poisoners would never have been discovered if cremation had been in vogue.—*The Lancet*.

The Artisans and Labourers' Dwellings Acts.—By order of the Court of Common Council, a return has been published showing the steps taken by the Corporation and the City Commissioners of Sewers to provide improved dwellings for the labouring poor. From this return it appears that the Corporation of London first directed their attention to the subject in the year 1851. In that year the Improvement Committee of the Court of Common Council acquired and cleared ground suited for labourers' dwellings, at an expense in all of 30,519*l*. Estimates of the cost of the erection of the buildings were prepared, but the ground acquired by the Court was taken compulsorily under the Act of Parliament for constructing the Metropolitan Railway, and delay consequently resulted. Ground was then acquired in the neighbourhood of the Farringdon-road, and a contract was entered into in the year 1869 for the erection of four blocks of buildings, to be called "Corporation Buildings," at a cost, including the site, of 54,568*l*. Additions were subsequently made, raising the total cost to 59,783*l*. These blocks accommodate 846 persons. The Corporation in the years 1866-7 further appropriated two buildings, designed for hotels, at the Metropolitan Cattle Market at Islington, and adapted them for lodging-houses for the artisan class, at a cost, including the estimated value of the site, of 33,000*l*. In these buildings 160 persons are accommodated. Under the Acts for making the Holborn Valley Improvements, the Corporation subsequently obtained powers facilitating the acquisition of land on which to erect dwellings for the poor. The amount expended under those Acts in the provision of the dwellings, termed "Viaduct Buildings," including the value of the site, has been 13,023*l*, and the number of persons accommodated is 585. The figures here given exhibit a great disproportion between the cost of the results obtained, the probable explanation being that the buildings near the Cattle Market were built for other purposes.

Building on Burial Grounds.—The proposal to build over the dissolved burial-ground in Peel-grove, Bethnal-green (alluded to in the *Builder* a few months ago), does not seem to have been abandoned, notwithstanding statements made to that effect at the time. The proposal being again revived, Lord Brabazon, Chairman of the Metropolitan Public Gardens and Playgrounds Association, has written asking the Metropolitan Board of Works to oppose the scheme, saying that even if the whole surface of the ground were concreted over, subsidences would certainly take place from time to time, creating fissures in the concrete, so that not only would the stability of the houses be endangered, but noxious emanations would arise from the human remains below. (The number of persons buried in the ground is given as 20,000.) It is satisfactory to note that at the meeting of the Metropolitan Board of Works on the 21st inst. Mr. Shepherd, Chairman of the Building Act Committee, stated that the Building Acts authorised the Board to take proceedings in the event of building operations being commenced, and the committee had instructed the solicitor to take proceedings when the occasion arose. He moved "That Lord Brabazon be informed that the Board have refused their consent to an application made by the parties in July last, and that they have taken, and are taking, steps to prevent buildings being erected upon the site." Mr. Ewen (representing the parish of Bethnal-green) said that the local authorities had given instructions for the ground to be watched, so that immediate action might be taken in the event of any building operations being commenced. Mr. Selway stated that under an Act obtained in 1878, the Board had full powers to deal with a case of this kind, but, as the chairman of the committee had explained, nothing could be done until building operations were commenced.

New Patent Law.—This law will come into operation on January 1, 1884. Under the new regulations Provisional Protection, which will give absolute security to an invention, will cost four guineas. The next and last step will consist in filing the complete specification, which may be done at any time afterwards, within nine months. This will cost nine guineas, exclusive of drawings, if any, and when the specification is not extremely long and elaborate. The patent, when issued, lasts for four years without further payment, instead of three years, as at present.

Artisans' Dwellings in the City.—At the meeting of the City Commission of Sewers on the 18th inst. a letter received from Messrs. Ashby & Horner, the well-known firm of builders, asking the Commission to endeavour to procure an alteration of the law under which blocks of dwellings for the poor, constructed by private individuals, were liable to house-tax, was referred to a committee for consideration. A request from the Home Secretary to be informed when the contract for the erection of artisans' dwellings on the Petticoat-square site was made, and at what date the buildings were to be completed, was referred to the clerk to answer. Dr. Sedgwick Saunders, the medical officer of health, urged the Court to reconsider that portion of the plans for the artisans' dwellings about to be erected in Petticoat-square which had reference to the height of the rooms. By the sectional drawings, that was shown to be 8 ft. only in all the rooms above the ground floor. In his opinion that was totally inadequate to the requirements of the people intended to be benefited by those dwellings. He desired to place on record that the dimensions, appliances, and ventilation of the rooms, and other kindred matters, had never in any shape or form been submitted to him as the medical officer. The report was referred to the Finance and Improvements Committee for consideration.

Brentford Drainage.—The new works for the drainage and disposal of the sewage of Brentford have just been inspected and formally opened by the Local Board, the ceremony of starting the engines being performed by Mr. T. Layton, F.S.A., the chairman of the Board. The sewage is pumped from the collecting well at the Town Meadow to the sewage-tanks at Ealing, a distance of about a mile. The sewage is deodorised and precipitated by the mixture of lime and sulphate of alumina, and the effluent water discharged into the river by a culvert along the line of Claypounds-lane. The sludge is dried by means of flues constructed under the tanks, and is run out by a small tramway. The Local Board have obtained a loan of 30,000*l*. to carry out these improvements. The works have been designed by Messrs. Gotto & Beesley, engineers, of Westminster, and have been carried out by Messrs. Ford & Everett, as contractors for the general works, the Staveley Coal and Iron Company supplying the iron pipes, and Messrs. James Watt & Co. the engines and machinery. The work has been superintended by Mr. Lacy, the town surveyor.

Birkenhead School of Art.—We received a week or two back the report of the able head master of this school, Mr. Bentley, from the general terms of which we gather that while attendances, for what is now a large and populous neighbourhood, are less numerous than might have been wished or expected, the average quantity of work done is good, and improving. Among other points we notice a considerable proportion of competitors for prizes for drawing from memory, a branch of artistic training which, to our thinking, should be assiduously cultivated. The principle of never drawing but with the object or model before the eye may be carried too far, with the result of making student or artist too exclusively dependent upon it. We give elsewhere an extract from an address which was delivered by Mr. Walter Smith, on the occasion of giving the prizes to the students.

Death from Sewer Exhalations.—A painful warning occurred last week of the danger arising from open sewer-ventilators in the public road. Police-constable Hilsden, a tall, stout, robust young man, had been placed on fixed duty at Waddon, near one of the open gratings in the road, and it is supposed he inhaled the escaping gas, and being taken ill he was removed to the Croydon Infirmary, where he died of typhoid fever, followed by pleuro-pneumonia, after six weeks' acute suffering.

The Manchester Ship Canal Bill has been deposited in due form in the Private Bill Office of the House of Commons. The capital is set down at 8,000,000*l*., and, as far as possible, last year's Bill has been improved upon from the promoters' point of view. The Pomona Gardens are to be acquired to divert the canal aqueduct at Barton. The railway diversions at Warrington and Irlam are to be minimised, and the course of the canal at Walton will be altered.

A Brass Eagle Lectern has just been supplied to Alderwasley Church by Messrs. Jones & Willis.

Sanitary Condition of the Inner Temple.

A report has reached us of a case of typhoid fever in the Inner Temple, and since the conditions of life in the sets of chambers there are somewhat peculiar, a word of caution may not be inopportune. A word of caution seems the more necessary as, doubtless, many of the sanitary fittings are of an archaic type, or, perhaps, modern fittings have been put into dwellings which were never designed for their reception. With common soil-pipes running through every floor of a building, with the waste-pipes of cisterns and lavatories communicating directly with these common soil-pipes, and, possibly, with a common supply of water for drinking and for closet flushing, it is evident that the fellow-lodgers of a case of typhoid would run some considerable risk, and we trust the Benchers will take the sanitary condition of their property into serious consideration.—*The Lancet*.

Wakefield Industrial and Fine Art Institution.—The report of this institution, submitted at the sixteenth annual public meeting and prize distribution, a few days ago, mentions the increasing number of artisan students, and a growing desire on their part to take up advanced subjects. Mr. John Binks moved the adoption of the report, and the motion was seconded by Mr. James Fowler, F.S.A., architect, of Louth, who said that considering the short time the School of Art had been in existence they could not help congratulating themselves upon the firm root it had taken in the town, and the scope it was able to propose to itself—the number of subjects taught. Mr. Fowler concluded by testifying to the courtesy and kindness, as well as efficiency, with which Mr. Swire, the head-master, fulfilled his duties. Mr. Walter Smith, whose address to the Birkenhead students we have given in part in another column, was also called on to address them at Wakefield.

Royal Institute of British Architects.—We are glad to note that a circular has been issued to members giving a notice of a proposed alteration in By-laws xxvi. and xxvii., the result of which, if adopted, will be to abrogate the principle of successive election to the presidential chair by seniority of Vice-presidents, and to rule that "any Fellow a Honorary Fellow shall be eligible to be nominated by the Council as President." We predicted from the first that the seniority arrangement would not work, and we hope the alteration will be carried unanimously, and the Institute enabled to adopt at once the only right system for their best interests—viz., the election successively to the chair of the best representatives of the profession who may be eligible, and be willing to accept office.

Edinburgh Operative Masons.—A meeting of the Edinburgh operative masons was held in their hall, High-street, a few days ago, to consider the intimation from the employers of a halfpenny reduction per hour. After several of the men had expressed their opinion in rather strong terms at the action taken by the employers, the following resolution was carried by a majority:—"That, in the opinion of those present, the employers have at the present time taken an undue advantage,—in fact, virtually broken faith with the operatives,—in reducing the wages a halfpenny per hour; we therefore, in the meantime, accept the reduction under protest."

Exeter.—A handsome addition is about to be made to the Church of St. Michael and All Angels, Exeter, in the shape of a carved oak pulpit, in place of the present temporary one. It is the gift of Mrs. Gibbs, of Tyntesfield, and has been designed by Mr. Arthur W. Blomfield, M.A. The execution of the work has been entrusted to Mr. Harry Hems.

Longridge, Preston.—A new Wesleyan Chapel and Class-rooms are about to be erected from the plans and designs of Mr. David Grant architect, Preston.

TENDERS.

For new warehouse in London-wall. Mr. W. E. Brown architect, 6, Poultry.—	
Adamson & Sons	£1,740 0 0
Mark	4,874 0 0
Brass	4,565 0 0
Servinor	4,542 0 0
Bass	4,500 0 0
Lawrence & Sons	4,497 0 0
Greenwood	4,443 0 0
Nightingale	4,381 0 0
Patman & Fotheringham	4,373 0 0
Boyce	4,373 0 0
Corder	4,285 0 0
Richardson	4,269 0 0

For the erection and completion of divisional headquarters, comprising stores, book rooms, council chamber, and offices, at Constitution-hall, Birmingham, for the Salvation Army, Mr. E. J. Sherwood, architect, 131, Queen Victoria-street, E.C. Quantities supplied:—

W. J. Whitall, Lancaster-street, Birmingham	£1,108 0 0
John Webb, Walls - street, Birmingham	1,144 0 0
Messrs. Bissett & Son, Sheffield	1,090 0 0
Wm. Smith, Key Hill, Birmingham	1,078 0 0

For the erection and completion of Salvation Army barracks, for General Booth, in Beresford-street, Woolwich. Mr. E. J. Sherwood, architect. Quantities supplied:—

H. Coombes, Plumstead, Kent	£1,478 17 7
Dunford & Griffin, Poole and Wimbomborne	1,384 0 0
Wm. Harris, Greens End, Woolwich	1,325 0 0
John Brightmore, High-street, North Woolwich	1,300 0 0
E. Foster, Springfield-terrace	1,282 0 0

For the erection of ten houses in Tonnay-road, Walham Green, for the Middlesex Land Company, Limited. Mr. George Edwards, architect, 68, Brompton-road:—

Reading	£4,940 0 0
Green	4,769 0 0
Colls	4,455 0 0
Hunt	4,460 0 0
Scharien & Williams	4,430 0 0
Long (accepted)	4,398 0 0

For the erection of outbuildings, consisting of mortuary, laundry, coal-house, ambulance, and living rooms, for the Cottage Hospital at St. Paul's Cray, Kent. Mr. St. Pierre Harris, architect and surveyor:—

Otway	£257 13 0
Treadwell	223 0 0
Wood (accepted)	191 0 0

For alterations to house, King's-road, Chelsea. Mr. W. E. Brown, architect, 6, Poultry:—

King	£232 10 0
Hudson	195 0 0
Holliday & Greenwood	189 0 0
Adamson & Sons	180 0 0

For building new club-room, exclusive of fittings, at the Refiners' Arms, Barrow-street, Commercial-road, E., for Mr. J. W. Connor:—

Moyle & Son (accepted)	£212 0 0
------------------------	----------

[No competition.]

For rebuilding house, No. 210, Mile Road-road, for Mr. W. B. Press. Mr. C. A. Legg, architect, Mile End:—

P. & F. J. Wood	£285 0 0
Lusk	800 0 0
Poole & Co.	655 0 0
Russell	560 0 0
Walker	522 0 0
Hearle & Son	515 0 0
Palmer & Son	465 0 0

For the construction of main sewerage works at Tillingham, Essex, for the Maldon Union Rural Sanitary Authority. Mr. Alfred B. Brady, A.-M. Inst. C. E. surveyor. Quantities supplied:—

G. W. Beaton, Hunstanton St. Edmunds	£1,112 10 0
Wise & Wilson, Manor Park	884 5 1
Beadle Bros, Erith	879 0 0
G. Cordery & Sons, New-out	873 4 6
G. Smith, Newcastle-on-Tyne	823 0 4
J. W. Steward, Southend	816 2 2
J. W. & J. Neave, Stratford, E.	857 0 0
W. William, Wimbledon	881 0 0
W. Armstrong, Chiswick, W.	851 6 5
G. Potter, Lower Clapton, E.	819 14 7

[Surveyor's estimate, £850 0 0]

* Accepted.

For building mission hall at Merton, Surrey, for the Committee. Mr. R. B. Marsh, architect:—

Townsend	£1,290 0 0
Greenwood	1,269 0 0
Ladley Bros.	1,230 0 0
Jarrard	1,274 0 0
Fox & Palmer	1,176 0 0
Ryder Hunt	1,170 0 0
Nightingale	1,112 0 0

For a detached residence at South Hill Park, Bromley, Kent. Mr. St. Pierre Harris, architect, Basinghall-street. Messrs. Bissett, Payne, & Loper, surveyors:—

D. Payne	£2,200 0 0
Armand & Son	1,808 0 0
T. Crossley	1,750 0 0

SPECIAL NOTICE.—Correspondents are desired to send full lists of persons tendering, with the amount of each tender. In future, no single name will be given without the amount of the tender, and not then unless we have the assurance of the sender that there was no competition.

To Contributors and Correspondents.

ALL LETTERS AND COMMUNICATIONS referring to LITERARY and ARTISTIC MATTERS must be addressed—

"To the Editor of THE BUILDER,
46, Catherine-street,
Covent Garden, W.C."

And not to any individual by name.

N.B.—J.G. (we give the addresses when sent).—T.A.—W.W. (not the style for our columns).—C.H.C. (thanks).—C.F. & Co. (our advertising columns).—G.H.—G.M.L.—J.H.—L.L.

Correspondents should address the Editor, and not the Publisher except in cases of business.

All statements of fact, lists of tenders, &c. must be accompanied by the name and address of the sender, not necessarily for publication.

We are compelled to decline pointing out books and giving addresses.

NOTE.—The responsibility of signed articles, and papers read at public meetings, rests, of course, with the authors.

PUBLISHER'S NOTICES.

In addition to the usual quantity of notices and interesting literary matter the First 200 of the New Year Volume, to be published in JANUARY next, will contain the following ILLUSTRATIONS, printed in two-coloured paper, viz.:

ILLUSTRATIONS AT WORTLEY HALL. Designed by E. J. Poynter, R.A. (COLOURED PLATE).

DETAILS OF SAME. (Double page Photo-Litho.)

"DESERTED," a Medical Study. By H. W. Brewer. (Double page Photo-Litho.)

THE NEW GERMAN HOUSE ARCHITECTURE. BERLIN. (Two Pages of Woodcuts, by J. D. Cooper.)

THE NEW THEATRE, NICE. (Two pages Litho.)

THE NEW ACADEMY OF SCIENCE AND ART, ATHENS. (Double page Engraving.)

THE NEW TECHNICAL INSTITUTION, KENSINGTON. A. WATERHOUSE, R.A. Architect. Four pages, Photo-Litho. (Engraving and Photo.)

THE INDEX and TITLE PAGE for Volume XLV. (July to December, 1883) will be given as a Supplement with the Number of January 12.

A COLOURED TITLE PAGE may be had, gratis, on personal application at the Office.

CLOTH CASES for Binding the Numbers are now ready, price 2s. 6d. each; also

READING-CASES (Cloth), with Strings, to hold a Month's Numbers price 2s. each; also

THE FORTY-FIFTH VOLUME of "The Builder" (bound), will be ready shortly, price Twelve Shillings and Sixpence.

SUBSCRIBERS VOLA MEA on being sent to the Office, will be bound at a cost of 3s. 6d. each.

CHARGES FOR ADVERTISEMENTS.

SITUATIONS VACANT, PARTNERSHIPS, APPRENTICESHIPS, TRADE, AND GENERAL ADVERTISEMENTS.

Six lines (about fifty words) or under 4s. 6d.

Each additional line (about ten words) 5s. 6d.

Terms for Series of Trade Advertisements, also for Special Advertisements on front page, Competition, Contracts, Sales by Auction, &c. may be obtained on application to the Publisher.

SITUATIONS WANTED.

Four lines (about thirty words) or under 2s. 6d.

Each additional line (about ten words) 3s. 6d.

PREPAYMENT IS ABSOLUTELY NECESSARY.

** Stamps must not be sent, but all small sums should be remitted by Cash in Registered Letter or by Money Order, payable at the Post-office, Covent-garden, W.C. to DOUGLAS FOORDHNER, Publisher.

Addressed to No. 46, Catherine-street, W.C.

Advertisements for the current week's issue must reach the Office before THREE o'clock p.m. on THURSDAY.

The Publisher cannot be responsible for DRAWINGS, TESTS, MONIALS, &c. left at the Office in reply to Advertisements, and strongly recommends that of the latter COPIES ONLY should be sent.

TERMS OF SUBSCRIPTION.

"THE BUILDER" is supplied direct from the Office to residents in any part of the United Kingdom at the rate of 10s. per annum, PARAP. Remittances payable to DOUGLAS FOORDHNER, Publisher, 46, Catherine-street, W.C.

Best Bath Stone.

WESTWOOD GROUND,
Box Ground, Combe Down,

Corsham Down, And Farleigh Down.
RANDELL, SAUNDERS, & CO., Limited,
Corsham, Wilts. [ADVT.]

SUMMER-DRIED

Corsham Down Stone

For Winter Use.

PICTOR & SONS, BOX, WILTS. [ADVT.]

Doubling Freestone and Ham Hill Stone

of best quality, in blocks, or prepared ready for fixing. An inspection of the Doubling Quarries is respectfully solicited; and Architects and others are CAUTIONED against inferior stone. Prices, delivered to any part of the United Kingdom, given on application to CHARLES TRASK, Norton-sub-Hamdon, Ilminster, Somerset.—Agent, Mr. E. WILLIAMS, 73, Charlotte-street, Portland-place, W. [ADVT.]

Doubling Freestone, Of best quality, supplied

HAM HILL STONE, from their own Quarries and Kilns by STAPLE & HARRIS, Stoke, Ilminster, Agent, Mr. H. MORGAN, 8, Augustus-road, Hammersmith, London, W. [ADVT.]

BLUE LIAS LIME

(Ground or Lump),

Asphalte.

Seyssel, Patent Metallic Lava, and

White Asphaltes.

M. STODART & CO.

Office:

No. 90, Cannon-street, E.C. [ADVT.]

Asphalte.—The Seyssel and Metallic Lava

Asphalte Company (Mr. H. Glenn), Office, 38,

Poultry, E.C.—The best and cheapest materials

for damp courses, railway arches, warehouse floors,

flat roofs, stables, cow-sheds and milk-rooms,

granaries, tun-rooms, and terraces. [ADVT.]

Immense quantities of

DRY WAINSCOT,

DRY MAHOGANY,

DRY WALNUT,

in all thicknesses.

B. J. HUDSON & SONS,

Whitefield-st. W., and Great Peter-st. S.W.

London. [ADVT.]

Notice of Partnership.

—Mr. W. H. BARBER, Surveyor, of No. 12, Buckingham-

street, Adelphi, W.C., having taken into Part-

nership his son, Mr. W. W. BARBER and Mr.

A. BOXALL, begs to announce that on and after

the 1st of January, 1884, his practice will be

carried on by the firm under the name of

BARBER, BOXALL, & BARBER.

MICHELMORE & REAP,

Manufacturers of

CHARLES COLLINGS' PATENT.

COLLINGS' PATENT HINGES,

LEVER, SCREW, & BARREL BOLTS,

Self-Acting "FALL DOWN" GATE STOPS,

and IMPROVED GATE FITTINGS of every description.

36A, BOROUGH ROAD,

LONDON, S.E.

DISCOUNT TO BUILDERS.

GOLD AND SILVER MEDALS AT AMSTERDAM EXHIBITION.

IRON CISTERNS.

F. BRABY & CO.

LONDON, LIVERPOOL, GLASGOW.

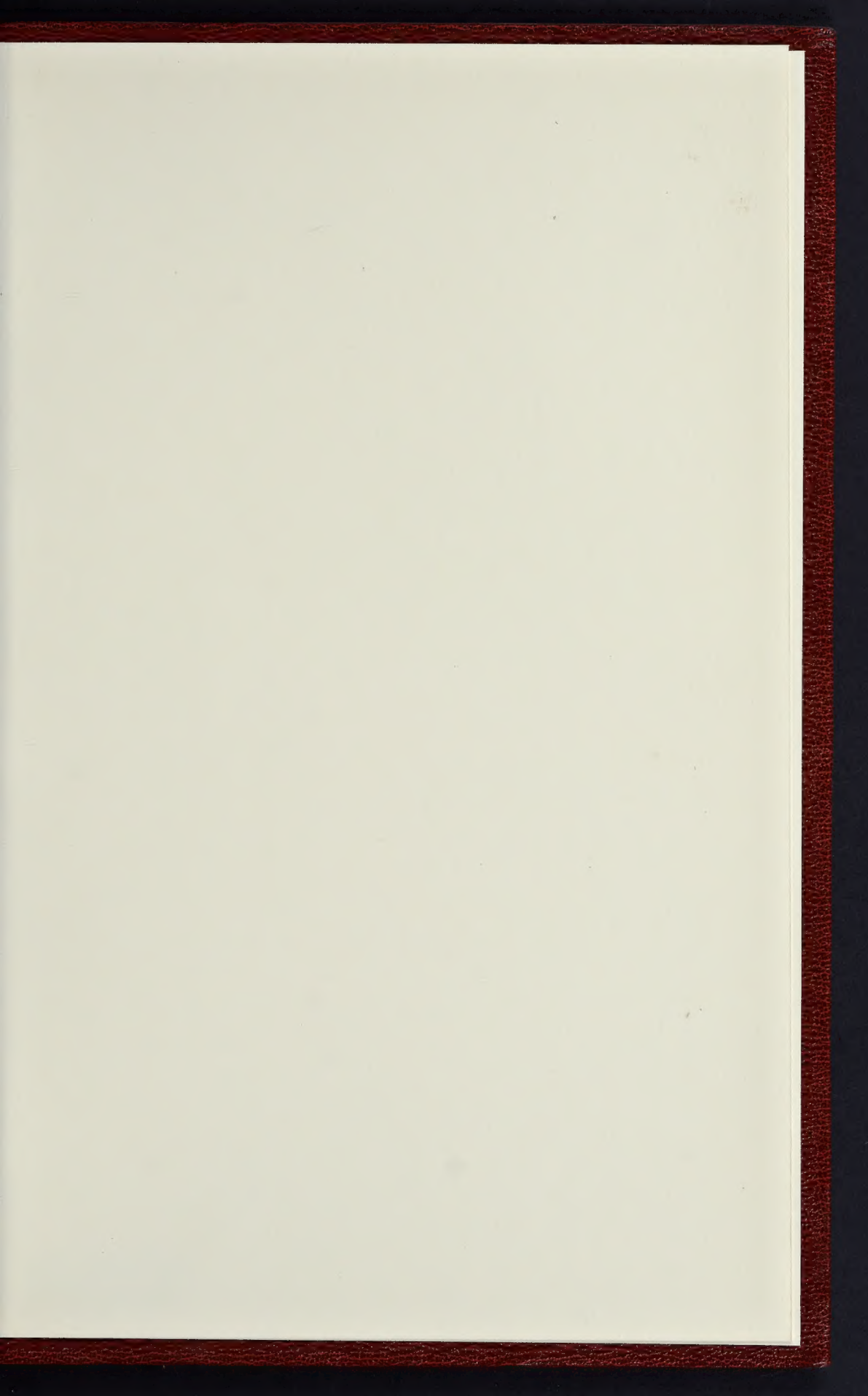
VERY PROMPT SUPPLY.

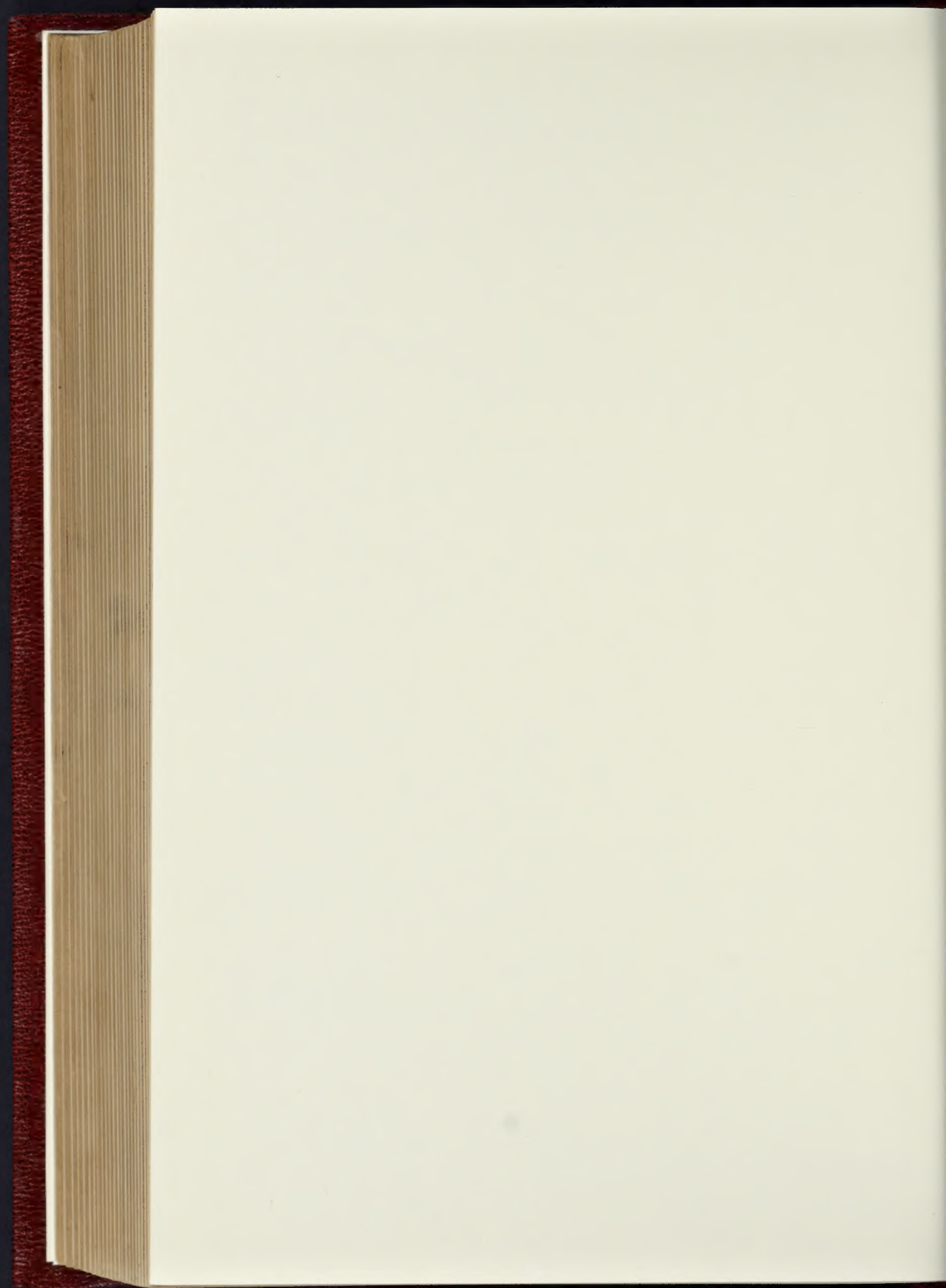
LARGE STOCK READY.

CYLINDERS FOR HOT-WATER CIRCULATION.

Particulars on application.

Chief Office: 360, EUSTON ROAD, LONDON.





GETTY CENTER LIBRARY



3 3125 00702 3258

